

NAVAL SCIENCE 3

**NAVAL KNOWLEDGE, LEADERSHIP
AND NAUTICAL SKILLS**

INSTRUCTOR GUIDE



NAVAL SCIENCE 3: NAVAL KNOWLEDGE, LEADERSHIP AND NAUTICAL SKILLS

INSTRUCTOR GUIDE

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NAVAL SCIENCE 3 - NAVAL KNOWLEDGE, LEADERSHIP, AND NAUTICAL SKILLS- INSTRUCTOR GUIDE
MODULE 1: Naval Knowledge

Module Overview

Module Objective:

In this Section, we will discuss some of the unique ways that the Navy and the Naval Service serves as a tool for national policy and how it fits in to the thinking of the country’s leaders in times of peace and in times of crisis. In so doing, we hope to give each cadet an appreciation for how the government of the United States interacts with the rest of the world as well as how the U.S. Navy performs its tasks from the perspective of their roles and missions. We will also introduce you to the concepts of law which affect each member of the service and how they relate to the day-to-day operations of the fleet. Finally, the Navy operates in an international arena and must be cognizant of the laws and practices which affect their activities throughout the world

Module Organization:

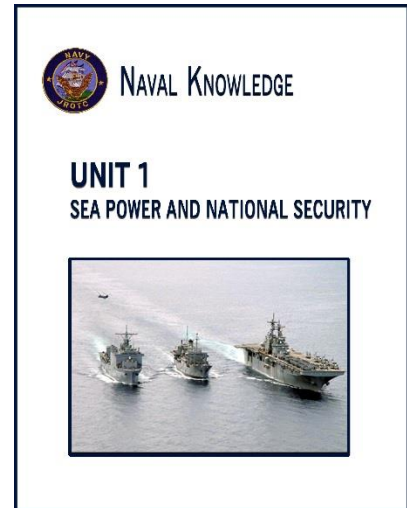
Unit Number	Unit Name	Chapter Name
1	Sea Power and National Security	The Importance of Sea Power
		The U.S Merchant Marine
		Grand Strategy
		U.S. Strategy and the Navy
		National Security and Modern Conflict
2	Naval Operations and Support Functions	Naval Operations
		Naval Communications
		Naval Intelligence
		Naval Logistics
		Naval Research and Development
3	Military Law	Military Law
		Discipline and Punishment
4	International Law and the Sea	Fundamentals of International Law
		International Law of the Sea
		Law of War at Seas

MODULE 1; UNIT 1: Sea Power and National Security

Unit Overview

Unit Objective:

Demonstrate an understanding of the international law as it applies to countries using the sea.



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	The Importance of Sea Power	NS3-M1U1C1S1 – The Importance of Sea Power
2	The U.S Merchant Marine	NS3-M1U1C2S1 – History of the Merchant Marine
		NS3-M1U1C2S2 – Merchant Marine and National Defense
3	Grand Strategy	NS3-M1U1C3S1 – Grand Strategy
4	U.S. Strategy and the Navy	NS3-M1U1C4S1 – U.S. Strategy and the Navy
5	National Security and Modern Conflict	NS3-M1U1C5S1 – Threat Evaluation
		NS3-M1U1C5S2 – Modern Forms of Armed Conflict

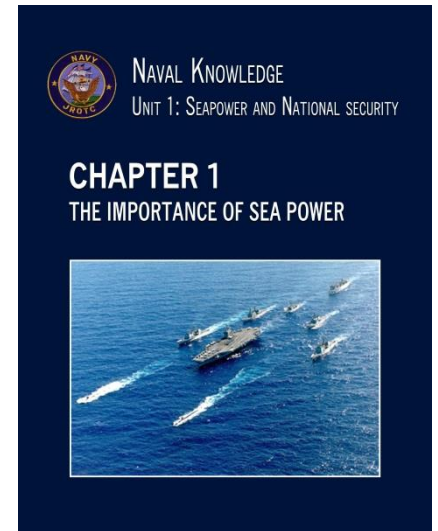
Module 1 Unit 1 Chapter 1: NS3-M3U1C1 – The Importance of Sea Power

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation's political, economic and military well-being

Skills and Knowledge to be Gained:

1. Define the importance of sea power as it relates to America
2. Describe four major developments since World War II that have increased the importance of the oceans of the world
3. Describe the strategic ocean areas
4. Describe the mobility of sea power
5. Describe the purpose and function of the United States Merchant Marine and the relationship between maritime commerce and the economy of the United States
6. Explain the importance of oceanography to the United States
7. Describe the vital role oceans will play in the future of humankind



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately ...
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media in order to make informed decisions and solve problems...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Module 1 Unit 1 Chapter 1: NS3-M3U1C1 – The Importance of Sea Power

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.

Dimension 2. Economic Decision Making

- D2.Eco.15.9-12. Explain how current globalization trends and policies affect economic growth, labor markets, rights of citizens, the environment, and resource and income distribution in different nations.

Dimension 2. Geography

- D2.Geo.4.9-12. Analyze relationships and interactions within and between human and physical systems to explain reciprocal influences that occur among them.
- D2.Geo.11.9-12. Evaluate how economic globalization and the expanding use of scarce resources contribute to conflict and cooperation within and among countries.
- D2.Geo.12.9-12. Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.

Dimension 4. Communicating Conclusions and Taking Action

- D4.2.9-12. Construct explanations using sound reasoning, correct sequence, examples, and details with significant and pertinent information and data...
- D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

(Section 1 of 1)

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation’s political, economic and military well-being

Skills and Knowledge to be Gained:

1. Define the importance of sea power as it relates to America
2. Describe four major developments since World War II that have increased the importance of the oceans of the world
3. Describe the strategic ocean areas
4. Describe the mobility of sea power
5. Describe the purpose and function of the United States Merchant Marine and the relationship between maritime commerce and the economy of the United States
6. Explain the importance of oceanography to the United States
7. Describe the vital role oceans will play in the future of humankind

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Keyterms	KeyTerm Definitions	Opening Question	Warm-Up Question	Introduction (A)	Video Importance of Sea Power
Introduction (B)	Strategic Ocean Areas	Check On Learning A	The Mobility of Sea Power (A)	Video Mobility of Sea Power	The Mobility of Sea Power (B)	Oceanography (A)	Check on Learning B
The Continuing Importance of Sea Power	Review Questions	Closing Questions	Call for Other Questions				

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 1, Chapter 1. Place a checkmark beside the NS3-M1U1C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U1C1S1 - Key Terms and NS3-M1U1C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that sea power is defined as the ability to use the seas for one’s own purposes and to deny the use of the seas to one’s enemy.	1-2
Video 1 on Sea Power and National Security	Show video 1 on sea power and national security.	3
Unit Overview	Explain that the Chief of Naval Operations (CNO) defined sea power as “the sum of a nation’s capabilities to implement its interests by using the ocean areas for political, economic and military activities in peace or war, in order to attain national objectives.”	4
Video 2 on Sea Power and National Security	Show video 2 on sea power and national security.	5
Unit Overview	Explain that the principal components of sea power include Naval power, ocean industry, ocean science, and ocean commerce. Sea power encompasses the Merchant Marine, oceanography, ocean engineering, marine research and technology, and Naval power.	6-7
Video 3 on Sea Power and National Security	Show video 3 on sea power and national security.	8
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the importance of sea power. We will learn about strategic ocean areas and the mobility of sea power. We will also learn the importance of oceanography and the continuing importance of sea power.	9-12
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	13
Key terms - Definitions	Reinforce the correct definition for each key term.	14-16

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

Opening Question(Random Pick a Student – “RPS”)	<p>This Opening Question is, “Besides fishing, can you think of other industries that are supported by the oceans?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the importance of sea power.</p>	17
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	18
Introduction	<p>Explain that throughout history the oceans have always been important to humanity, as they have been a major means whereby travel, commerce, cultural exchange, and military power projection have been accomplished. Since World War II, four major developments have emphasized the importance of the oceans even more. Two of these are political, and two are technological.</p>	19
Introduction	<p>Explain that the first major political development has been the rapid increase in new nations since World War II. Only 51 nations formed the United Nations after the war and today there are over 190. Many of these are underdeveloped Third World countries, tempting targets for more aggressive nations.</p>	20
Introduction	<p>Explain that the second political development is the steady increase in the interdependence of all nations of the world since World War II. The Internet and international commerce have linked all nations of the world together to a degree unprecedented in the history of the world. The United States today is committed by treaty or agreement to assist in the defense and development of well over half the world’s nations. Through our participation in the United Nations, we render indirect assistance to even more. Many of these border on oceans or seas. These oceans and seas are often the means by which any needed assistance can be delivered.</p>	21
Video on the Importance of Sea Power	<p>Show video on the importance of sea power.</p>	22
Introduction	<p>Explain that on the constructive side are fission reactors used in ship and submarine propulsion and for power generation ashore. On the destructive side is the thermonuclear warhead that can be launched from land, sea or air to obliterate any target against which it is used.</p>	23

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

Strategic Ocean Areas	Explain that there are four main ocean areas that are of prime strategic importance to the United States. The first is the Atlantic, which includes the Mediterranean Sea, the North Atlantic, and the western approaches to Europe. This area was the main site of confrontation between the Western allies and the Soviet Bloc during the Cold War. The second area is the Pacific Ocean, extending from the Bering Strait off Alaska to the Strait of Malacca in Southeast Asia. This was the site of two wars and many other confrontations between the United States and its allies and communist states such as North Vietnam, China, and North Korea.	24-26
Strategic Ocean Areas	Explain that the third prime strategic ocean area is the Arctic Ocean, which lies north of our North American continent and separates it from Asia. The advent of the nuclear submarine made this ice-encrusted ocean into an important area of Naval operations when in the mid-1960s submarines of the Soviet Union, United States, and other NATO nations began routine cruises under the polar icecap. It has also been proposed as a route for submarine transport of crude oil shipments, and more recently with the increased melting of much of its surface ice, for surface shipping along the legendary Northwest Passage.	27-28
Strategic Ocean Areas	Explain that the fourth area is the vast Afro-Asian ocean, which includes the broad reaches of the South Atlantic and Indian Oceans, as well as the Middle-Eastern oil transportation routes through the Red Sea, Suez Canal, and Persian Gulf.	29
Strategic Ocean Areas	Explain that in these strategic ocean areas there are a number of geographic chokepoints (bottlenecks) through which the world’s maritime traffic must pass in order to conduct international trade and deploy Naval forces. Many of these chokepoints were identified in the Maritime Geography unit of Naval Science 2. Much of our worldwide maritime strategy is concerned with how best to protect their continued use by the United States and our allies, while denying their use to any prospective enemy.	30
Check on Learning Questions A (Lesson questions 3-4)	Check in on students’ understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	31
The Mobility of Sea Power	Explain that in contrast to land forces, whose mobility and resupply capability is limited by the geographical features and political constraints of the terrain in which they operate, seaborne naval forces have several advantages. The open sea is a vast level highway over which no nation can claim sovereignty. Thus Naval forces can move much more quickly than land forces wherever they wish, and disperse whenever and however necessary. They can establish a line of defense far from their national shores, making it easier to prevent attack by enemy forces. They can easily replenish fuel, stores, and ammunition at sea whenever required.	32
Video on the Mobility of Sea Power	Show video on the mobility of sea power.	33

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

Merchant Marine	Explain that a strong Merchant Marine (commercial shipping) is a vital element of sea power. This belief was part of Alfred Thayer Mahan’s doctrine of sea power. The merchant fleet must be kept competitive if it is to meet the growing needs of industry and provide logistic support to our forces overseas.	34
Merchant Marine	Explain that Captain Alfred T. Mahan believed in a strong Merchant Marine for many reasons, including that interruptions to transportation of goods and services can seriously impact way of life and economies.	35
Merchant Marine	Explain that in order to maintain our economy, there are about eighty “strategic resources” that the United States cannot do without. We rely on imports to satisfy our needs for many of these resources. For instance, we must import some 85 percent of the manganese required to produce steel. We import around 85 percent of the bauxite from which aluminum is refined. We import more than 99 percent of our nation’s tin, and over 90 percent of the chromite used to toughen steel. Ninety percent of the columbite used to construct nuclear reactors, make stainless steel, and manufacture rockets and missiles is also imported. Since the late 1960s we have imported a large portion (some 70 percent in recent years) of our petroleum. Moreover, foreign markets for our farm products and manufactured goods have become increasingly important to the U.S. economy in recent years. Loss of freedom of the seas would mean no more aluminum, manganese, columbite and other goods needed.	36-37
Merchant Marine	Explain that most nations understand the doctrine of freedom of the seas under international law, though some have varying interpretations. In wartime, however, a belligerent nation will do all in its power to disrupt the passage of commercial shipping to its opponents. Throughout history, whenever powerful nations have lost control of the seas, they have fallen. There is no reason to believe that things will be different in the future.	38
Merchant Marine	Explain that for this reason the United States needs a strong Merchant Marine. The flow of ocean-borne commerce must not be stopped by any enemy if we are to maintain our national security, as well as the health and stability of our domestic economy. Keeping the sea-lanes open is a vital mission of the U.S. Navy, for these lanes are the lifelines of America.	39
Oceanography	Explain that many littoral nations (those with ready access to the seas) are engaged in oceanographic research. We know that we must increasingly turn to the sea for resources that we previously obtained on land: food, fresh water, minerals and energy. Vast new resources have already been discovered in the continental shelf (a narrow belt around the continents). International agreements have given littoral nations exclusive rights to develop all the natural resources in the continental shelf adjacent to their own shores.	40
Oceanography	Explain that oil resources under the sea are being tapped as are minerals from sea water. Some of these oils rigs are located in the Gulf of Mexico and the North Sea. Minerals of all kinds can be extracted from seawater, but as yet this is cost effective for only a few chemicals and elements. Processing seawater to obtain fresh water for	41-42

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

	drinking and irrigation is being done in a few places around the world where natural fresh water is in short supply.	
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	43
Oceanography	Explain that harnessing the tides for a boundless supply of energy is presently done only in a few locations mainly in Holland, France, and Canada. However, it could be done on nearly every seacoast where the tidal range is sufficient. The ocean tides are an endless supply of energy.	44
Oceanography	Explain that commercial fisheries have not begun to realize the potential of the ocean harvest. They have concentrated on only about 20 varieties of fish out of more than 20,000 known species. Almost all sea life is edible. Even tiny high-protein plankton and algae are being investigated as possible sources of food.	45
Oceanography	Explain that science has barely begun its search for knowledge of the ocean's depths. The United States' efforts to increase basic and applied research in oceanography are quite recent. Our progress has been slow. There is no question that we have the capability and scientific knowledge for this effort. What we must develop is a national awareness of the importance of the seas and the will to move ahead boldly with its exploration.	46
The Continuing Importance of Sea Power	Explain that no one denies the growing importance of space exploration to the future of humankind. But even as we gaze toward the stars, dreaming of space ships and distant planets, we must still live on planet Earth. While expeditions to distant stars and colonies on the planets or the Moon may happen someday, it is far more practical to consider the proper use of the Earth for the sustenance of future generations. With nearly three-fourths of the globe covered by water, it is inevitable that the oceans will play a vital role in the future of the human race.	47
The Continuing Importance of Sea Power	Explain that as science turns seaward for fresh water, food, oil, natural gas, and raw materials, it becomes very evident that no country can live in isolation from the rest of the world. The trade routes of the seas have become the arteries of life. Sea power has evolved into an essential ingredient for sustaining life, political independence, and economic prosperity.	48
The Continuing Importance of Sea Power	Explain that sea power is an essential ingredient for sustaining life, maintaining political independence, and economic prosperity. Balanced sea power makes possible a flexible national strategy. In short, sea power gives the United States the ability to carry out policy that supports our national interests and fosters peace in the world.	49-50
The Continuing Importance of Sea Power	Explain that sea power, however, depends on people—highly trained and dedicated people who believe in their mission. They must respond rapidly and decisively to changing world events. It is up to all Americans— service people, civilians, professional people, and students—to learn about the importance of sea power. There is one fact that we must never forget: the sea and the United States are inseparable.	51
Review Question	The Review Question is, "Why is it important for the U.S. to maintain a strong Merchant Marine?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	52
Closing	Have students respond to questions 7 and 8 covering the final segment of the lesson,	53

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

Questions(Lesson Questions 7 - 8)	with follow-up reinforcement and discussion as appropriate.	
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	54

III. Supplemental Activities -

A. In Class Activity:

Supplies required: MOBI Board and handouts for In Class and Take Home activities

When: after talking about the Ocean's resources

- Ask the Cadets - What do the words "renewable" (*Can grow or start over again*) and "non-renewable" (*Resource cannot be replaced*) mean?
- Next make two columns on the board: "renewable" and "nonrenewable" and leave them blank. They will be filled in during the activity.
- Ask for ideas about the definition of "resource" and ask for examples of resources we get from the sea (see suggestions below) and what we use these things for. Make a list on the board of the students' ideas make sure to ask what they are, how we get them and if they are renewable or nonrenewable and list in the appropriate columns

Suggestions:

Fish: food, fish meal (inexpensive protein for poultry, livestock), fish oil (margarine, cosmetics, paint, fertilizers, pet food)

Oil: to use as fuel and to make plastics and other petroleum products

Natural Gas: fuel for heat and for powering some cars and industries

Pharmaceuticals (drugs from the sea): antibiotics and anti-inflammatory agents from corals and sponges, anesthetic and painkillers from poisons found in puffers and porcupine fish, heart attack prevention from oils found in fish

Minerals: commercial value; can be from ocean mining (seabed sand and gravel, offshore coal mines, tin, iron, and even diamonds and gold. Also minerals, especially table salt, are taken from sea water (virtually every element on earth is in sea water)

Kelp/seaweeds: ice cream, chemicals used in food processing, cosmetics, plastics.

Corals, pearls, shells: used in jewelry, other uses

- Divide the students into groups of 4 and have them discuss and answer the questions on the handout "Resources from the Sea"

Answers:

1. Shortages: from over consumption; overfishing. Impact on the ocean environment: pollution from harvesting methods for oil/minerals; altering habitat (for example, if we take too much kelp).

2. As we use these resources up how can that affect other animals in the sea?

(Examples: Who eats krill (small shrimp-like animals)? (Some whales)The Japanese harvest krill, what do you think might happen to the whales if too much of this resource is used? (Remind students of the food web) What about kelp? We use kelp to make ice

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

cream. Who eats or lives in kelp? (Fish, sea otters, sea urchins, etc. They would be affected if too much kelp was lost.)

3. How does this work in the real world/how do we conserve our resources? (Suggestions: Fish: catch limits (#s and size), licensing, regulated 'seasons'. Have regulated kelp cultivation. There is very little regulation of marine pharmaceuticals, we could do more in that area. Pollution issues can be addressed by reducing or stopping off-shore oil drilling and improving and enforcing laws about how it can be safely done if it is done at all.)

4. What are possible solutions? (New alternative resources (ex: whale oil is no longer needed), new technologies, conservation and better management practices.)

5. Should we not take any resources? (This would create other types of problems such as hunger, transportation and economic problems. Also, some cultures rely on certain resources. Without these resources that culture might not exist the in the same way.

B. Take Home Activity: Have the cadets answer the questions on the handout "The importance of Sea Power"

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

Activity 1: In Class Activity- Resources from the Sea

Name: _____ Date: _____ Class: _____

1. What kinds of problems can we have when we take resources from the sea?
2. As we use these resources up how can that affect other animals in the sea?
3. How does this work in the real world/how do we conserve our resources? What are possible solutions?
4. Should we not take any resources? If we should not why if we should why.
5. Should people/countries pay for the right to take resources? If yes then, who should get the money? And what should be done with it?
6. Do you think technology can solve all of these problems of shortages or must we use stronger measures of conservation; why?
7. How can we use/divide the resources better among all groups of people and between people and marine life?

Chapter 1 / Section 1: NS3-M1U1C1S1 – The Importance of Sea Power

Activity 1: Take Home Activity – The Importance of Sea Power

Name: _____ Date: _____ Class: _____

There are four major developments that have emphasized the importance of the Sea Power and the Oceans. Name all four and include whether they are political or technological. Give the reason why you feel they have had such an impact on Sea Power.

1. _____

2. _____

3. _____

4. _____

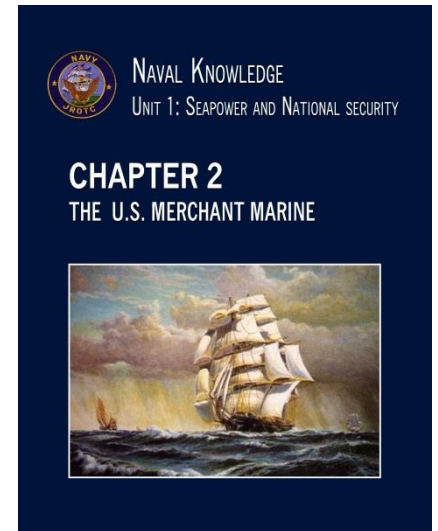
Module 1 Unit 1 Chapter 1: NS3-M1U1C2 – The U.S. Merchant Marine

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation's political, economic and military well-being

Skills and Knowledge to be Gained:

1. Give a historical view of the United States merchant marine from the 1850s to the present
2. Describe national policy as it related to the merchant marine acts
3. Describe the impact of waterborne commerce
4. Describe the types of merchant ships
5. Describe the auxiliary function of the U.S. merchant marine in national defense
6. Explain the role of the Merchant Marine in supporting our military forces in both peace and war
7. Describe the role of the Merchant Marine in carrying strategic materials and energy resources which support the civilian economy and the defense production of our nation
8. Explain the direct support the Merchant Marine provides to some military operations
9. Identify the auxiliary combatant role of Merchant ships
10. Describe the role of the Merchant Marine in support of foreign policy
11. Describe the future of the Merchant Marine



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

Module 1 Unit 1 Chapter 1: NS3-M1U1C2 – The U.S. Merchant Marine

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.1.9-12. Distinguish the powers and responsibilities of local, state, tribal, national, and international civic and political institutions.
- D2.Civ.6.9-12. Critique relationships among governments, civil societies, and economic markets.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 2. Economic Decision Making

- D2.Eco.15.9-12. Explain how current globalization trends and policies affect economic growth, labor markets, rights of citizens, the environment, and resource and income distribution in different nations.

Dimension 2. Geography

- D2.Geo.11.9-12. Evaluate how economic globalization and the expanding use of scarce resources contribute to conflict and cooperation within and among countries.

Dimension 4. Communicating Conclusions and Taking Action

- D4.2.9-12. Construct explanations using sound reasoning, correct sequence, examples, and details with significant and pertinent information and data...
- D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 2 / Section 1: NS3-M1U1C2S1 – History of the U.S. Merchant Marine

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation's political, economic and military well-being

Skills and Knowledge to be Gained:

1. Give a historical view of the United States merchant marine from the 1850's to the present
2. Describe national policy as it related to the Merchant Marine Acts
3. Describe the impact of waterborne commerce
4. Describe the types of Merchant ships
5. Describe the auxiliary function of the U.S. Merchant Marine in National Defense

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	Historical Background	Check On Learning A
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National Policy and the Merchant Marine Acts (A)	Video1 National Policy and the Merchant Marine Acts	National Policy and the Merchant Marine Acts (B)	Video2 National Policy and the Merchant Marine Acts	National Policy and the Merchant Marine Acts (C)	The Impact of Waterborne Commerce	Check on Learning B
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Modern Merchant Ships	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Chapter 2 / Section 1: NS3-M1U1C2S1 – History of the U.S. Merchant Marine

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 1, Chapter 2. Place a checkmark beside the NS2-M1U1C2S1 PowerPoint presentation, and these two CPS question deck files: NS2-M1U1C2S1- Key Terms and NS2-M1U1C2S1- Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this, we will briefly summarize the history of the U.S. Merchant Marine, discuss how it supports our nation in peace and war, and describe some of the main types of ships that make up our modern-day Merchant Marine.	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “In what way can a civilian Maritime force assist the active military forces?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the U.S. Merchant Marine.	8
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	9
Introduction	Explain that ships that carry goods and liquids from one place to another over the world’s oceans and waterways are called merchant marine ships. They range in size from giant tankers the size of an aircraft carrier that carry petroleum products across the seas to small cargo and passenger vessels that ply inland waters and rivers. The	10-13

Chapter 2 / Section 1: NS3-M1U1C2S1 – History of the U.S. Merchant Marine

	Merchant Marine consists of commercial ships and vessels registered in the U.S, most of which are privately owned.	
Introduction	Explain that the United States Merchant Marine ships are an important part of U.S. sea power. They convey American products to markets around the world, and bring foreign products and raw materials essential to our economy back to U.S. ports. During a war, merchant shipping delivers most of the equipment and supplies needed by our forces deployed overseas.	14
Historical Background	Explain that the United States Merchant Marine has experienced several extremes between expansion and decline over the many years since the birth of our nation. It flourished during the early days of the American republic while Europe was at war, and reached a peak in the 1850's, due in large measure to the superiority of American-built clipper ships. Just prior to the Civil War, our Merchant Marine was second in numbers only to that of the British.	15-17
Historical Background	Explain that during and after the Civil War, however, our Merchant Marine suffered a dramatic decline. This happened for several reasons. Chief among these was the effect of the Southern commerce raiders during the war, which preyed upon Northern Merchant shipping around the globe and virtually drove it from the seas by war's end. After the war, the nation's focus turned to westward expansion. Our depleted Merchant Marine suffered from European competition, noncompetitive wage scales, soaring insurance costs, and steadily increasing domestic shipbuilding costs. The latter three factors have continued to plague the U.S. Merchant Marine to the present day. Not since the Civil War has the U.S. Merchant Marine been among the leaders in the world, except when spurred by the demands of war.	18-20
Historical Background	Explain that by the time of World War I, the volume of American imports and exports had grown a great deal, but only about 10 percent of this trade was carried in ships flying the U.S. flag. A large effort to remedy this situation was made during the war, which resulted in over 2,000 ships being built. Unfortunately, a competitive edge could not be sustained after the war. In 1936, Congress passed the Merchant Marine Act, which provided for the payment of construction and operating subsidies so American ship owners would consider expansion. The Maritime Commission was established under this law in order to administer the Act.	21-23
Historical Background	Explain that many contracts were for cargo ships to be used by merchants in peace, but built to military specifications for use during wartime.	24
Historical Background	Explain that during World War II, the U.S. shipbuilding industry again went into high gear. Between 1939 and 1945, almost 6,000 merchant ships were built. Close cooperation with the Navy resulted in Liberty and Victory ships designed to meet the auxiliary needs of the wartime Navy and capable of being mass-produced at a phenomenal rate. The U.S. Merchant Marine amassed an incredible record. Its ships and crews were subject to every kind of enemy attack, but nevertheless succeeded in carrying millions of tons of varied cargo across every ocean. Strategic materials essential to industry were often brought back to the United States following delivery of wartime military cargoes overseas. Merchant Marine casualties per capita were exceeded only by the Marine Corps.	25-26

Chapter 2 / Section 1: NS3-M1U1C2S1 – History of the U.S. Merchant Marine

Historical Background	Explain that in 1951, the Maritime Commission was abolished and its function was taken over by a new agency called the Maritime Administration (MARAD). MARAD administers federal programs to develop, promote, and operate the U.S. Merchant Marine, including routing, research and development, and regulation of registration. It also maintains reserve fleets of government-owned ships essential for national defense, operates the U.S. Merchant Marine Academy at Kings Point, New York, and administers grants-in-aid for state operated maritime academies in California, Maine, Massachusetts, New York, and Texas.	27-29
Historical Background	Explain that after World War II, the U.S. Merchant Marine once again entered a long period of decline that has lasted to this day. This decline was caused by the combined effects of foreign subsidies and the high costs of both shipbuilding and ship operations in the United States as compared with most foreign maritime nations. For the past several years, only a limited number of new U.S. ships have been built in U.S. shipyards, and foreign ships now carry most American cargo on the high seas.	30-31
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	32
National Policy and the Merchant Marine Acts	There were three important Merchant Marine Acts passed in the years 1920, 1928, and 1936 that sought to promote the development of the U.S. Merchant Marine. Several additional acts have been passed since, the last in 1996, that modified some of the provisions of the earlier three. Probably the most significant was the act of 1920, better known as the Jones Act, named after its sponsor, Senator Wesley Jones of Washington State. As stated in the Act, it is necessary for the national defense and proper growth of foreign and domestic commerce that the United States shall have a Merchant Marine of the best equipped and most suitable types of vessels sufficient to carry the greater portion of its commerce and serve as a Naval auxiliary in time of war or national emergency.	33-34
Video 1 on National Policy and the Merchant Marine Acts	Show video 1 on national policy and the Merchant Marine Acts.	35
National Policy and the Merchant Marine Acts	Explain that the Act specified that all domestic, waterborne commerce between two points in the United States must be carried by U.S.-owned and operated vessels.	36
Video 2 on National Policy and the Merchant Marine Acts	Show video 2 on national policy and the Merchant Marine Acts.	37
National Policy and the Merchant Marine Acts	Explain that the Act of 1936 also provided payment of construction and operating subsidies to operators of U.S. flag vessels designed to help meet foreign competition. Subsequent federal regulations also require at least half of all U.S. government cargos be carried by American-flag shipping.	38-39
The Impact of Waterborne Commerce	Explain that throughout the globe, the preferred method of transporting large quantities of raw materials and manufactured trade goods is by water, because this is	40-41

Chapter 2 / Section 1: NS3-M1U1C2S1 – History of the U.S. Merchant Marine

	the fastest, most efficient, and least costly means of transportation of goods. Some 80 percent of all world trade goods travel by water. The other transport systems—rail, truck, aircraft, and pipeline—all support, augment, and complement waterborne transport.	
The Impact of Waterborne Commerce	Explain that the economies of all nations of the world have become interdependent to a degree never before seen in the history of the world. No nation has all the resources it needs to be completely independent, nor can the economy of any nation thrive without marketing its goods beyond its borders. Approximately 90 percent of our domestic and foreign trade travels via the sea-lanes.	42
The Impact of Waterborne Commerce	Explain that the United States must import over 100 vital metals and minerals from more than sixty countries, including almost 70 percent of our petroleum, nearly 100 percent of ores such as aluminum and chromium, and a growing percentage of finished steel products. Grain from our farms is marketed worldwide, and income from our manufactured products sold overseas represents a vital and steadily growing part of our national economy.	43-44
The Impact of Waterborne Commerce	Explain that ocean trade will continue to increase significantly. There can be no doubt about the importance of keeping sea lanes open as it is vital to America’s prosperity.	45
The Impact of Waterborne Commerce	Explain that the primary commercial purpose for operating the merchant fleet is, of course, to make a reasonable profit. However, this is much easier said than done. U.S. shipping companies often have to compete with rebates given by foreign manufacturers to foreign shipping companies to carry their products at premium rates. Also, a poor record of labor stability in American Maritime unions has periodically tied up U.S.–flagged ships. These factors, along with the perennial problems of rising taxes and insurance costs and higher shipbuilding and labor costs over the years, have caused the percentage of American cargo carried in American ships to drop to less than 3 percent of the current annual total.	46-50
The Impact of Waterborne Commerce	Explain that, in the United States there are some 350 ports that handle freight, passengers, or both. Over 2 billion tons of cargo and 150 million passengers pass through these ports each year. Currently, the ten leading U.S. marine ports in the order of the value of shipments handled are the Port of Los Angeles, California; New York/New Jersey; Long Beach, California; Houston, Texas; Charleston, South Carolina; Norfolk, Virginia; Tacoma, Washington; Baltimore, Maryland; Oakland, California; and Seattle, Washington.	51-52
The Impact of Waterborne Commerce	Explain that because much of the world’s oceangoing commercial fleet is aging at a fairly rapid pace, orders for new and larger merchant ships of all descriptions are increasing at building yards worldwide, especially in Asia, where Japan and South Korea together account for some 70 percent of the world shipbuilding market.	53
The Impact of Waterborne Commerce	Explain that unfortunately, the United States does not get much of this business because of higher labor and construction costs in our country. Most of the large shipbuilding yards in the United States specialize in the construction of Naval vessels, although most also build some high quality commercial vessels. The five largest U.S. shipyards in the United States are Northrop Grumman/Newport News, Newport News,	54-55

Chapter 2 / Section 1: NS3-M1U1C2S1 – History of the U.S. Merchant Marine

	Virginia; Northrop Grumman/Ingalls, Pascagoula, Mississippi; General Dynamics/Electric Boat, Groton, Connecticut; General Dynamics/Bath Iron Works, Bath, Maine; and Northrop Grumman/Avondale, in New Orleans and Tallulah, Louisiana, and Gulfport, Mississippi.	
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	56
Modern Merchant Ships	Explain that tankers, ships designed to carry liquid cargoes in bulk quantities, are the most numerous ships in the active U.S. Merchant Marine and are the most common type of ship plying the high seas. The tankers vary greatly in size, with the largest modern jumbo tankers ranging up to over a half million tons. Large tankers are used mainly to carry crude oil from the producing regions to refineries. Smaller tankers can carry crude products but generally carry refined products. Many tankers belong to the major oil companies, with their ships carrying their own brand name of refined products. The majority are owned by independent operators who charter their ships to others.	57-59
Modern Merchant Ships	Explain that tankers can and do carry other liquid cargoes besides POL (petroleum, oils, lubricants), including various chemicals and even wine. The most specialized types of tankers are the liquefied natural gas (LNG) and liquefied petroleum gas (LPG) carriers. These are sophisticated and expensive ships designed to carry natural gas and other forms of petroleum gasses in the liquid state at extremely high pressures and low temperatures.	60
Modern Merchant Ships	Explain that modern intermodal ships are designed to interface seamlessly with modes of inland transportation such as trucks, trains, or inland waterways. Containerships have revolutionized waterborne freight transport worldwide. The standard size of the containers plus their inherent security greatly enhance both ease of handling and protection against pilferage. A large containership can be offloaded and reloaded in less than twenty-four hours by only about ten longshoremen (cargo handlers) using semiautomatic cargo-handling equipment, instead of the eighty-plus longshoremen it used to take to load and unload conventional freighters in the past. Moreover, containership crew sizes have decreased to around twenty from forty or more over the last decade, and may ultimately shrink to under half a dozen as more automated ship technology becomes available in the coming years.	61-64
Modern Merchant Ships	Explain that once offloaded, containers can easily be placed aboard semi-truck trailers or railroad flatcars for efficient transport overland to their destinations. This ability makes possible sea-land bridge freight transportation operations that have made international trade far less dependent on strategic waterways like the Panama Canal.	65
Modern Merchant Ships	Explain that roll-on roll-off (RoRo) ships have ramps and large hold openings designed to accommodate either containerized or unitized cargoes, or wheeled and tracked vehicles. This type of ship requires few facilities ashore, in contrast to the containership—merely a strong ramp from pier to ship, compatible with the mobile cargo.	66
Modern Merchant Ships	Explain that another type of ship that has become increasingly important in recent years is the cruise ship. These ships are built to accommodate anywhere from several hundred to several thousand passengers on pleasure cruises lasting from several days to several weeks or more. Newer cruise ships can be as long as three football fields, and they are outfitted to provide their guests with every amenity that would be expected in luxury hotels on land. Some 70 percent of these passengers come from North America and 20 percent from Europe. It is estimated that the cruise shipping	67-68

Chapter 2 / Section 1: NS3-M1U1C2S1 – History of the U.S. Merchant Marine

	industry generates some 60 billion dollars for their operators annually.	
Review Question	The Review Question is “What types of vessels are part of the merchant marine fleet?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	69
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	70
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	71

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handout for in class and take home activities

When: after the section on Merchant Marines

- Have the cadets use the provided T-chart and describe the Pros and Cons of joining the Merchant Navy

B. Take Home Activity: Using the handout “History of the U.S. Marines, have the cadets develop a time line of significant events related to the Merchant Marines, make sure they include details about each of the significant entries.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 1: NS3-M1U1C2S1 – History of the U.S. Merchant Marine

Activity 1: In Class Activity- Pros and Cons of a Merchant Marine

Name: _____ Date: _____ Class: _____

Directions: Use the provided T-chart and describe the Pros and Cons of joining the Merchant Navy. Make sure you provide reasoning for why you list it as a Pro or a Con.

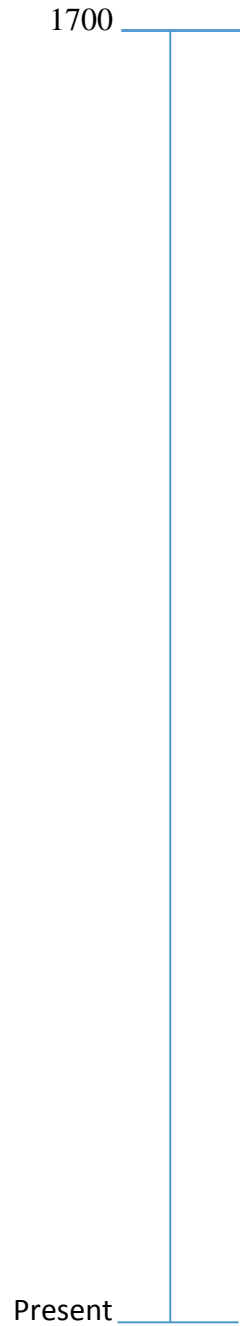
PROS	CONS

Chapter 2 / Section 1: NS3-M1U1C2S1 – History of the U.S. Merchant Marine

Activity 1: Take Home Activity – History of the US Merchant Marines

Name: _____ Date: _____ Class: _____

Directions: Develop a time line of significant events related to the Merchant Marines. Include details with each of your entries.



Chapter 2 / Section 2: NS3-M1U1C2S2 – Merchant Marine and National Defense

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation’s political, economic and military well-being

Skills and Knowledge to be Gained:

1. Explain the role of the Merchant Marine in supporting our military forces in both peace and war
2. Describe the role of the Merchant Marine in carrying strategic materials and energy resources which support the civilian economy and the defense production of our nation
3. Explain the direct support the Merchant Marine provides to some military operations
4. Identify the auxiliary combatant role of Merchant ships
5. Describe the role of the Merchant Marine in support of foreign policy
6. Describe the future of the Merchant Marine

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	KeyTerm Definitions	Opening Question	Warm-Up Question	Merchant Marine and National Defense (A)	Video1 Merchant Marine And National Defense
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Merchant Marine and National Defense (B)	Video Military Sealift Command	Check on Learning A	Merchant Marine and National Defense (C)	Check on Learning B	Merchant Marine and National Defense (D)	The Future
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Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Chapter 2 / Section 2: NS3-M1U1C2S2 – Merchant Marine and National Defense

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 1, Chapter 2. Place a checkmark beside the NS3-M1U1C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M1U1C2S2- Key Terms and NS3-M1U1C2S2- Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this chapter, we will briefly summarize the history of the U.S. Merchant Marine, discuss how it supports our nation in peace and war, and describe some of the main types of ships that make up our modern-day Merchant Marine.	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “What are some of the military needs fulfilled by the Merchant Marine?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the U.S. Merchant Marine and National defense.	9
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	10
Merchant Marine and National Defense	Explain that an important auxiliary function for the U.S. Merchant Marine is to aid in the National Defense. There are five important ways in which the Merchant Marine serves in this role. They are military sealift, transport of strategic material, direct support of military operations, use as auxiliary combatants, and support of foreign policy.	11-12

Chapter 2 / Section 2: NS3-M1U1C2S2 – Merchant Marine and National Defense

Merchant Marine and National Defense	<p>Explain that the Merchant Marine transports most of the supplies and equipment needed to support U.S. military forces in both peace and war. This support may be intended for either U.S. or allied forces, and can be carried by either U.S. or allied ships. Airlift can complement sealift to provide initial fast response requirements. But sealift has always carried the great bulk of the total heavy lift requirements. In all recent large-scale operations involving U.S. forces, including Operations Desert Storm, Enduring Freedom, and Iraqi Freedom, 95 percent of all the heavy equipment, fuel, and munitions was transported to the area of operations by sea.</p>	13-14
Video 1 on Merchant Marine and National Defense	<p>Show video 1 on Merchant Marine and National Defense.</p>	15
Merchant Marine and National Defense	<p>Explain that in time of war, the entire U.S.–flag fleet is subject to requisitioning by the Secretary of Commerce to meet National Defense needs. However, this might not be necessary in a small limited war. The situation determines the needs. At present, analysis indicates that the U.S. Merchant Marine would be inadequate to meet our military needs in a large-scale general war. Only with significant augmentation by foreign-flag shipping could the United States meet its national requirements in a large-scale war. Such augmentation might, however, be problematical if these foreign nations chose not to support our needs.</p>	16-18
Merchant Marine and National Defense	<p>Explain that shipping for U.S. National Defense requirements can come from the following sources:</p> <ol style="list-style-type: none"> 1. Military Sealift Command (M.S.C.) 2. Maritime Administration (M.A.R.A.D.) 3. Sealift Readiness and V.I.S.A. Programs 4. Active Merchant Fleet Sealift Readiness Program 5. Effective U.S.-controlled ships 6. Foreign-flag ships 	19
Merchant Marine and National Defense	<p>Explain that the Military Sealift Command (MSC) is an organization within the Navy that controls most of its replenishment and military transport shipping. It also is one of three service commands that report to the U.S. Transportation Command, responsible for coordinating the movement of D.O.D. personnel and logistics worldwide. The mission of the Military Sealift Command is to provide ocean transportation of equipment, fuel, supplies, and ammunition to sustain U.S. forces worldwide both in peace and wartime for as long as operational needs require. In support of its mission MSC routinely operates more than 120 ships worldwide on a daily basis, and has access to more than 100 other ships usually kept in reduced operating status in U.S. ports.</p>	20-21
Merchant Marine and National Defense	<p>Explain that except for hospital ships, which are painted white with large red crosses on their sides, M.S.C. Naval auxiliary ships are painted gray like U.S. Navy ships, but can be identified by blue and gold stripes on their stacks. They are designated U.S. Naval Ships (U.S.N.S. rather than U.S.S.), and are crewed mostly by civilian mariners. They regularly engage in underway replenishment operations with the fleet. MSC’s newer fast sealift (FSS) and large medium-speed roll-on/roll-off (LMSR) ships are among the largest and fastest cargo ships in the world, and can carry large quantities of wheeled and tracked vehicles at speeds up to 30 knots.</p>	22-23

Chapter 2 / Section 2: NS3-M1U1C2S2 – Merchant Marine and National Defense

Video on Military Sealift Command	Show video Military Sealift Command.	24
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	25
Merchant Marine and National Defense	Explain that Maritime Administration (M.A.R.A.D.) maintains a fleet of more than fifty Ready Reserve Force (R.F.F.) ships that can be activated in from four to twenty days and transferred to M.S.C. to provide surge capability when required. They consist mainly of RoRo and crane ships, and are maintained at U.S. ports close to potential military load-out sites by small cadre crews augmented by additional merchant seamen when needed. R.F.F. ships can be readily identified by distinctive red, white, and blue markings on their stacks.	26
Merchant Marine and National Defense	Explain that the Active Merchant Fleet Sealift Readiness Program (S.R.P.) is designed to improve the response of private operators to national defense needs. Half of U.S.-flag merchant ships are designated under the program as being liable for conscription for military sealift duties by the secretaries of defense and transportation in time of national need. Others are liable to be called on an incremental basis, if required.	27
Merchant Marine and National Defense	Explain that effective U.S.-controlled ships are ships owned by U.S. citizens or corporations that are licensed by and fly the flags of other nations such as Liberia, Panama and Honduras in order to escape the high insurance and wage costs associated with U.S. registry. Ships in this category are said to be operating under "flags of convenience". There is some question as to the responsiveness of these ships in all but the direst of national emergencies, and some doubt as to how valuable they would be in a military sealift capacity since most of the ships are bulk carriers such as tankers, ore carriers, and grain carriers. Further, most of their crews are foreigners who may not support American interests in wartime.	28-29
Merchant Marine and National Defense	Explain that a final possible source of U.S. sealift assets is the charter of foreign-flag ships. There are obvious political drawbacks here, so the reliability of this source in time of national emergency is marginal at best.	30
Merchant Marine and National Defense	Explain that in addition to military cargoes, the Merchant Marine must carry the strategic materials and energy resources that support the national economy and defense establishment. Our allies also require such sealift. Britain, for instance, must continually import food to sustain its population, and Japan is totally dependent on imported oil. If the U.S. industrial complex is to support our forces and those of our allies in time of war, the movement of cargo across the oceans to and from the United States must continue.	31
Merchant Marine and National Defense	Explain that an important concern has arisen in this area. From the commercial standpoint, increasingly larger ships are needed to satisfy the ever-growing industrial demand for bulk strategic materials, particularly crude oil and metallic ores, with maximum efficiency. Consequently, fewer but larger and more productive ships are being built to meet the commercial requirements. In a wartime situation, the United States and its allies could ill afford to lose many such big commercial ships, for such attrition would have immediate and serious impact on imports of strategic materials.	32-33

Chapter 2 / Section 2: NS3-M1U1C2S2 – Merchant Marine and National Defense

Merchant Marine and National Defense	Explain that what probably would have to be done in time of a national emergency would be to incorporate defensive features into our Merchant ships. Fortunately, a provision exists that mandates certain defensive characteristics in ships built with government construction subsidies. The additional cost of such features is funded by the Department of Commerce on the basis of Navy recommendations. Among the features that can be incorporated into ships for better defense are improved compartmentation, helicopter pads, foundations for self-sustaining container cranes, overhead and ramp adjustments for RoRo ships, and more rugged materials than would be necessary for purely commercial use.	34
Merchant Marine and National Defense	Explain that ships of the Merchant Marine can be used in direct support of some military operations. This was done to a considerable extent in World War II, particularly with tankers that were fitted with underway refueling rigs. Some bulk freighters were also fitted for transfer of cargo at sea. More recently, there has been some design work and testing using containerships in this role, but more remains to be done.	35-37
Merchant Marine and National Defense	Explain that another example of direct fleet support is the sealift of follow-on supplies to support an amphibious operation. This was done extensively in World War II. The follow-on support should arrive within five days of the initial amphibious assault. It consists mainly of troops, weapons, and supplies that cannot be put ashore during the initial landings but that are necessary to keep the offensive going. Normal resupply there-after would also most likely be delivered by Merchant ships.	38
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	39
Merchant Marine and National Defense	Explain that Merchant ships can be easily converted to perform a variety of combatant roles. The history of this adaptation goes back to the privateer in the Revolutionary War and War of 1812. Later, merchant raiders, or "Q" ships (ships that looked like cargo vessels but that had camouflaged weapons), were used, principally by the Germans, in the two World Wars. The United States converted tankers and freighters into escort carriers in World War II. Also, most World War II amphibious troop and cargo ships were converted Merchant ships.	40-41
Merchant Marine and National Defense	Explain that there are many possible military applications for the fast, modern ships now entering the Merchant Marine. For example, they could be fitted with defensive weapon systems or sonar, and RoRo ships with their large clear main decks could support military aircraft such as helicopters and V/STOL (vertical takeoff) planes.	42-43
Merchant Marine and National Defense	Explain that a frequently overlooked contribution of the Merchant Marine to National Defense is its role in support of foreign policy. Historically, the British and American merchant fleets were very instrumental in developing the nineteenth-century foreign policies of those nations. During the cold war the Soviets made much use of their Merchant Marine to support their foreign policy toward Third World nations during the cold war years of the twentieth century.	44-45
Merchant Marine and National Defense	Explain that the United States, however, has not actively pursued this option for a long time. The potential to promote U.S. foreign policy through the American Merchant Marine is great and should be more seriously considered. At present, however, most U.S. foreign aid and trade goods are shipped in foreign-flag ships. Moreover, the trend toward larger ships with cargoes in containers further diminishes the opportunity to	46-47

Chapter 2 / Section 2: NS3-M1U1C2S2 – Merchant Marine and National Defense

	“show the flag” in underdeveloped countries. Such countries may have only small ports that lack the expensive facilities to handle containerships, and the local market for goods may be too small to make calls by huge containerships profitable.	
The Future	Explain that the hard fact is that the United States is an island nation that needs Merchant ships at sea and trained sailors in those ships. The ships must be able to serve the needs of the nation in both commercial and defensive capacities.	48
The Future	Explain that the U.S. shipbuilding industry must push technology to cut cost. The nation must intensify efforts to develop modern modular weapons installations for the defense of merchant ships and to facilitate the use of containerships in support of the Naval fleet.	49-51
The Future	Explain that the American people must not lose sight of the fact that the nation’s prosperity and survival depends on our ability to use the seas for international trade. The combination of strong Naval forces and a strong Merchant Marine, together serving the commercial and strategic needs of the nation, is the beginning of true sea power.	52
Review Question	The Review Question Is, “What improvements need to be made for a more effective Merchant Marine Fleet?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	53
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	54
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	55

III. Supplemental Activities -

A. In Class Activity:

Supplies required: handout for in class activity

When: After the lesson

- Have the cadets write a one page essay on what the U.S can do to build a stronger Merchant Marine Force.

B. Take Home Activity: Have the cadet’s research and bring in a newspaper or internet article that shows the Merchant Marines being used in the present.

IV. Evaluation - see CPS database for chapter test questions.

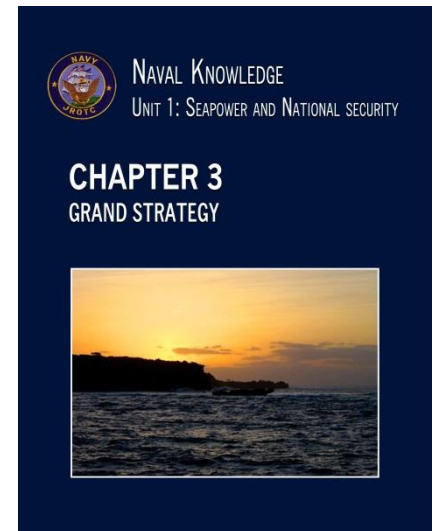
Module 1 Unit 1 Chapter 3: NS3-M1U1C3 – Grand Strategy

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation's political, economic and military well-being

Skills and Knowledge to be Gained:

1. Define national, grand and military strategy
2. Name the major strategists from 400 B.C. to the mid-nineteenth century
3. Describe the three classic schools of strategy
4. Explain preparedness as it relates to grand strategy
5. Describe the three phases of the evolution of U.S. grand strategy
6. Describe the concepts of massive retaliation and flexible response as they relate to U.S. grand strategy
7. Describe the three principle elements of today's national military strategy
8. Explain the anticipated future strategic trends



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...
- RI.11-12.8. Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Module 1 Unit 1 Chapter 3: NS3-M1U1C3 – Grand Strategy

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.
- D2.Civ.12.9-12. Analyze how people use and challenge local, state, national, and international laws to address a variety of public issues.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 2. Geography

- D2.Geo.11.9-12. Evaluate how economic globalization and the expanding use of scarce resources contribute to conflict and cooperation within and among countries.

Dimension 2. History

- D2.His.3.9-12. Use questions generated about individuals and groups to assess how the significance of their actions changes over time and is shaped by the historical context.

Dimension 4. Communicating Conclusions and Taking Action

- D4.1.9-12. Construct arguments using precise and knowledgeable claims, with evidence from multiple sources, while acknowledging counterclaims and evidentiary weaknesses.
- D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.
- D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 3 / Section 1: NS3-M1U1C3S1 – Grand Strategy

(Section 1 of 1)

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation’s political, economic and military well-being

Skills and Knowledge to be Gained:

1. Define national, grand and military strategy
2. Name the major strategists from 400 B.C. to the mid-nineteenth century
3. Describe the three classic schools of strategy
4. Explain preparedness as it relates to grand strategy
5. Describe the three phases of the evolution of U.S. grand strategy
6. Describe the concepts of massive retaliation and flexible response as they relate to U.S. grand strategy
7. Describe the three principle elements of today’s national military strategy
8. Explain the anticipated future strategic trends

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Introduction	National, Grand and Military Strategies	Check On Learning A	Schools of Strategy
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Grand Strategy and Preparedness	Evolution of U.S. Grand Strategy (A)	Check on Learning B	Evolution of U.S. Grand Strategy (B)	Video on Evolution of U.S. Grand Strategy	Evolution of U.S. Grand Strategy (C)	Review Questions
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Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Chapter 3 / Section 1: NS3-M1U1C3S1 – Grand Strategy

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 1, Chapter 3. Place a checkmark beside the NS3-M1U1C3S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U1C3S1 - Key Terms and NS3-M1U1C3S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the different types of strategies including national, grand, and military strategies. We will learn about the different types of schools of strategy. Finally we will discuss the evolution of the United States grand strategy and why the U.S. must continue to take a leadership role in the world's events.	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-10
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Can you think of some examples where massive military retaliation strategies have been used in U.S. history?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student's name or clicker number, chosen randomly. The student selected will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students' responses to the question on the slide, focusing on grand strategy.	11
Introduction	Explain that strategy does not pertain only to the military or to armed combat. Both civilian and military leaders must consider strategic matters at the national level.	12
National, Grand and Military Strategies	Explain that national strategy combines all the capabilities of a nation, during peace as well as war, to attain national interests and objectives. Within national strategy there are political, economic, diplomatic, legal, and Naval and military strategies, both international and domestic. All of the national strategies together constitute grand strategy, the art and science of employing national power to exert desired degrees and types of control over the opposition. This can be done through threats, force, rewards, diplomacy, subterfuge, and other means.	13-14

Chapter 3 / Section 1: NS3-M1U1C3S1 – Grand Strategy

<p>National, Grand and Military Strategies</p>	<p>Explain that Military strategy involves physical violence or the threat of such violence. It seeks victory through force of arms. Grand strategy, if successful, will attain national objectives without violence. Perhaps more important, grand strategy looks beyond victory to a lasting peace. Military Strategy must be controlled by the Grand Strategy of which it is an important part. The true aim of Grand Strategy is, according to British strategist Liddell Hart, "to seek a situation so advantageous that if it does not of itself produce the decision, its continuation by a battle is sure to achieve this." Even the first strategist, Sun Tzu, said, "to subdue the enemy without fighting is the acme of skill."</p>	<p>15-16</p>
<p>National, Grand and Military Strategies</p>	<p>Explain that a study of Grand Strategy is such a complex and fascinating task that it is impossible to cover the subject in a brief chapter such as this. One method to study strategy would be to try to digest the concepts and principles of strategy as written and carried out by the world's greatest acknowledged strategists. This study would include <i>The Art of War</i>, written sometime between 400 and 320 B.C. by the first great mind to shape strategic thought, the Chinese general Sun Tzu. His concepts rank with the most profound of all time, and most of his ideas are as applicable in our world today as they were in his.</p>	<p>17-18</p>
<p>National, Grand and Military Strategies</p>	<p>Explain that another great ancient strategist was Alexander the Great of Macedonia (356-323 B.C.), the first Western Grand Strategist. He dreamed of a world empire, an idea many since have attempted to achieve but without as much success. Alexander determined that war is always conducted on two levels: physical and psychological. His campaigns can be studied today as examples of how to apply every principle of war, both military and in other ways.</p>	<p>19</p>
<p>National, Grand and Military Strategies</p>	<p>Explain that Hannibal of Carthage and Scipio Africanus of Rome, the major opponents in the Second Punic War (218-201 B.C.), were both exceptional military strategists as was Julius Caesar (110-44 B.C.). Niccolo Machiavelli (1469-1519), the great Florentine politico-military theorist, broadened strategic thinking when he wrote on the sources, applications, and limitations of power. His unscrupulous concepts of diplomatic and military conduct later served to inspire the dictators of the twentieth century.</p>	<p>20-23</p>
<p>National, Grand and Military Strategies</p>	<p>Explain that during the sixteenth century, knowledgeable thinkers of the day began to differentiate between strategy and the tactics used to achieve strategies, linking military action with political policy at the international level. Frederick the Great of Prussia (1712-1786) became the next great Grand Strategist, developing from his central geographic position the concept of "interior lines" on the battlefield. However, he used statesmanship to even better advantage to secure the foundation of the German Empire.</p>	<p>24</p>
<p>National, Grand and Military Strategies</p>	<p>Explain that Napoleon Bonaparte of France (1769-1821) applied existing strategic theories to perfection. Except for his 115 military maxims he did little writing, but he made many strategic contributions indirectly through subsequent writers who critically reviewed his campaigns. The two most important of these were Antoine Jomini (1779-1869) of France and Karl von Clausewitz (1780-1831), a Prussian. Jomini began the modern, systematic study of the subject of war, particularly the maneuvering of troops to occupy territory. The nineteenth-century French military leadership, and many American Civil War field commanders used Jomini's strategic concepts.</p>	<p>25-26</p>
<p>National, Grand and Military Strategies</p>	<p>Explain that Clausewitz concerned himself with the basic nature of war. His book, <i>Vom Kriege (On War)</i>, is generally acclaimed as the most influential dissertation on strategy ever published. Much of it can be applied successfully to modern times, though some modifications have to be made for present-day circumstances. Clausewitz showed that war has both social and political aspects. Probably his most famous statement is that</p>	<p>27-28</p>

Chapter 3 / Section 1: NS3-M1U1C3S1 – Grand Strategy

	<p>“War is not merely a political act, but also a real political instrument, a continuation of policy carried out by other means.” He continually asserted that military and political strategy must go hand in hand.</p>	
National, Grand and Military Strategies	<p>Explain that Clausewitz recognized the concept of “limited aims for limited warfare,” with the purpose of wearing down an opponent. In other words, he saw beyond the battlefield toward the enforcement of policy over an enemy. A later German strategist, Hans Delbrück, further clarified Clausewitz’ meaning. He showed that Clausewitz had defined two methods of conducting war: annihilation of the enemy in decisive battle, and limited warfare or strategy of exhaustion. In the latter concept, the commander could move between battle and maneuver. The political object of war could be obtained by means other than all-out battle, such as by occupying territory, blockade, or destroying crops and commerce.</p>	29
National, Grand and Military Strategies	<p>Explain that in the mid-nineteenth century, technology and social revolution made their imprint on strategic thinking. The Industrial Revolution resulted in an ever-increasing list of innovations that would facilitate warfare on a global scale: propulsion systems, communications, and means to project power overseas. Educational systems were developed to train professional officer corps, and the social concepts of the day were used to shape the attitudes and aptitudes of people. Karl Marx was the author of <i>Das Kapital</i>, the foundation of modern Communism. Marx was foremost of the philosophers of the time and added a new dimension to modern strategy.</p>	30-35
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on students’ understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	36
Schools of Strategy	<p>Explain that there are three traditional schools of Strategic thought: maritime, continental, and aerospace. These theories will be briefly summarized below from the strategic standpoint. All have their merits, depending upon the nations that have embraced them, and all have had some details of their original theses altered to reflect current circumstances.</p>	37
Schools of Strategy	<p>Explain that in the late nineteenth century, the great American Naval Strategist Alfred Thayer Mahan, then President of the Naval War College in Newport, Rhode Island, developed a strategic theory that would revolutionize Naval strategic thought. In 1890, after extensive studies of the strategies of Napoleon, Jomini, Clausewitz, and the English admiral Lord Nelson, he published a brilliant text on Naval history and strategy, <i>The Influence of Sea Power upon History, 1660-1783</i>. This text, and subsequent writings by Mahan, had a profound influence on the theory of warfare and on Naval policy and strategy in the United States and abroad from that time forward.</p>	38
Schools of Strategy	<p>Explain that Mahan advocated a large Navy, overseas bases, and national greatness through sea power. He emphasized the significance of commerce in war, and of economic warfare through the application of sea power. He was convinced that a coalition of nations in command of the seas could best acquire the trade, wealth, and resources of the world and be more likely to win future wars. He applied Frederick the Great’s concept of interior lines of communication to Naval strategy, arguing that central position in the world’s seas was even more important than central continental position. He viewed concentration of naval forces and command of the sea approaches as fundamental to the United States’ attainment of insular safety, national greatness, and prosperity.</p>	39
Schools of Strategy	<p>Explain that President Theodore Roosevelt and the U.S. Navy quickly adopted Mahan’s theory of Naval Strategy and the use of the Navy as an instrument of national power. When the United States acquired overseas possessions as the result of the Spanish-</p>	40

Chapter 3 / Section 1: NS3-M1U1C3S1 – Grand Strategy

	American War in 1898, our strategic position was dramatically changed, and the nation emerged as a world power. This would permanently alter the strategic balance of power among the nations of the world.	
Schools of Strategy	Explain that the geography of the Earth has not changed since Mahan’s writing, though politics and weapons have changed. There is no question that the United States is and always will be a maritime nation. Mahan’s theory of maritime strategy remains completely applicable to America and her allies. Insular safety is no longer a valid concept, however, with the advent of land- and sea-launched intercontinental ballistic missiles.	41-42
Schools of Strategy	Explain that some thirty years after Mahan’s writings, in 1919, a British geographer Sir Halford J. MacKINDER published an alternative thesis that emphasized the strategic importance of geographic landmasses. In his work titled, <i>Democratic Ideals and Reality</i> , he hypothesized that by controlling Asiatic Russia and most of Eastern Europe, an area he called the “Heartland,” a central land power could eventually extend control to the rest of the world.	43-44
Schools of Strategy	Explain that MacKINDER believed that the nation in control of this strong, centralized land position could move powerful armies in any direction with little opposition. The first goal of such a nation would be to subjugate the rest of Europe and Asia. He named this geographic rimland of Eurasia the “Inner” or “Marginal Crescent.” The next step would be to conquer Africa, which, along with Eurasia, he called the “World Island.” Once consolidated, he believed that the nation in control of the World Island would control the bulk of the world’s resources. Then it would be just a matter of time before the remainder of the world, called the “Outer” or “Insular Crescent,” would fall under the domination of the central land power.	45-47
Schools of Strategy	Explain that World Wars I and II were in many ways fought to prevent MacKINDER’s premises from becoming reality. Interestingly, his theories also foretold the nature of much of the conflict that would occur between the Soviet Union and the West during the cold war years that followed. The Soviets played the role of the continental land power that sought to extend its domination of the Heartland to the World Island and beyond. However, it was ultimately blocked from gaining control of the “Inner Crescent” (the Middle East and Southeast Asia) by the dominant sea power, the United States, and the other Western European NATO nations.	48
Schools of Strategy	Explain that many contemporary strategists still support MacKINDER’s basic theories, although the continental school ideal of totally secure interior lines of communication in the heartland has been shattered by aircraft and intercontinental missiles. In addition, the development of an adequate system of roads and rail transportation sufficient to establish these interior lines has not occurred to date. With the advent of modern aircraft and guided missiles after World War II, many proponents of modern air power declared both Mahan’s and Mackinder’s theories obsolete.	49
Schools of Strategy	Explain that one such critic who gained prominence was U.S. Air Force strategist Major Alexander de Seversky. Benefiting from earlier work by Italian army air officer Giulio Douhet and the experiences of World War II, de Seversky in his 1950 book, <i>Air Power: Key to Survival</i> , put forth a competing theory. It was based on the premise that complete air superiority, as opposed to just local or temporary air superiority, is possible. He criticized overseas bases as untenable, downgraded the importance of naval and land combat. He stated that, “The manifest destiny of the United States is in the skies.” His position maintained that the main area of East-West confrontation would be across the Arctic Ocean, not the Atlantic or Pacific.	50

Chapter 3 / Section 1: NS3-M1U1C3S1 – Grand Strategy

Schools of Strategy	Explain that De Seversky drew a circle centered on the United States, showing the 5,000-mile strike radius of contemporary manned bombers. A similar circle was drawn centered on the Soviet Union. The southernmost extremities of these circles represented United States or Soviet <i>Air Dominance Areas</i> . He called the central area where the circles overlapped the Area of Decision. The <i>Area of Decision</i> encompassed the bulk of the Eurasian and North American continents, and the entire Arctic region. Here is where he postulated the struggle for mastery of the air would be decided, and with that decision, domination of the globe.	51
Schools of Strategy	Explain that most strategists today believe the aerospace theory is entirely too restrictive. People, nations and resources are located on the Earth's surface. Resolution of conflict and exploitation of resources must be accomplished by forces on the land, regardless of the aerial outcome. This was demonstrated in the Vietnam War in the 1960s and 1970s, in Desert Storm against Iraq in the early 1990s, and again in the invasions of Afghanistan in 2001 and Iraq in 2003. Destruction of the surface by air attack leaves nothing for anyone.	52-54
Grand Strategy and Preparedness	Explain that World War II and its aftermath proved beyond any doubt that modern war had grown to the degree of finality. Military strategy now had to be considered, along with science, industry, diplomacy, and psychology, as an integral part of a national Grand Strategy. War has now become a contest of opposing political and economic ideas waged on all fronts in the international arena. A key factor in such a competition is preparedness, both military and nonmilitary. Preparedness is a matter of maintaining the appropriate strength or power base from which to launch the ideas and take the actions essential to the implementation of the Grand Strategy.	56-57
Grand Strategy and Preparedness	Explain that Clausewitz's statement points out that a government cannot deter an adversary from waging war with half measures and inadequate military strength. Every sign of deficiency will be used to an advantage by the opponent. If we hope to avoid war, then the best strategy is to be fully prepared to engage in war should our national survival require it.	58
Evolution of U.S. Grand Strategy	Explain that the U.S. Grand Strategy has evolved through several phases from the earliest days of our republic to the present day, in response to the ever-changing dynamics of the world around us. In the first phase, referred to as the period of Western hemispheric defense (1783-1898), entangling alliances were shunned. The United States tended toward isolationism while shrewdly recognizing the balance of power that existed in Europe, and the fact that the British Royal Navy's command of the seas assured our national security. The Monroe Doctrine, for example, was allowed to stand almost unchallenged because of the balance of power existing in Europe after Napoleon's defeat in 1815.	59-61
Evolution of U.S. Grand Strategy	Explain that the second phase of U.S. strategy, limited interventionism, emerged with the victory in the Spanish-American War of 1898 and lasted through the two World Wars until 1948. The United States revised its long-standing policy and began to participate in world affairs. The U.S. acquired territories overseas, while retaining traditional economic and political relationships with Europe. U.S. sea power, spurred by Mahan's writings, became a major military force, showing the flag, protecting U.S. commerce, and extending the periphery of defense to the overseas territories. This reliance on the U.S. Navy as almost a "single weapons system" worked satisfactorily in the Pacific. In Europe, however, the absence of a strong U.S. Army presence to meet, in a timely manner, the challenges of Germany enabled that country to embroil the world in two global wars.	62-63
Evolution of U.S. Grand Strategy	Explain that the third strategy phase, called the Containment of Communism, began after World War II with President Truman's administration. The wartime alliance with	64

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	the Soviet Union ended and Communists worldwide began worrisome expansionist tendencies, particularly by supporting revolutions in developing countries. It ended with the dissolution of the Soviet Union and the end of the Cold War in 1991. This strategy evolved through two stages: massive retaliation and flexible response.	
Evolution of U.S. Grand Strategy	Explain that after the demobilization of the U.S. military following the end of World War II, America had little left with which to counter communist aggression except its monopoly in nuclear weapons. It was the time when Western nations signed the major mutual defense and collective security pacts such as NATO and OAS, many of which are still in effect today. The United States provided the nuclear umbrella critical to each of the treaties. Nuclear deterrence was the basis of national strategy, and the threat was massive retaliation for any major aggression. This strategy worked during these years, and deterred major war. However, massive retaliation failed to discourage the outbreak of limited wars in the 1950's along the eastern rim of Asia from Malaysia to Korea. The strategy of reliance on a single weapon system proved to be inadequate for the challenge of the times. Other options had to be developed.	65-66
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	67
Evolution of U.S. Grand Strategy	Explain that during the presidency of John F. Kennedy in the early 1960s, the U.S. strategy was modified to cope with all levels of aggression. This necessitated the development of an ability to apply controlled force decisively against any kind of aggression, at times and places of our choosing. The Armed Forces were directed to be ready simultaneously to suppress a general war, a major conventional war in Europe or Asia, and minor insurgencies or revolutionary wars worldwide. Such an ambitious undertaking soon hit budgetary roadblocks. Flexible response was too expensive, and the American public was unwilling to pay the price to maintain such force capabilities.	68-69
Evolution of U.S. Grand Strategy	<p>Explain that the strategy, however, was valid. It was the manner of implementing it that needed revision. All of the aspects—credible deterrence, collective security, and appropriate response—had to be present. Before his resignation in 1974, President Nixon made good progress in refining the strategy to a viable doctrine. All subsequent presidents have adjusted United States strategy according to the basic guidelines proposed by the Nixon Doctrine of the early 1970s. There are seven major principles of current U.S. strategy, all descendent from the Nixon Doctrine. Each can be emphasized or modified as conditions require. These principles are:</p> <ul style="list-style-type: none"> • A concept of strategic nuclear sufficiency, rather than an attempt to maintain nuclear superiority • A strong conventional capability, assisted by increased participation and improved defense capabilities of allied nations • Adequate peacetime general purpose forces for meeting a major attack against our allies in either Europe or Asia and helping with local contingencies such as terrorism as required • Smaller U.S. active forces, with greater emphasis given to their readiness and modernization • Emphasis on a strong research and development program to maintain our technological superiority • Security assistance for the defense needs of friendly nations • Meeting the U.S. military needs with an all-volunteer active force in all services and continued support of the reserves 	70-73

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Video on Evolution of U.S. Grand Strategy	Show video on Evolution of U.S. Grand Strategy.	74
Evolution of U.S. Grand Strategy	Explain that in the years following the terrorist attacks on the United States in September 2001, President George Bush developed a 'Bush Doctrine', which held among other things that the threat to the United States posed by terrorists who could be equipped with modern weapons of mass destruction is so severe that it justifies preemptive attacks upon them and any countries harboring terrorists. Although controversial, the new doctrine was used in part to justify the invasions of Afghanistan in 2001, and Iraq in 2003.	75-76
Evolution of U.S. Grand Strategy	Explain that the national military strategy of the United States today includes three principal elements: deterrence, flexible response, and forward strategy. Deterrence of aggression requires the capability and resolve to prevail at any level of conflict, so that potential adversaries will consider their own risks to be unacceptable. This means that our military forces must be able to respond effectively to any contingency, from showing the flag and combating piracy to retaliating against nuclear attack. This flexible response may involve strategic or theater nuclear forces, and general purpose forces. A forward strategy of maintaining a significant portion of our forces on deployment overseas, at sea and in foreign ports and bases is required in order to respond in a timely manner and to extend our defense perimeter as far as possible from our shores.	77-79
Evolution of U.S. Grand Strategy	Explain that in 2007, the Chief of Naval Operations and Commandants of the Marine Corps and Coast guard issued a joint document called <i>A Cooperative Strategy for 21st Century Sea Power</i> that set forth a new comprehensive U.S. maritime strategy for the rest of the 21st century. The first document of its kind to be issued jointly by all three maritime services, it reaffirms the importance of the traditional elements of forward presence, deterrence, sea control and power projection to our Naval strategy, and adds to them two more critical elements: Maritime security and humanitarian assistance/disaster response. The Maritime security element emphasizes the importance of international cooperation to maintain freedom of the seas, and the humanitarian assistance/disaster response element stresses the importance of participation in international and domestic relief efforts when natural disasters occur, such as the tsunami in Southeast Asia in 2004 and Hurricane Katrina in the Gulf region of the United States in 2005.	80-81
Evolution of U.S. Grand Strategy	Explain that much contemporary thought on the direction that our national Grand Strategy should take in the future focuses on the threat represented by worldwide terrorism. Some strategists see the major world conflicts of the past 100 years as four distinct "world wars." World Wars I and II were open conflicts for world domination resolved by force of arms and national mobilization of resources by allied nations to achieve victory. World War III was the Cold War, ultimately resolved not so much by open conflict involving force of arms as by the triumph of one ideology (Western democracy) over another (Soviet style communism) by means of sustained political and economic pressure, while using military power for strategic deterrence and regional conflict resolution. World War IV is the global war against terrorism. In contrast to the other major conflicts that preceded it, this war is being waged against adversaries having no firm allegiance to any country, about whom little is known, including who or where they are, and what tactics they might use and when. Their goal is to wage unending ideological warfare against us, our allies, and our way of life, as opposed to open military conflict. It is therefore difficult to bring modern high-tech military forces and weapons to bear against them, as there are few high value fixed targets or concentrations of forces to attack.	82-83

Chapter 3 / Section 1: NS3-M1U1C3S1 – Grand Strategy

Evolution of U.S. Grand Strategy	Explain that against this enemy our national strategy must be to defeat them by a kind of moral warfare, steadfastly emphasizing the principles upon which our nation was founded, while continuing at every opportunity to challenge the extremist assertions used by terrorists to justify their causes and to gain credibility and support. We, in cooperation with our allies, will need to take active leadership roles in issues of global concern that terrorists can exploit to their advantage, such as global warming and development of alternative energy sources. We need to better utilize our information warfare capabilities to gain timely intelligence on terrorist tactics, operations, intentions, and capabilities. We need to continue to upgrade our domestic defensive capabilities to counter any future overt or covert terrorist attacks, including our local, state, and regional civil defense capabilities. Finally, the United States must continue to take a proactive leadership role in world events, both for the welfare of our citizens and for the benefit of humankind.	84-85
Review Question	The Review Question is, “Discuss terrorism and violent extremism and how the U.S. national grand strategy has changed or will change to handle these form of warfare.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	86
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	87
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	88

III. Supplemental Activities -

A. In Class Activity:

Supplies required: handout for take home activity

When: This activity should take place during the lesson to help cadets organize information

- In Class: Cadets will create a Tree Map during the presentation of the PowerPoint for slides 36- 53 (schools of strategy). This tree map will aid cadets in classifying and organizing information in an understandable way.

B. Take Home Activity: Using the handout and their knowledge of the *Schools of Strategy*, cadets will write a paper explaining how each school (Maritime, Continental and Aerospace) could be used to deal with terrorist and extremism in the world today.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 1: NS3-M1U1C3S1 – Grand Strategy

Activity 1: Take Home Activity- Schools of Strategy

Name: _____ Date: _____ Class: _____

Directions: Using your knowledge of the Schools of Strategy, write a paper explaining how each school (Maritime, Continental and Aerospace) could be used to deal with terrorist and extremism in the world today.

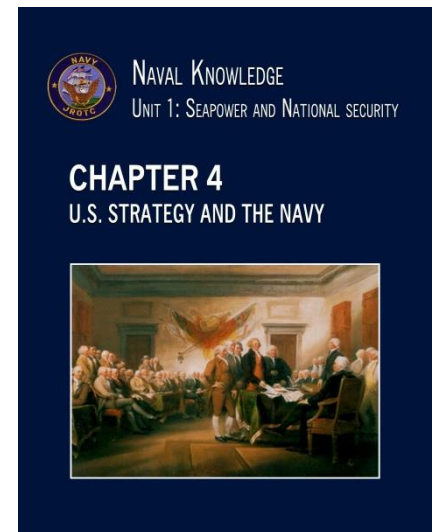
Module 1 Unit 1 Chapter 4: NS3-M1U1C4 – U.S. Strategy and the Navy

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation's political, economic and military well-being

Skills and Knowledge to be Gained:

1. Describe the two basic functions of the U.S. Navy
2. Explain the three functional roles of the Navy within national military strategy
3. Differentiate between tactics and strategy
4. Describe modern tactical innovations
5. Describe the capabilities the U.S. naval force must have if it is to be able to support national strategy
6. Describe the Navy's fundamental and supportive tactical warfare tasks
7. Describe the two categories of major tactical naval ships



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Module 1 Unit 1 Chapter 4: NS3-M1U1C4 – U.S. Strategy and the Navy

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.
- D2.Civ.12.9-12. Analyze how people use and challenge local, state, national, and international laws to address a variety of public issues.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 2. Geography

- D2.Geo.11.9-12. Evaluate how economic globalization and the expanding use of scarce resources contribute to conflict and cooperation within and among countries.
- D2.Geo.12.9-12. Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.

Dimension 2. History

- D2.His.3.9-12. Use questions generated about individuals and groups to assess how the significance of their actions changes over time and is shaped by the historical context.
- D2.His.4.9-12. Analyze complex and interacting factors that influenced the perspectives of people during different historical eras.
- D2.His.15.9-12. Distinguish between long-term causes and triggering events in developing a historical argument.

Dimension 4. Communicating Conclusions and Taking Action

- D4.1.9-12. Construct arguments using precise and knowledgeable claims, with evidence from multiple sources, while acknowledging counterclaims and evidentiary weaknesses.
- D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.
- D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Module 1 Unit 1 Chapter 4: NS3-M1U1C4 – U.S. Strategy and the Navy

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 4 / Section 1: NS3-M1U1C4S1 – U.S. Strategy and the Navy

(Section 1 of 1)

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation’s political, economic and military well-being

Skills and Knowledge to be Gained:

1. Describe the two basic functions of the U.S. Navy
2. Explain the three functional roles of the Navy within national military strategy
3. Differentiate between tactics and strategy
4. Describe modern tactical innovations
5. Describe the capabilities the U.S. Naval Force must have if it is to be able to support national strategy
6. Describe the Navy’s fundamental and supportive tactical warfare tasks
7. Describe the two categories of major tactical naval ships

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Introduction (A)	Video1 U.S. Strategy and the Navy	Introduction (B)	Video2 U.S. Strategy and the Navy
Tactics vs Strategy (A)	Video Tactics vs Strategy	Tactics vs Strategy (B)	Check On Learning A	Modern Tactical Innovations	Video Modern Tactical Innovations	Naval Force Capabilities (A)	
Video1 Naval Force Capabilities	Naval Force Capabilities (B)	Video2 Naval Force Capabilities	Naval Force Capabilities (C)	Video3 Naval Force Capabilities	Naval Force Capabilities (D)	Video4 Naval Force Capabilities	
Naval Force Capabilities (E)	Check on Learning B	Naval Warfare (A)	Video Naval Warfare	Naval Warfare (B)	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 4 / Section 1: NS3-M1U1C4S1 – U.S. Strategy and the Navy

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 1, Chapter 4. Place a checkmark beside the NS3-M1U1C4S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U1C4S1 - Key Terms and NS3-M1U1C4S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the U.S. Navy’s strategy. We will learn the difference between tactics and strategy. We will learn about modern tactical innovations as well as naval force capabilities. Lastly we will learn about Naval Warfare.	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-12
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “What do you think the benefits are from having Naval units deployed overseas during peacetime?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. The chosen student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on U.S. strategy and the Navy.	13
Introduction	Explain that the mission of the U.S. Navy is to be prepared to conduct prompt and sustained combat operations at sea in support of U.S. national interests. This basically means that maritime superiority for the United States must be assured. The U.S. Navy must be able to defeat any potential threats to our continued free use of the high seas. In its simplest terms, defeating an enemy maritime threat means the neutralization of hostile spacecraft, aircraft, surface ships, and submarines that threaten the seaborne forces of the United States and its allies. The Navy carries out this mission within the framework of our national strategy in coordination with the other U.S. armed services and in combined planning with our allies.	14-16
Introduction	Explain that the Navy’s two basic functions are sea control and power projection. These two functions are closely related.	17
Video 1 on U.S. Strategy and the Navy	Show video 1 on U.S. Strategy and the Navy	18

Chapter 4 / Section 1: NS3-M1U1C4S1 – U.S. Strategy and the Navy

Introduction	Explain that sea control means mastery over the entire surface, subsurface, and air and near-Earth space above designated sea and littoral (shore) areas, or, in other words, over the battlespace within which naval operations are to be conducted. It also means preventing the approach of enemy forces within range of our forces or territory, and defense against enemy ballistic and cruise missiles. It does not imply complete control of all the world's ocean areas, but only where and when needed. Sea control is necessary so the Navy may have secure operating areas for the projection of power, such as carrier air strikes, amphibious assaults, and cruise missile attacks. The ultimate means of power projection is through fleet ballistic missile submarines, a principal element of the nation's strategic offensive force.	19-21
Introduction	Explain that the U.S. Navy is responsible for three functional roles within the national military strategy: strategic nuclear deterrence, deployment of overseas forces, and security of the sea lines of communication.	22
Introduction	Explain <i>Strategic Nuclear Deterrence</i> . The effectiveness of the submarine-launched ballistic missile, combined with the near invulnerability of the ballistic missile submarine, constitutes the strongest and probably most survivable deterrent in our strategic nuclear forces. During much of the Cold War, this system was generally regarded as the principal stabilizing factor in the strategic nuclear balance between the United States and the Soviet Union.	23
Introduction	Explain <i>Overseas-Deployed Forces</i> . The Navy maintains operationally ready naval units overseas as part of other deployed American and allied forces. The Sixth Fleet in the Mediterranean, the Fifth Fleet in the Indian Ocean, and the Seventh Fleet in the western Pacific are well known in this capacity. These ships are deployed where they can support forward-positioned U.S. and allied forces in peacetime and engage enemy forces should hostilities break out.	24-25
Introduction	Explain <i>Security of the Sea Lines of Communication</i> . The success of the forward military strategy depends upon the Navy's ability to keep the sea lines of communication open, both to support deployed U.S. and allied forces, and to assure a continued supply of vital imported raw materials for our industry. The protection of friendly ships close to enemy shores where they are most vulnerable to enemy air, surface, and submarine attack places a demanding burden upon the U.S. Navy.	26
Video 2 on U.S. Strategy and the Navy	Show video 2 on U.S. Strategy and the Navy	27
Tactics versus Strategy	Explain that tactics is defined as the art and science of fighting battles. Traditionally, it has been distinguished from strategy in a military sense. Strategy has always been concerned with the politics, economics, and planning that goes on in the prelude to battle. Strategy includes the large movements and disposition of forces among the theaters of operations and the direction of the overall campaigns. Tactics, according to Karl Von Clausewitz, is the "formation and conduct of single combats in themselves."	28
Video on Tactics versus Strategy	Show video on Tactics versus Strategy	29
Tactics versus Strategy	Explain that Strategy gives tactics its direction, although strategy is often limited by the tactical capabilities of the forces employed. Tactics depend on the strategic considerations involved with the planning and conduct of campaigns; successful tactics meet the strategic requirements of the broad plan.	30-31

Chapter 4 / Section 1: NS3-M1U1C4S1 – U.S. Strategy and the Navy

Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	32
Modern Tactical Innovations	Explain that the tactical considerations of the atomic age permeated all aspects of warfare during the Cold War, and to a great extent since. The key to survival in atomic warfare is dispersal, and that is dependent on mobility. The first atomic weapons were mass destruction bombs designed to neutralize industrial cities or huge concentrations of forces. With the dispersal capability of modern infantry divisions and the mobility of naval forces, however, it became necessary to develop low-yield nuclear artillery and rockets to fit the changing tactical picture. Just as ships are intended to be mobile and largely self-sufficient, the modern army division includes both air and ground transport to aid in dispersing its forces.	33-34
Modern Tactical Innovations	Explain that though atomic weapons are surely here to stay, several limited wars and numerous insurrections have been fought since 1945 without their being used. This does not mean that strategists and tacticians can eliminate these weapons from their planning. To do so would certainly be foolish if a potential adversary were known to possess them. It is at least conceivable that world leaders will take the necessary effort to prevent these and other weapons of mass destruction from being used in any future conflict.	35-36
Modern Tactical Innovations	Explain that another technical innovation that was used for the first time to great tactical advantage in Operation Desert Storm in the Persian Gulf War in 1991, and later in the invasions of Afghanistan in 2001 and Iraq in 2003, is the "smart" weapon, such as laser-guided bombs, rockets, and programmable cruise missiles. These highly accurate precision weapons have greatly increased the probability of successful target destruction with just a single shot or attack, often from far greater ranges than were possible before. They are more "surgical" in nature, and greatly reduce the possibility of collateral damage to innocent civilians and private property.	37-38
Modern Tactical Innovations	Explain that more recently, much use has been made of various kinds of remotely controlled unmanned aerial vehicles (UAVs) to conduct all manner of surveillance of enemy installations and personnel, and on occasion to attack them using various kinds of precision weapons described above. They range in size from drone aircraft launched from airstrips and ships, to model airplane sized ones that can be launched by troops in the field. More about them will be presented later in this textbook.	39
Video on Modern Tactical Innovations	Show video on Modern Tactical Innovations	40
Naval Force Capabilities	Explain that the U.S. Navy must have certain capabilities if it is to be able to support our national strategy. The Navy's ballistic missile submarine (SSBN) fleet has long been a vital part of our nation's strategic nuclear triad, along with land-based intercontinental ballistic missiles (ICBMs) and long-range strategic bombers. Since the 1960s, this triad has supported our national strategy of nuclear deterrence against attack by weapons of mass destruction by any nation having this capability.	41-42
Video 1 on Naval Force Capabilities	Show video 1 on Naval Force Capabilities	43
Naval Force Capabilities	All other forces in our Navy are called general purpose forces. In order to support other aspects of our national strategy, they must have the tactical capabilities summarized below.	44

Chapter 4 / Section 1: NS3-M1U1C4S1 – U.S. Strategy and the Navy

Naval Force Capabilities	Explain Offensive Power. Naval forces must have sufficient power to be capable of projecting power through such means as carrier and amphibious battle forces, and destroying all hostile forces in the theater of operations by weapons such as guns and missiles. The Navy's offensive capabilities in the theater must be credible to allies for defense and to potential enemies for deterrence.	45
Video 2 on Naval Force Capabilities	Show video 2 on Naval Force Capabilities	46
Naval Force Capabilities	Explain Defensive Strength. Deployed Naval forces must be able to quickly react to and defend against any enemy attack within a given theater. Such attacks might range from localized actions initiated by terrorists to large-scale attacks by forces equipped with both conventional weapons such as guns or antiship missiles, or weapons of mass destruction. Naval defensive capabilities must include long-range detection systems such as airborne early warning, quick-reacting command and control systems, and effective defensive weapons systems including those designed for defense against ballistic and cruise missiles.	47-48
Naval Force Capabilities	Explain Logistical Independence. Naval forces must be capable of sustaining themselves for extended periods of time, and for much longer periods by underway replenishment by mobile logistic supply forces. Ships must be able to ride out heavy weather, and to steam long distances without refueling. Overseas bases may be helpful for sustaining deployed forces during peacetime, but they may become a liability in time of war.	49-50
Naval Force Capabilities	Explain Command and Control. The Naval Commander must be able to communicate with and monitor assigned forces through a system for command and control. This system also connects forward-deployed naval forces with one another, the supporting shore establishment, forces of other services and nations, and government and nongovernment agencies.	51
Video 3 on Naval Force Capabilities	Show video 3 on Naval Force Capabilities	52
Naval Force Capabilities	Explain that Modern command and control systems have five subdivisions: command, control, communications, computers, and intelligence, or C4I for short. They include all information systems, equipment, software, and infrastructure that enable the commander to direct assigned forces.	53
Video 4 on Naval Force Capabilities	Show video 4 on Naval Force Capabilities	54
Naval Force Capabilities	Explain Tactical Nuclear Weapons Capability. The Navy must be able to employ tactical nuclear weapons if confronted with them. The U.S. Navy can expect to fight and win at sea only with equivalent weapons capability.	55
Check on Learning Questions B (Lesson questions 5-6)	Check in on students understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	56
Naval Warfare	Explain that Naval Warfare is conflict in which at least one of the opponents is operating from the sea with surface ships, submarines, or sea-based aircraft. The three corresponding Naval Warfare areas are surface, subsurface, and aerospace. The forces that are used in these warfare areas each have their own characteristics, strengths, and limitations. The art of Naval Warfare is to employ these forces in such a way as to exploit the strengths and minimize the weaknesses of each. This objective has led to the integrated use of all three types of forces in mutual support to gain advantage	57

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	over an enemy. Moreover, Naval forces now and in the future must be able to work together with those of other services and other nations in all tactical warfare areas in order to meet the multidimensional threat posed by our potential enemies.	
Naval Warfare	The Navy is tasked with both sea control and power projection in all three warfare areas.	58
Naval Warfare	Explain that its tactical warfare tasks are classified as fundamental and supporting tasks. The fundamental warfare tasks are the following	59
Naval Warfare	Explain that Air Warfare (AW): The destruction of enemy air platforms and airborne weapons, whether launched from air, surface, subsurface, or land platforms. AW includes all the measures used to achieve air superiority.	60
Naval Warfare	Explain that Undersea Warfare (USW): The destruction or neutralization of enemy submarines, mines, and other undersea forces.	61
Naval Warfare	Explain that Surface Warfare (SUW): The destruction or neutralization of enemy surface combatants and merchant ships. Its aim is to deny the enemy effective use of its surface warships, support ships, and cargo-carrying vessels.	62
Naval Warfare	Explain that strike warfare: The destruction or neutralization of enemy targets ashore through the use of conventional or nuclear weapons. This includes any enemy strategic nuclear forces, shipyards, and any operating bases from which the enemy might launch an attack against United States or allied forces.	63
Naval Warfare	Explain that Amphibious Warfare: Attacks launched from the sea by naval forces and landing forces embarked in ships and craft designed to make a landing on a hostile shore. It includes close air support or shore bombardment in support of troops in contact with enemy forces.	64
Naval Warfare	Explain that mine warfare: The use of mines and mine countermeasures. It consists of the control or denial of sea or harbor areas through the laying of minefields, and the countering of enemy mine warfare through the destruction or neutralization of hostile minefields.	65
Naval Warfare	Explain that Information Warfare (IW): Actions taken against an adversary's information or information systems, while defending our own information and information systems.	66
Video on Naval Warfare	Show video on Naval Warfare	67
Naval Warfare	Explain that its Tactical Warfare tasks are classified as fundamental and supporting tasks. The supporting Warfare tasks are the following: <ol style="list-style-type: none"> 1. Special Warfare 2. Ocean Surveillance 3. Intelligence 4. Electronic Warfare 5. Logistics 	68
Naval Warfare	Explain Special Warfare. Naval operations that are unconventional in nature, and often clandestine in character. Special warfare often accomplishes other fundamental warfare tasks, but does so in a unique manner. Examples of special warfare are underwater demolition, special mobile operations, coastal and river interdiction, beach and coastal reconnaissance, and certain tactical intelligence operations. In the	69

Chapter 4 / Section 1: NS3-M1U1C4S1 – U.S. Strategy and the Navy

	Navy many of these tasks are carried out by S.E.A.L. teams, among the most highly trained and capable special warfare personnel in the U.S. armed services.	
Naval Warfare	Explain Ocean Surveillance is the observation of ocean areas to detect, locate, and classify potential aerospace, surface, and subsurface targets, and the reporting of this information to users in a timely manner. A target may be any hostile, neutral, or friendly platform of interest. Ocean surveillance provides the updated operational setting in which Navy commanders deploy forces to do battle. It supports and depends upon C4 (command, control, communications, and computer) and intelligence, and so must be integrated with both.	70
Naval Warfare	Explain that intelligence is the assessment and management of information obtained via surveillance, reconnaissance, and other means to produce timely warning of the location, composition, capabilities, and tactics of opposed forces. National leaders and military commanders who correctly use interpreted intelligence are able to make decisions based on accurate knowledge of the enemy's forces and capabilities.	71
Naval Warfare	Explain that Electronic Warfare is the electronic support for all warfare tasks. Its primary objective is to ensure effective use of the electromagnetic spectrum by friendly forces, while determining, exploiting, reducing, or denying its use by an enemy.	72
Naval Warfare	Explain that logistics is the resupply of combat consumables to combatant forces in the theater of operations. A principal goal of Naval Logistics is to make the operating forces as independent as possible of overseas bases. This is accomplished mainly by sealift, either from mobile logistic Navy ships or the U.S. Merchant Marine. Logistics are often the major factor in determining the success or failure of an operation.	73
Naval Warfare	Explain that there are two categories of major Naval ships: combatants and auxiliaries. The combatant category includes vessels classified as warships, such as aircraft carriers, surface combatants, submarines, and amphibious warfare ships. Auxiliaries include primarily mobile logistic and support ships, such as oilers and repair ships. Of this total group of ships, the fleet ballistic missile submarines are part of the U.S. Strategic Forces. All other Naval vessels are regarded as general purpose tactical forces.	74-77
Naval Warfare	Explain that each type of ship has unique tactical capabilities and different primary and secondary missions in the conduct of Naval Warfare and support of U.S. national military strategy. Navy planners and tacticians attempt to structure our Naval forces in such a way that there is always a proper balance of ship types to accomplish the expected warfare tasks.	78
Naval Warfare	Explain that the grouping of units to achieve a proper balance for a specific tactical requirement is called tactical force organization. Navy units are operationally deployed in task organizations designed for specific jobs, as, for example, a U.S.W. task group, carrier strike group, an amphibious task force, or an underway replenishment group.	79
Naval Warfare	Explain that under normal conditions, about 30 percent of our active operating naval forces are deployed overseas in a fully operational status. Another 40 percent are operationally ready, but assigned to fleets working out of U.S. ports. These are ready for immediate deployment to reinforce forward deployed forces if required. The remaining 30 percent are in a reduced operating status, undergoing planned maintenance or conducting basic training. In time of increased tension, the deployed forces can be increased to 50 percent or more for limited periods. Under extreme conditions of general mobilization, up to 85 percent of the fleet could be deployed, as it was during most of World War II.	80-82

Chapter 4 / Section 1: NS3-M1U1C4S1 – U.S. Strategy and the Navy

Naval Warfare	Explain that current Naval planning foresees far greater emphasis on joint and combined operations in littoral (coastal) areas in the years to come. This means that in future conflicts our naval forces can expect to operate closely with elements of the Air Force, Army, Coast Guard, Reserve Forces, and available allied forces to accomplish the desired objective of force projection onto land. The exact composition of strike and support forces will be tailored to meet the specific requirements of each mission.	84
Review Question	The Review Question is, “Discuss tactics and strategy and how they are used in the military, including differences between them.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	84
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	85
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	86

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Internet connection or if possible, print out copies of the two articles beforehand.

When: This activity should be done at the end of class.

- Cadets will read two articles. The first article, *Military Strategy and Tactics*, is a great article that summarizes the history and characteristics of each term. The second article, *Understanding the Decision to Drop the Bomb on Hiroshima and Nagasaki*, explores how difficult it can be, as a leader, to use available military tactics to meet the goals of military strategy. Once you have had a chance to read both articles, have a class discussion on using available military tactics to meet the goals of military strategy.
- Articles can be found at these links:
 - <http://www.scholastic.com/teachers/article/strategy-and-tactics-military>
 - <http://csis.org/print/38933>

B. Take Home Activity: using the handout Cadets will write a response to this question:

In your opinion, what U.S. military strategy should be employed in dealing with groups such as ISIS? What role do modern tactical innovations play in this strategy?

IV. Evaluation - see CPS database for chapter test questions.

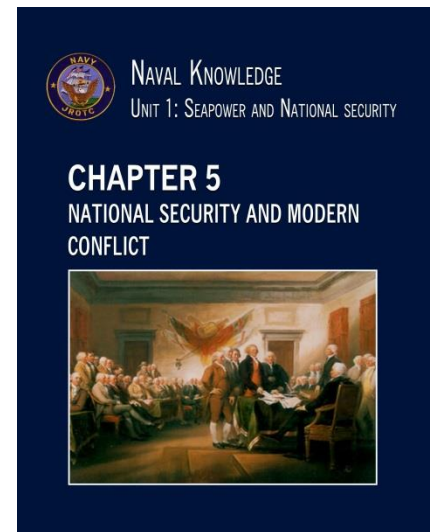
Module 1 Unit 1 Chapter 5: NS3-M1U1C5 – National Security & Modern Conflict

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation’s political, economic and military well-being

Skills and Knowledge to be Gained:

1. Explain the major concerns and elements used to evaluate national strategy
2. Describe the nine principles of war that govern war fighting strategy and tactics
3. Explain the following forms of modern armed conflict: general war, limited war, revolutionary war, and terrorism
4. List the possible causes of general war
5. Describe the prerequisites for revolution



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Module 1 Unit 1 Chapter 5: NS3-M1U1C5 – National Security & Modern Conflict

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.13.9-12. Evaluate public policies in terms of intended and unintended outcomes, and related consequences.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 2. Geography

- D2.Geo.11.9-12. Evaluate how economic globalization and the expanding use of scarce resources contribute to conflict and cooperation within and among countries.
- D2.Geo.12.9-12. Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.

Dimension 4. Communicating Conclusions and Taking Action

- D4.2.9-12. Construct explanations using sound reasoning, correct sequence, examples, and details with significant and pertinent information and data...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 5 / Section 1: NS3-M1U1C5S1 – Threat Evaluation

(Section 1 of 2)

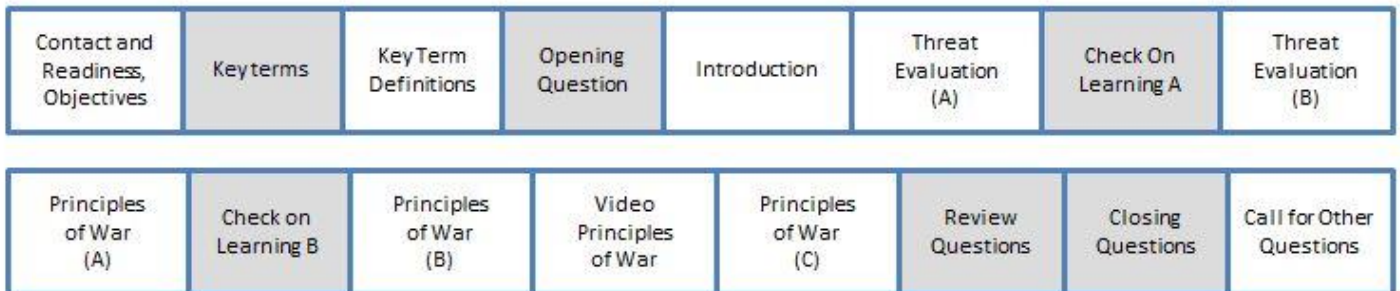
What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation’s political, economic and military well-being

Skills and Knowledge to be Gained:

1. Explain the major concerns and elements used to evaluate national strategy
2. Describe the nine principles of war that govern war fighting strategy and tactics

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 1, Chapter 5. Place a checkmark beside the NS3-M1U1C5S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U1C5S1 - Key Terms and NS3-M1U1C5S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 5 / Section 1: NS3-M1U1C5S1 – Threat Evaluation

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the importance of evaluating potential threats and what that entails. We will also learn the different principles of war and the importance of each principle.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Can you give examples in history of the military’s role in providing our country national security?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. The chosen student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on national security and modern conflict.	6
Introduction	Explain that National Strategy combines all the capabilities of a nation to attain its national interests and objectives. One of the most important of these objectives is the maintenance of national security. While military power is the primary means by which national security is maintained, it is not the only thing. All aspects of a nation’s power must be considered in the total strategy.	7
Introduction	Explain that political policy is of primary importance in all National Security Strategy. It is through politics, both at home and abroad, that the mind and actions of people can be influenced. There are other important considerations as well. A nation’s economy, including its natural resources, industrial capacity, and finances, is a very important element of national power and can be used to attain national objectives. The strength and will of its citizens is also important, including their numbers, location, morale, and education. Geographic position, natural defenses, terrain, and the food supply are all significant factors. Finally, a good scientific and technological base is important both for national security and commerce.	9-12
Threat Evaluation	Explain that National Security factors are meaningful, however, only when viewed in context with external and internal threats. The most obvious threat to any nation is military. But National Security can be harmed just as badly by political, economic, and psychological warfare as by force of arms. A good example of this is the effect of instability in the Middle East on the supply and price of oil in the United States and Europe. The military threat is merely easier to identify, and perhaps the easiest to counter if a nation has the will to keep sufficient forces in readiness.	13
Threat Evaluation	There are three basic considerations in evaluating possible external threats to a nation’s national security:	14

Chapter 5 / Section 1: NS3-M1U1C5S1 – Threat Evaluation

	<ul style="list-style-type: none"> • Capabilities—what can a potential adversary do? • Intentions—what will the adversary do? • Vulnerabilities—what are the adversary's weaknesses? 	
Threat Evaluation	Explain that capabilities means the ability of a state to satisfy its objectives or to stop others from threatening it—in peace as well as in war. They are the sum total of national power: political, military, economic, social, scientific, technological, psychological, moral, and geographic. Capabilities are only useful when combined with the means of applying that power effectively. Intentions concern a state's determination to execute certain plans	15-16
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	17
Threat Evaluation	Explain that intentions are subjective and often easily concealed. They are shaped by interests, objectives, policies, principles, and commitments, many of which may be unknown to outsiders. Determining the intentions of a potential adversary is extremely difficult. An adversary's probable course of action, however, must always be considered in determining one's own best strategy. A rule of thumb is generally applied: the best indication of intentions is not what people say, but rather what they do.	18
Threat Evaluation	Explain that Vulnerabilities are the weaknesses of a nation, which, if struck by any action or means, will reduce the war potential, combat effectiveness, or national will of that nation. Nations' vulnerabilities differ: they may include the ease of interdiction of key transportation routes, the vulnerability of major industrial centers, dependence on overseas imports of raw materials or fuels, weak or unpopular governments, and so forth. The list is extensive.	19
Threat Evaluation	Explain that the intelligence process is used to gain the information necessary to make estimates of the situation or threat that might face a nation. Data concerning capabilities, intentions, and vulnerabilities must flow in a never-ending stream to intelligence specialists, who must process, analyze, and evaluate this information. They arrive at intelligence estimates that are provided to the decision-making leaders. This evaluated, integrated, and interpreted information required for the development of national security objectives, policies, and plans is called strategic intelligence.	20-21
Threat Evaluation	Explain that the purpose of estimates is to forecast intentions. The Strategic Intelligence Specialist has a greater chance for success than does the Combat Intelligence Officer, since the former has more time to study and reach conclusions concerning enemy capabilities, habits, and vulnerabilities. Estimating intentions, however, is a dangerous occupation. It is so because no one can positively determine what actually is in the minds of potential enemy leaders. Wide background knowledge, wisdom, experience, and judgment are necessary, and even then the strategist must recognize that the best intelligence estimators are subject to error because they are human. Threat evaluation is a difficult and vital process, but one on which every government and nation is dependent for survival.	22
Threat Evaluation	Explain that the strategic planner must assess the degree of risk associated with various possible courses of action that could be taken to achieve national objectives. This means, simply, the probability of success of a course of action versus the stakes. The degree of risk is almost entirely a matter of judgment. Defeat and failure can result from miscalculations such as overrating one's own capabilities or underrating	23-24

Chapter 5 / Section 1: NS3-M1U1C5S1 – Threat Evaluation

	those of the opposition. Sometimes unavoidable calculated risks (actions having some degree of risk associated with them) must be taken in order to make best use of the available resources, be they economic, military, or other. To do this intelligently, the planner must be well informed and alert to any possible negative effects on the overall grand strategy.	
Principles of War	Explain that if all measures fail, short of war, and war comes, there are certain principles that have evolved over the centuries that govern warfighting strategy and tactics. They have been used by all successful military commanders, both famous and infamous, since biblical times, including Hannibal, Julius Caesar, Napoleon, Lord Nelson, Grant, Eisenhower, Nimitz, and Schwarzkopf, to name just a few. Taken together, these are called the principles of war.	25-27
Principles of War	Explain every military operation should be directed toward a clearly defined, decisive, and attainable objective. Whether the objective is destroying an enemy's armed forces or merely disrupting the ability to use forces effectively, the most significant preparation a commander can make is to express clearly the objective of the operation to subordinate commanders.	28
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	29
Principles of War	Explain that mass forces use strength against weakness. A force, even one smaller than its adversary, can achieve decisive results when it concentrates or focuses its assets on defeating an enemy's critical vulnerability.	30
Principles of War	Explain that maneuver means to place an enemy in a position of disadvantage through the use of speed and agility to gain an advantage in time and space relative to the enemy's vulnerabilities.	31
Principles of War	Explain that to take the offensive the following needs to be done: seize, retain, and exploit the initiative. Offensive action allows the commander to set the terms and select the place of confrontation, exploit vulnerabilities, and seize opportunities from unexpected developments.	32
Principles of War	Explain that economize force employ all combat power available in the most effective way possible; minimize combat power spent on secondary targets. A successfully coordinated strike at an enemy's critical vulnerability can have far more significance than an attempt to attack all vulnerabilities at once.	33
Principles of War	Explain that to achieve unity of command ensure coordinated effort for every objective under one responsible commander. Whether the responsibility involves a single independent unit or a complete battle force, unity of command is achieved by assigning a single commander at every level of command.	34
Principles of War	Explain that to maintain simplicity avoid unnecessary complexity in preparing, planning, and conducting military operations. The implementing orders for some of the most influential naval battles ever fought have been little more than a paragraph. Broad guidance, rather than detailed and involved instructions, promotes flexibility and simplicity. Simple plans and clear direction promote understanding and minimize confusion. For example, the operation order for operation Desert Storm summarized the allied objectives in a single sentence: "Attack Iraqi political-military leadership and command and control; sever Iraqi supply lines; destroy chemical, biological, and nuclear capability; destroy Republican Guard forces in the Kuwaiti theater; liberate Kuwait."	35

Chapter 5 / Section 1: NS3-M1U1C5S1 – Threat Evaluation

Principles of War	Explain that to achieve surprise, strike an enemy at a time or place or in a manner for which the enemy is unprepared. It is not essential that an enemy be taken completely unaware, only that the enemy becomes aware too late to react effectively. Concealing capabilities and intentions by using covert techniques and tactics provides the opportunity to achieve surprise.	36
Principles of War	Explain that to maintain security never permit an enemy to acquire unexpected advantage. Alert watch standers, scouting forces, and the use of electronic emission control all reduce vulnerability to hostile acts, influence, or surprise.	37
Video on Principals of War	Show Video on Principals of War	38
Principles of War	Explain that interestingly, many of the foregoing principles are also applicable to activities other than warfare, such as various board games like chess and athletic contests like football and soccer. Most successful head coaches in these and other sports are well aware of these principles at either the conscious or intuitive level, and employ them to good effect to win their games.	39
Review Question	The Review Question is, “Describe the principles of war that govern war fighting strategy and tactics.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	40
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	41
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	42

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handout “The Principles of War”

When: at the end of class

- Cadets will complete the “Principles of War” activity to help the identify examples of the principles discussed in the lesson.

B. Take Home Activity: Cadets will write a comparison of a game, such as football, to describe how its principals are much like the principles of war. An example of each principle should be highlighted in the comparison.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 5 / Section 1: NS3-M1U1C5S1 – Threat Evaluation

Activity 1: In Class Activity – The Principles of War

Name: _____ Date: _____ Class: _____

Directions: Listed below are examples of the nine principles of war. Beside each, write the principle of war that is being described. Be prepared to defend your choice.

- | | |
|-------------------------|-----------------------------|
| 1. Define the Objective | 6. Mass Forces |
| 2. Maneuver | 7. Take the Offensive |
| 3. Economize Force | 8. Achieve Unity of Command |
| 4. Maintain Simplicity | 9. Achieve Surprise |
| 5. Maintain Security | |

- _____ 1. During the American Revolution, the colonial armies were fighting on their home soil and knew the lay of the land.
- _____ 2. Operation Desert Storm was implemented to destroy Iraqi weapons of mass destruction, force a withdrawal of Iraqi forces from Kuwait and restore a legitimate government in the area.
- _____ 3. The United States launches airstrikes against Islamic State militants in Iraq to provide support to Iraqi security forces fighting the militants.
- _____ 4. In 1776, on Christmas night, General George Washington crossed the Delaware to lead the Continental Army on an unexpected raid against the Hessians.
- _____ 5. The Japanese use Kamikaze pilots to attack Pearl Harbor.
- _____ 6. Norman Schwarzkopf, a United States Army General, led all coalition forces during the Persian Gulf War.
- _____ 7. A colonel reads his military orders that will go out to the fighting units to an officer at his headquarters. He knows that if the officer understands them, then anyone will.
- _____ 8. During WWI, a small number of observation flights were flown to supply the General Staff with information about the enemy. The valuable aircraft and crew were saved for another day.
- _____ 9. During WWI, air forces were quickly assembled just prior to the offensive and all deployments were done at night.

Chapter 5 / Section 1: NS3-M1U1C5S1 – Threat Evaluation

Activity 1: Take Home activity – Principles of War Comparison

Name: _____ Date: _____ Class: _____

Directions: As we learned, the Principles of War are applicable to athletic contests. You are to write a comparison paper that takes a contest, such as football, and illustrate how the same principles are used in that game. You may use any sport that you like. Give specific examples of how each principle can be applied to the sport that you chose. For example: in football, the objective is to score more points than the opponent by making touchdowns, field goals or scoring a safety. Another objective is to stop the opposing team from advancing down the field by tackling the opponents, intercepting their passes or recovering any ball they may fumble, etc.

Chapter 5 / Section 2: NS3-M1U1C5S2 – Modern Forms of Armed Conflict

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of how sea power strongly impacts our nation’s political, economic and military well-being

Skills and Knowledge to be Gained:

1. Explain the following forms of modern armed conflict: general war, limited war, revolutionary war, and terrorism
2. List the possible causes of general war
3. Describe the prerequisites for revolution

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Modern Forms of Armed Conflict (A)	Video 1 Modern Forms of Armed Conflict	Check On Learning A	Modern Forms of Armed Conflict (B)
Video 2 Modern Forms of Armed Conflict	Modern Forms of Armed Conflict (C)	Video 3 Modern Forms of Armed Conflict	Modern Forms of Armed Conflict (D)	Check on Learning B	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 1, Chapter 5. Place a checkmark beside the NS3-M1U1C5S2 PowerPoint presentation, and these two CPS question deck files: NS3-M1U1C5S2 - Key Terms and NS3-M1U1C5S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 5 / Section 2: NS3-M1U1C5S2 – Modern Forms of Armed Conflict

II. Instructional Flow:

Flow Item	Textbook Content / Student Engagement and Assessment	Slides
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the different types of modern forms of armed conflict. We will learn about the different types of limitations of war. We will discuss revolutionary war and the different forms it can take. We will also learn the prerequisites for a revolutionary war. Lastly, we will discuss the new terrifying form of war call terrorism.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “What types of conditions (i.e., political, economic) do you think lead to revolutions within countries?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on fleet aviation organization.	7
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	8
Modern Forms of Armed Conflict	Explain that In modern times, there are three main forms that large-scale armed conflict might take. These are General War, Limited War, and various kinds and degrees of Revolutionary War. Each of these is discussed in the following sections.	9
Modern Forms of Armed Conflict	Explain that General War is defined by the U.S. Joint Chiefs of Staff as "armed conflict between major powers in which the total resources of the belligerents are employed, and the national survival of a major belligerent is in jeopardy." At one time, victory in such a war was considered to be worth any privation. Speaking before the House of Commons in 1940 in the darkest days of World War II, Winston Churchill bravely said, "You ask what is our aim? I can answer in one word: victory—victory at all costs; victory in spite of all terror, victory however long and hard the road may be, for without victory, there is no survival."	10
Modern Forms of Armed Conflict	Explain that in speaking of the Korean War in 1951, General Douglas MacArthur sagely advised, "There is no substitute for victory." This is an easily understood statement, but one that might not be so easily understood today.	11

Chapter 5 / Section 2: NS3-M1U1C5S2 – Modern Forms of Armed Conflict

Modern Forms of Armed Conflict	<p>Explain that victory in the context of the term General War, as it is now defined, might be very hollow indeed. A global struggle with the unrestricted use of mass-destruction nuclear weapons would endanger life everywhere on Earth. Victory in such an event would be hard to imagine for either side, or, for that matter, for any of the survivors on Earth of such a war.</p>	12
Modern Forms of Armed Conflict	<p>Explain that General War on this scale, and with this potential, has no precedent in history. The risks are huge and probably overshadow any gains. There is almost no margin for strategic error. Therefore, for the first time in history we now devote more mental energy to the prevention of General War than to plans for fighting such a war. This, however, has not caused nations to give up ideas of becoming dominant powers in their regions, or in the world. Rather, the very fact that the risks of war have grown larger enables a clever antagonist to gain strategic advantage by exploitation of the opponent's fear of these risks. Nuclear stalemate has not invalidated the use of force or changed sound strategic concepts. Just as in the past, calculated escalation of force is often used to attain political objectives.</p>	13-14
Modern Forms of Armed Conflict	<p>Explain that there are six potential actions that might cause a general war to occur:</p> <ul style="list-style-type: none"> • Deliberate initiation • Accidental initiation • Miscalculation • Misunderstanding • Entanglement • Irrational acts 	15-21
Modern Forms of Armed Conflict	<p>Explain that it is unlikely that any sane leader would ever deliberately start a General War, unless one of two preconditions existed: threat of destruction, or assurance of victory. If a leader had positive evidence that his or her country was about to be destroyed by a nuclear attack, that leader might think there was nothing to lose by launching a nuclear attack first. If a country made a spectacular technological breakthrough that would make retaliation unlikely, the leader might consider that the risk would be far outweighed by potential gains. However, because the long-term effects of a nuclear war are so unknown and far-reaching, deliberate initiation of such a war seems unlikely as long as the potential victim maintains a credible military deterrent.</p>	22
Modern Forms of Armed Conflict	<p>Explain that the United States now has such preponderant military power that it is difficult to imagine how an opponent could envision overcoming it. However, proliferation of nuclear weapons or other weapons of mass destruction among unprincipled countries or terrorists could lead to general war through accident, miscalculation, or misunderstanding in the future.</p>	23
Modern Forms of Armed Conflict	<p>Explain that conflicts resulting in entanglement of major powers are always a danger. Wars can be touched off intentionally by a third country or coalition for a variety of motives. Collective security systems, pledges, and other involvements with nations constantly in conflict with neighbors in areas vital to the major powers (such as Israel and the Arab states in the Middle East, India and Pakistan, and the two Koreas) pose such dangers.</p>	24-25
Modern Forms of Armed Conflict	<p>Explain that irrational acts can never be discounted. The danger is not so much the possible mental breakdown of a leader as that leader's consideration of totally illogical, unwarranted, or unrealistic approaches to a problem. When considering this possibility, one must be aware of cultural differences between peoples. For instance, Americans generally place a high value on human life. This is not necessarily the case in other cultures or countries. As recent history has shown, there will probably always</p>	26

Chapter 5 / Section 2: NS3-M1U1C5S2 – Modern Forms of Armed Conflict

	be individuals, groups, and even nations that are willing to sacrifice innocent lives for political or economic gains, or to advance extremist ideologies.	
Video 1 on Modern Forms of Armed Conflict	Show Video 1 on Modern Forms of Armed Conflict	27
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	28
Modern Forms of Armed Conflict	Explain that this falls between the extremes of general war and the so-called cold war. The previous section discussed the totality of nuclear general war; cold war, in which all measures short of armed combat are used to attain national objectives, is the other extreme. Limited war is defined as "armed encounters, other than incidents, in which one or more major powers or their proxies voluntarily restrict their actions in order to prevent escalation to general war." A proxy war is a form of limited war in which a major power avoids direct military involvement by having satellite states engage another major power or its allies.	29
Modern Forms of Armed Conflict	Explain that these limitations or restrictions are seldom effected by formal agreements. They usually result from "understandings" that are conveyed by means other than direct diplomatic meetings. The understandings may be made known through a speech of the chief of state, official releases to the media, or perhaps an exchange of notes through diplomatic channels in third countries. Interpretation of these "rules" that limit operations may be rather broad, but clearly the intent is to prevent escalation to nuclear warfare.	30
Modern Forms of Armed Conflict	Explain that wars may be limited in a number of ways, such as by limiting objectives, arms, targets, forces, or geographic operations. Limiting objectives is usually avoided, so restraints most often involve means, not ends. For example, the U.S. national security objective in Korea—the containment of communism—was successfully attained, but the secondary goal of unifying Korea was abandoned. The object in limited war is to select goals that avoid the appearance of directly endangering the enemy power's vital interests	31-34
Modern Forms of Armed Conflict	Explain that in any war, arms limitations, particularly limitations of nuclear weapons, are controversial. Most civilized people agree that strategic nuclear bombardment of population centers should be avoided, but what about the use of smaller tactical nuclear weapons designed specifically for battlefield use or the destruction of enemy missile silos? Argument against their use is centered on the probability that once introduced for any purpose, both the size and extent of their use could rapidly escalate. An opposite contention is that tactical nuclear weapons should be used in limited-war situations "in the overall best interest of humanity and civilization." The argument here is that if they are used once or twice on the right targets at the right time, further aggression can be stopped and future limited wars can be deterred from ever starting. Each argument poses a strategic dilemma.	35-36
Modern Forms of Armed Conflict	Explain that the use of chemical and biological agents poses the same kind of problems for strategists dealing with limited war.	37
Video 2 on Modern Forms of Armed Conflict	Show Video 2 on Modern Forms of Armed Conflict	38

Chapter 5 / Section 2: NS3-M1U1C5S2 – Modern Forms of Armed Conflict

<p>Modern Forms of Armed Conflict</p>	<p>Explain that careful target selection also is an important factor in limiting the scope and intensity of war. All manner of limitations and understandings can be imposed. The Vietnam War was a classic example of Target Limitation imposed by political leaders. At one time, few targets other than enemy troops, armored vehicles, and logistics in transit could be struck by U.S. Navy and Air Force aircraft. Many important facilities essential to the North Vietnamese war effort, such as bridges, ports, rail yards, and industrial areas, were exempt. Haiphong Harbor was restricted both from aerial attack and the laying of mines until the very end, enabling massive quantities of war equipment to be delivered without hazard. Political, not military, prohibitions prevailed in the effort to limit the war. According to many analysts, the Vietnam War was lost largely because of these limitations. Would it have been won if these constraints had been removed, or would such actions have escalated the war, perhaps involving other nuclear powers? No one will ever know.</p>	<p>39</p>
<p>Modern Forms of Armed Conflict</p>	<p>Explain that limitations as to type, number, roles, and origins of military forces can also affect a war. Defensive, support, and advisory troops are less provocative than major combat elements. Proxy forces avoid major power confrontations. Forces from alliances or the United Nations are often less objectionable than those from individual states. Use of naval and air power is less risky than an invasion by ground forces, which immediately implies more than a temporary presence. All of these factors figured into the limited wars fought in Korea and Vietnam. Soviet troops never actually participated in either war. The Chinese insisted their forces in Korea were all volunteers, despite the obvious fiction of that claim. The fact that U.N. forces fought in Korea against the Chinese "volunteers" tended to reduce the impact of the cold fact that the United States was in reality at war with China.</p>	<p>40-41</p>
<p>Modern Forms of Armed Conflict</p>	<p>Explain that geographic limitations are inherent in limited war. The area of conflict is mostly restricted to a relatively small region, or a single country. Additionally, there often are "safe havens" that are left alone. In the Korean War, for instance, Chinese staging areas across the Yalu River were constantly under observation by U.S. reconnaissance planes but were completely immune from any United Nations attack. During the Vietnam War, the Communists had a safe haven in Cambodia for years in the Parrot's Beak, a portion of land projecting deep into South Vietnam near Saigon. Allied forces were prohibited from advancing toward Baghdad in the First Persian Gulf War, and al Qaeda and the surviving Afghan Taliban found sanctuary for years in the mountainous terrain along the Pakistan-Afghanistan border following the U.S. invasion of Afghanistan in 2001-2002.</p>	<p>42-44</p>
<p>Modern Forms of Armed Conflict</p>	<p>Explain that revolutionary war can take a number of different forms. Today, it often involves a conspiracy, culminating in a coup that overturns an established government. Few people actually are involved, and little is changed but the leadership. In times past, it took the form seen in the United States in 1776, and in much of South America in the early 1800s: a colonial war for independence from a mother country, with opposing armed forces engaged in traditional warfare, ending with a formal treaty of peace and recognition of sovereignty. The French and Russian Revolutions, in contrast, were explosive upheavals of the masses. They turned out the old royalty and then consolidated the unexpected victories by means of infighting among various revolutionary groups until one dominant group emerged.</p>	<p>45-46</p>
<p>Modern Forms of Armed Conflict</p>	<p>Explain that revolutionary war basically involves efforts to seize political power by force of arms, destroying the existing government of a country and possibly its political, social, and economic structures in the process. Such warfare today is carried on in most cases by military insurrection or insurgency fostered by dissident elements among the population. These revolutions are often called "wars of national liberation" or "people's wars," and they have been numerous in the emerging nations of Africa and Asia since World War II.</p>	<p>47</p>

Chapter 5 / Section 2: NS3-M1U1C5S2 – Modern Forms of Armed Conflict

Modern Forms of Armed Conflict	Explain that from the standpoint of its perpetrators, Revolution is total war. The philosophy of such revolution, as expressed by Mao Tse-tung, is brutal: "Any and all means are justified to attain desired ends, without regard for stupid scruples about benevolence, righteousness, and morality."	48
Modern Forms of Armed Conflict	Explain that such revolutionary wars are primarily political and social processes rather than military operations. Insurgent actions steadily weaken popular support, the national economy, and the international status of that government. The military leadership is discredited, for it cannot suppress insurgent actions everywhere at once; morale in the government forces drops as the situation deteriorates. At every retreat, the insurgents advance; at every loss, the strength of the revolution increases. By the time the coup de grâce (mortal stroke) is administered, little resistance is left.	49
Modern Forms of Armed Conflict	Explain that there are three prerequisites for a successful revolution: dissatisfaction with the status quo, a cause, and a carefully directed organization.	50
Modern Forms of Armed Conflict	Explain that insurgent revolutions most often occur in underdeveloped countries where slowly improving economies create expanding gaps between those in power and the majority of the people. Zealots often surface in such societies, where rising expectations breed impatience and dissatisfaction.	51-52
Video 3 on Modern Forms of Armed Conflict	Show Modern Forms of Armed Conflict	53
Modern Forms of Armed Conflict	Explain that friction develops because of communication gaps between rich and poor, young and old, peasants and small businessmen, bureaucrats and the public, ethnic groups, and religious groups. The insurgents can exploit these frictions. If, in addition to these circumstances, corruption in government or social and economic injustices are widespread, the situation is ripe for revolution.	54
Modern Forms of Armed Conflict	Explain that the second prerequisite for any Revolution is an emotional cause, one worth dying for. It must have broad appeal and be vague enough so it can be interpreted to each person's satisfaction. It does not have to be realistic, or even attainable. Patriotic and nationalistic causes such as freedom from oppression, human rights, equal opportunity, and self-determination can stimulate the imagination of anyone, especially those who feel any change will better their own lot. Finally, the insurgents must be organized and directed by a closely-knit group of clever leaders skilled in mobilizing and manipulating people. One of the first steps is the establishment of a subversive shadow government. This group constantly vies with the legal government to undermine its control and continually purges weaker elements from its own membership.	55
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	56
Modern Forms of Armed Conflict	Explain that a classic example of these prerequisites was the rise to power of the Taliban in Afghanistan following the defeat of Soviet forces there in the late 1980s. They took advantage of the disarray of the legitimate government following the Soviet withdrawal, arms and money supplied by the West and Osama bin Laden during the conflict, and religious zealotry among a small segment of the population to secure control of the country by 1998. Once in power, they imposed all manner of restrictions on the populace, especially women, which led to the country gaining a reputation as one of the most oppressive regimes in the world by the end of the 1990s. They remained in control of the country until their harboring of terrorists caused the coalition led by the United States to oust them from power in 2001-2002.	57-60

Chapter 5 / Section 2: NS3-M1U1C5S2 – Modern Forms of Armed Conflict

Modern Forms of Armed Conflict	Explain that revolutionary wars are difficult for established regimes to combat. To do so, it is vital that militant causes such as the following be eliminated: corruption and crime, unequal treatment and opportunity before the law, discrimination against minorities of any category, economic troubles and unemployment, and a breakdown in traditions because of lax educational, spiritual, and moral standards. Even when rebels or terrorists know their initial position is weak, they can be encouraged by future possibilities and can become determined to pursue their course.	61-62
Modern Forms of Armed Conflict	Explain that in recent years another more sinister form of warfare has burst onto the world stage, that is one called terrorism. In this form of warfare, a small group of individuals outside the established government attempts to bring about political change by the creation and exploitation of fear. Actions taken always involve violence or the threat of violence. The aim, as in more traditional forms of revolutionary war, is to try to undermine confidence in the government and the legitimate political leadership. The terrorist groups generally have only a limited number of members, and often few resources and not much firepower. They tend to rely largely on spectacular hit-and-run actions to achieve their objectives. A prime example is, of course, the 11 September 2001 attack on New York and Washington, D.C., by bin Laden's al-Qaeda plane hijackers.	63-65
Review Question	The Review Question is, "Describe terrorism as a new form of warfare and how it is related to revolutionary war." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	66
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	67

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handouts for In Class and Take Home activities

When: This activity will be used as an anticipatory set prior to the lesson to get cadets thinking about the word "Revolution".

- In-Class: Cadets will complete the "Revolt!" activity as a warm-up to the lesson.

B. Take Home Activity: Cadets will complete the "Causes of War" activity.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 5 / Section 2: NS3-M1U1C5S2 – Modern Forms of Armed Conflict

Activity 1: In Class Activity- Revolt!

Name: _____ Date: _____ Class: _____

Directions: In small groups, answer the following questions. When your group is finished, prepare to share your thoughts with the entire class.

1. In your own words, define the word “revolution”?
2. How would you distinguish a revolution from other kinds of conflict such as a protest, rebellion, or war?
3. What historical events come to mind when you think of the word, “revolution”?
4. What are some reasons people might revolt?
5. In your opinion, what kind of people might lead revolts?
6. Do you think revolutions happen quickly or over a long period of time? Explain.
7. How can revolutions be avoided?
8. Revolutions can be societal events such as the Industrial Revolution, the Sexual Revolution or the Digital Revolution. How do these revolutions differ from political revolutions? How are they the same?

Chapter 5 / Section 2: NS3-M1U1C5S2 – Modern Forms of Armed Conflict

Activity 1: Take Home Activity – Causes of War

Name: _____ Date: _____ Class: _____

Listed below are the 6 causes of General War. Beside each, give a brief explanation and historical example.

Deliberate Initiation:

Explanation:

Example(s):

Accidental Initiation:

Explanation:

Example(s):

Miscalculation:

Explanation:

Example(s):

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Misunderstanding:

Explanation:

Example(s):

Entanglement:

Explanation:

Example(s):

Irrational Acts:

Explanation:

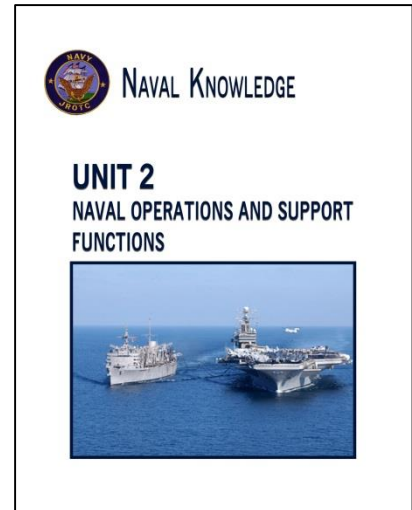
Example(s):

MODULE 1; UNIT 2: Naval Operations and Support Functions

Unit Overview

Unit Objective:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Naval Operations	NS3-M1U2C1S1 – Naval Command and Control
		NS3-M1U2C1S2 – Fleet Aviation Organization
		NS3-M1U2C1S3 – Undersea Warfare
2	Naval Communications	NS3-M1U2C2S1 – Naval Communications
3	Naval Intelligence	NS3-M1U2C3S1 – The Intelligence Cycle
		NS3-M1U2C3S2 – Naval Intelligence
4	Naval Logistics	NS3-M1U2C4S1 – Naval Logistics
5	Naval Research and Development	NS3-M1U2C5S1 – Naval Research and Development

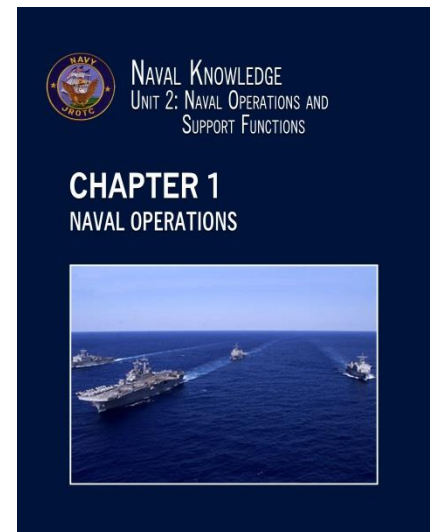
Module 1 Unit 2 Chapter 1: NS3-M1U2C1 – Naval Operations

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe naval task force organization
2. Describe the naval command and control organization
3. Define strike and strike group in the context of naval striking forces
4. Describe the missions of the carrier strike forces
5. Describe the modern carrier strike group (CSG)
6. Describe the naval surface action groups
7. Describe fleet aviation organization
8. Describe air warfare
9. Describe surface warfare
10. Describe submarine warfare
11. Describe undersea warfare
12. Describe amphibious warfare
13. Describe the principle objectives for amphibious operations
14. Describe information warfare
15. Describe space warfare



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...

Module 1 Unit 2 Chapter 1: NS3-M1U2C1 – Naval Operations

- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.5.9-12. Evaluate citizens' and institutions' effectiveness in addressing social and political problems at the local, state, tribal, national, and/or international level.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 2. History

- D2.His.3.9-12. Use questions generated about individuals and groups to assess how the significance of their actions changes over time and is shaped by the historical context.

Dimension 3. Gathering and Evaluating Sources

- D3.1.9-12. Gather relevant information from multiple sources representing a wide range of views...

Dimension 4. Communicating Conclusions and Taking Action

- D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.
- D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor's Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor's Guide.

Chapter 1 / Section 1: NS3-M1U2C1S1 – Naval Command and Control

(Section 1 of 3)

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe naval task force organization
2. Describe the naval command and control organization
3. Define strike and strike group in the context of naval striking forces
4. Describe the missions of the carrier strike forces
5. Describe the modern carrier strike group (CSG)
6. Describe the naval surface action groups

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction (A)	Naval Task Force Organization
Check On Learning A	Command and Control Organization (A)	Videos 1 & 2 Command and Control Organization	Command and Control Organization (B)	Striking Forces	Modern Naval Striking Forces (A)	Check on Learning B	Modern Naval Striking Forces (B)
Video1 Modern Naval Striking Forces	Modern Naval Striking Forces (C)	Video2 Modern Naval Striking Forces	Modern Naval Striking Forces (D)	Video3 Modern Naval Striking Forces	Modern Naval Striking Forces (E)	Review Questions	Closing Questions

Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 1 / Section 1: NS3-M1U2C1S1 – Naval Command and Control

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 2, Chapter 1. Place a checkmark beside the NS3-M1U2C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U2C1S1 - Key Terms and NS3-M1U2C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that in broad terms naval operations refers to the day-to-day conduct of all actions involving units of the U.S. fleet in the oceans of the world. Naval operations areas of responsibility include naval activities, naval communications, naval intelligence, naval logistics, and naval research and development. All five of these areas are interrelated to the daily operation of naval units	1-4
Unit Overview	Explain that the definition of naval communications is the transmission and reception of military instructions and information by sound, electronics, or visual means. Naval intelligence gives government and military leaders the information about potential or actual enemies needed to make good decisions.	5-6
Unit Overview	Explain that naval logistics provides the means and support for naval operations. Naval research and development ensure that the Navy operates with the latest technology.	7-8
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the Naval task force organization. We will learn about the Command and Control organization. Finally we will discuss strike forces, including modern Naval strike forces.	9-12
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	13
Key terms - Definitions	Reinforce the correct definition for each key term.	14-16
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What do you think could be some consequences of poor execution of battle group support?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing naval operations.	17

Chapter 1 / Section 1: NS3-M1U2C1S1 – Naval Command and Control

Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	18
Introduction	<p>Explain that the employment and movements of various types of naval ships and other naval forces in carrying out the Navy’s mission is collectively called naval operations. These operations can range from missions carried out by individual combat units, ships, or aircraft, to large-scale evolutions done by an entire fleet.</p>	19
Introduction	<p>Explain that in his blueprint for the U.S. Navy of the twenty-first century, Sea Power 21, CNO Admiral Vernon Clark stated that henceforth there will be three basic concepts underlying all future naval operations: Sea Strike, Sea Shield, and Sea Basing. Sea Strike is the ability to project offensive power from the sea worldwide, whenever and wherever required. Sea Shield concerns naval operations related to homeland defense, and defense of U.S. and allied sea and land forces and territory abroad. Sea Basing concerns the maintenance of deployed fast response forces sufficient to carry out the Navy’s mission worldwide, and their sustainment from the sea. Clark believed that all of his operational concepts will be tied together and managed by means of an enhanced state-of-the art networked computer-based command and control system.</p>	20-21
Naval Task Force Organization	<p>Explain that the Navy's operating forces are divided into a number of fleets: Eastern Pacific, Third; Western Pacific, Seventh; Indian Ocean, Fifth; Western Atlantic, Second; and Mediterranean Sea, Sixth. The Navy's fleets are subdivided into task forces, groups, units, and elements. Warships are grouped to achieve the proper balance for specific tactical jobs; this is called the battle group organization. The battle groups, or strike forces, are made up of those ships designed for combat at sea. These are the warships: carriers, surface combatants, and submarines. Other groups comprise the amphibious force, mobile logistic force, and support force.</p>	22-27
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on student’s understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	28
Command and Control Organization	<p>Explain that naval forces are organized for their roles as task-oriented, Navy-Marine Corps teams. Command authority for naval forces, as with all U.S. military forces, starts with the president and extends through the secretary of defense, with advice from the chairman of the Joint Chiefs of Staff, to the unified or specified commanders. A unified or specified command is a command with a broad, continuing mission under a single commander. A unified command has a geographical area of responsibility, referred to as a theater. A specified command has functional responsibilities, such as for special operations or space. Naval forces are assigned to these unified or specified commands for operations; currently there are no specified commands assigned.</p>	29-31
Videos 1 and 2 on Command and Control Organization	<p>Show videos on command and control organization.</p>	32-33
Command and Control Organization	<p>Explain that a commander may establish various support relationships between subordinate commanders when one unit or organization can aid, protect, complement, or sustain another force. A commander normally establishes a support relationship by directing one force (the "supporting force") to provide support to</p>	34

Chapter 1 / Section 1: NS3-M1U2C1S1 – Naval Command and Control

	another (the "supported force").	
Command and Control Organization	Explain that in addition to specified command responsibilities, commanders are also normally assigned a staff appropriate to their level of command. The staff assists the commander in carrying out his or her duties by providing specialized expertise and allowing a division of labor. The staff is not part of the chain of command and thus has no authority of its own, although the commander may delegate authority to a staff officer if he or she so chooses. In such cases, the staff officer exercises that authority "by direction" of the commander.	35
Striking Forces	Explain that a strike is form of power projection meant to damage, seize, or destroy an objective. Types of naval forces used to make strikes are carriers, cruisers, destroyers, and submarines. These ships may operate independently or together. If they operate together, they are called a strike group. Naval striking forces carry out national military policy, in peace or in war. Their presence near a trouble spot may serve as a stabilizing influence. Mobility, one of the greatest assets of naval striking forces, and a constant state of readiness enable them to make surprise attacks from any point on navigable waters.	36-37
Modern Naval Striking Forces	Explain that today's naval striking forces are built primarily around the carrier, just as in World War II. There are also some striking forces built around cruisers or frigates. The missions of carrier strike forces are still basically the same today. These are <ul style="list-style-type: none"> • To seek out and destroy enemy air, surface, and subsurface forces • To make pre-invasion strikes against enemy airborne aircraft and airfields • To provide close air support • To strike against remote enemy installations • To protect amphibious forces from enemy attack 	38-40
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	41
Modern Naval Striking Forces	Explain that while many of these missions are in support of amphibious assault forces, the primary mission of the carrier strike groups, as they are called today, is to win command of the seas. To do this, they can make strikes, sweeps, and raids. A carrier strike is an operation planned to destroy an enemy base area or strong point. A series of strikes against several enemy targets in a general area is termed a sweep. A raid is a sudden destructive attack against a limited area or facility, with no intention of holding the territory invaded.	42
Modern Naval Striking Forces	Explain that the modern carrier strike group (CSG) usually has one carrier along with the necessary escort and support ships.	43
Video 1 on Modern Naval Striking Forces	Show video 1 on modern Naval Striking Forces.	44
Modern Naval Striking Forces	Explain that unlike World War II formations, with concentric circles of protective escort ships surrounding the carriers, today's formations are spread over vast expanses of sea, often with the ships out of sight of one another. Dispersion makes it more difficult for an enemy to determine the defense plan, or to target multiple ships in a single attack. Guided-missile ships, radar picket vessels, submarines, fast replenishment ships, and airborne early-warning (AEW) aircraft have been added.	45

Chapter 1 / Section 1: NS3-M1U2C1S1 – Naval Command and Control

Video 2 on Modern Naval Striking Forces	Show video 2 on modern Naval Striking Forces.	46
Modern Naval Striking Forces	Explain that protecting the carrier strike group from surprise air attack are the airborne early- warning aircraft and combat air patrol (CAP) fighters.	47
Video 3 on Modern Naval Striking Forces	Show video 3 on modern Naval Striking Forces.	48
Modern Naval Striking Forces	Explain that during surface action, aircraft are used for tactical scouting and attacking the enemy to cause damage, destroy, or demoralize enemy forces. Surface action groups (SAGs) may be formed from the surface warships of the CVBG and detached for particular tasks, such as destruction of isolated enemy units, shore bombardment, or scouting missions	49
Modern Naval Striking Forces	Explain that when surface action occurs, it is usually a series of rapid engagements, often overlapping. Surface warfare ships such as cruisers and destroyers are moved in and out of battle for attack, pursuit, or mopping-up operations. Maneuvers to change from an approach or cruising formation to a battle disposition, or formation, are called deployment of forces. This is a tactical deployment for battle and differs from a normal overseas deployment of ships to the Mediterranean on a cruise, for example.	50
Modern Naval Striking Forces	Explain that a battle formation is not a precise formation, for each ship must be able to meet its own opposition as it occurs. However they may be arranged, surface warships in a battle formation are usually close enough to each other that some mutual support is possible. Such ships are often referred to as a surface action group (SAG).	51-52
Review Question	The Review Question is “Define the CAP and state its purpose.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	53
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	54
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	55

Chapter 1 / Section 1: NS3-M1U2C1S1 – Naval Command and Control

III. Supplemental Activities -

A. In Class Activity:

Supplies required: handout Carrier Strike Group for Take Home Activity.

When: The In-Class activity can be done any time in the lesson after slide 35

- In Class: Cadets will make a graphic that illustrates the organization of naval command and control. The graphic should include the distinction between combatant commander, unified command and specified command.
- Time should be made to share and explain the graphics created.

B. Take Home Activity: Cadets will complete the “Carrier Strike Group” activity

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 1: NS3-M1U2C1S1 – Naval Command and Control

Activity 1: Take Home Activity- Carrier Strike Group

Name: _____ Date: _____ Class: _____

Directions: You have been selected to create a new carrier strike group. You will need to access the world-wide situation and report to others the details about this group and how it will be used. Prepare your report by answering the following questions.

1. To what fleet will this CSG be assigned? Why did you choose this fleet?

2. Create an emblem for this group and explain why these words, symbols and colors were used.

3. What is the objective of this CSG? Describe the mission that they will be assigned.

4. What will be the composition of this CSG? Describe the equipment that will be included.

5. Where will you deploy this group given the world situation today?

Chapter 1 / Section 2: NS3-M1U2C1S2 – Fleet Aviation Organization

(Section 2 of 3)

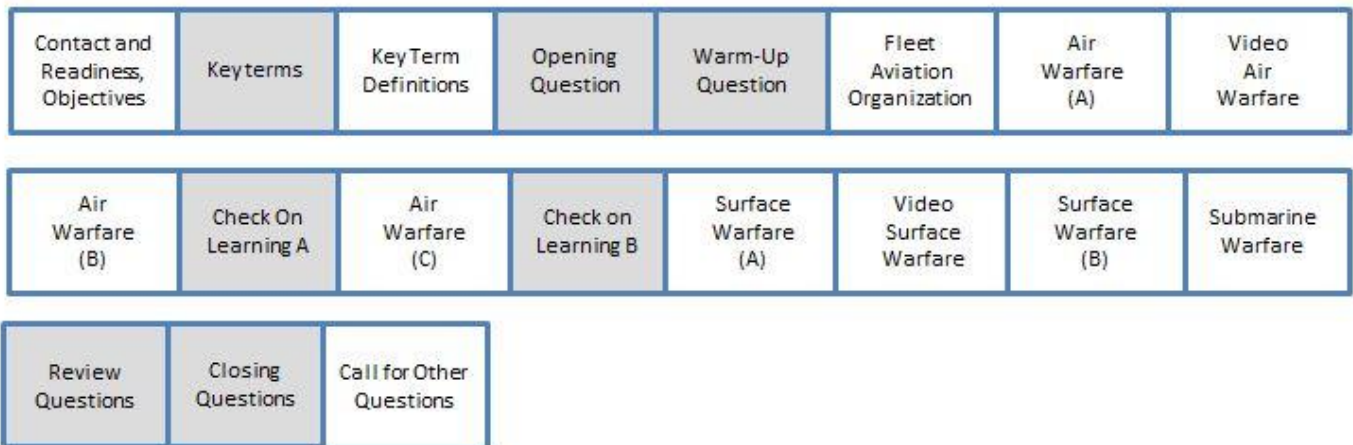
What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

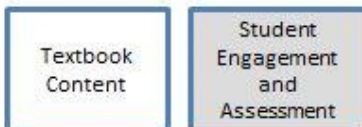
Skills and Knowledge to be Gained:

1. Describe fleet aviation organization
2. Describe air warfare
3. Describe surface warfare
4. Describe submarine warfare

LESSON FLOW OUTLINE



Key:



Chapter 1 / Section 2: NS3-M1U2C1S2 – Fleet Aviation Organization

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 2, Chapter 1. Place a checkmark beside the NS3-M1U2C1S2 PowerPoint presentation, and these two CPS question deck files: NS3-M1U2C1S2 - Key Terms and NS3-M1U2C1S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What do you think is meant by the term “dogfight,” as related to aviation?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing fleet aviation organization.	6
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	7
Fleet Aviation Organization	Explain that Naval air forces are broken down into functional air wings, each of which supports squadrons of one type of aircraft such as fighter, AEW, attack, control, and patrol. The air wings are responsible for training and preparing their squadrons for deployment, either aboard ships or in the case of patrol squadrons to advance bases. A squadron may contain anywhere from four to fifteen aircraft, usually of the same type and model, and from 150 to in excess of 400 personnel, depending on the kind of aircraft, mission, and duty assignment.	8-12

Chapter 1 / Section 2: NS3-M1U2C1S2 – Fleet Aviation Organization

Fleet Aviation Organization	Explain that when a squadron is deployed on an aircraft carrier, it becomes an operational unit of the air wing of that carrier, which is comprised of various types of squadrons. Typically a carrier air wing today consists of several F/A-18 strike fighter squadrons, plus airborne early-warning (AEW), electronic attack (EA), and helicopter squadrons, totaling altogether seventy to eighty aircraft. Upon completion of a deployment, usually of about six months in duration, the individual squadrons return to their respective functional wings to begin another training cycle.	13-14
Air Warfare	Explain that all air warfare may be roughly broken down into three main classifications: air-to-surface, air-to-air, and surface-to-air.	15
Air Warfare	Explain that air-to-surface strike warfare includes all measures used by aircraft to attack surface targets on land and sea, including guns, missiles, bombs, and other types of air-dropped ordnance. Although carried out primarily by attack aircraft, in recent years fighters, patrol aircraft, unmanned aerial vehicles, and especially helicopters have been increasingly used in this role.).	16
Video on Air Warfare	Show video on air warfare.	17
Air Warfare	Explain that major subcategories of air-to-surface warfare are undersea warfare (USW) and surface warfare (SUW).	18-19
Check on Learning Questions A (Lesson questions 3-4)	Check in on student’s understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	20
Air Warfare	Explain that air-to-air warfare is that carried out by one or more aircraft against each other. A dogfight is close aerial combat between fighter planes. The primary type of plane involved in this type of warfare has been the fighter, but attack planes and sometimes helicopters also get involved on occasion, as do surveillance and airborne early-warning (AEW) aircraft that detect incoming hostile aircraft.	21-22
Air Warfare	Explain that many modern tactical aircraft require a crew of two—one to fly the airplane, and the other to operate the complex fire-control and weapons systems of today's sophisticated aircraft.	23
Air Warfare	Explain that surface-to-air warfare, called simply air warfare (AW) in the fleet, includes all measures designed to counter attack by hostile aircraft or guided missiles. Active AW uses aircraft, antiaircraft guns, missiles, and electronic countermeasures. Electronic countermeasures are used to jam radars, confuse guidance systems; and present false targets. Passive AW uses such tactics as cover, concealment, and dispersion.	24-25
Air Warfare	Explain that an AW ship formation is designed to provide defense in depth to the carrier or other high-value ships in the battle group. AW operations occur in three phases as attacking aircraft approach the formation. The first phase involves searching for, finding, evaluating, and reporting the enemy attack force. This is followed by initial AW defense measures. Taken while attacking aircraft are still distant from the force, these may include electronic deception, aircraft intercepts, and long-range surface-to-air guided-missile fire. The third phase begins when the enemy aircraft or the missiles they launch have come within antiaircraft gun range of the main body of ships. This involves close-range defense by rapid-fire guns of both large and small caliber, short-range missiles, and evasive maneuvering.	26-27

Chapter 1 / Section 2: NS3-M1U2C1S2 – Fleet Aviation Organization

Air Warfare	Explain that defense in depth against an air attack demands careful coordination between widely dispersed ships in the formation. The attackers can climb to very high altitudes or they can come in just over the waves. No matter what their altitude, their speed is likely to be supersonic. And they can fire missiles that can home in on target ships from miles away, which means that defenders must be able to react and compute defensive fire-control solutions instantaneously.	28
Air Warfare	Explain that an AW coordinator is in charge of a team that directs air defense for the entire formation. Using computerized tactical data links, the coordinator guides with direct communications and electronics the weapons systems of all ships involved with air defense. The most modern system of this type in the fleet today is called Aegis, which was described in Naval Science 1. Aegis cruisers and destroyers are able to effectively combat the most serious threat to surface ships, the low-altitude antiship missile. This virtually automatic system is regarded as the best defensive and offensive system for task groups ever developed.	29-30
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	31
Surface Warfare	Explain that surface warfare at sea has been conducted ever since two enemies went to sea in boats and later in ships. Like carrier-based strike forces, surface attack forces are primarily intended to establish command of vital sea areas so that friendly forces may operate there and enemy forces cannot.	32
Surface Warfare	Explain that until the advent of naval aviation and submarine warfare in the early part of the last century, virtually all naval warfare was conducted between opposing surface forces. Combat was sometimes between individual ships, like many of the famous actions in the American Revolution. Many major naval battles were fought between opposing battle fleets, such as the Greeks and Persians at the Battle of Salamis in 480 B.C., the defeat of the Spanish Armada by Britain in 1588, and the Battle of Jutland fought in World War I between the English and the Germans.	33
Surface Warfare	Explain that in World War II numerous surface actions were fought to establish control of vital shore areas, straits and other navigational chokepoints, and sea routes over which war supplies traveled. In the Korean and Vietnam Wars, surface actions involved mainly support of forces ashore and transportation of war materiel, and denial of these capabilities to enemy forces.	34
Surface Warfare	Explain that subsequently, surface forces were used to convoy U.S. and allied oil tankers through the Strait of Hormuz and the Persian Gulf during the Iran-Iraq War, to enforce trade sanctions and launch cruise missiles against Iraq during Operations Desert Storm and Iraqi Freedom, and to launch cruise missiles against enemy forces in Afghanistan during Operation Enduring Freedom. More recently, they have been used to protect shipping against piracy in the waters off the Horn of Africa.	35-36
Surface Warfare	Explain that long-range surface-to-surface missiles such as the Tomahawk add greatly to the capabilities of surface forces today. These missiles allow naval surface forces and attack submarines to hit land targets from positions far offshore, formerly a capability reserved for carrier air forces and ballistic missile submarines.	37
Video on Surface Warfare	Show video on surface warfare.	38

Chapter 1 / Section 2: NS3-M1U2C1S2 – Fleet Aviation Organization

Surface Warfare	Explain that surface ships used in surface warfare today include guided-missile cruisers, frigates, destroyers, and a wide variety of patrol, littoral combat, and mine warfare craft. They have many capabilities and missions, ranging from peacekeeping in the troubled areas of the world to drug traffic interdiction in the waters of the Caribbean and the Straits of Florida.	39
Submarine Warfare	Explain that historically, the mission of a submarine has been to seek out and destroy enemy surface ships, both naval and merchant. Since the advent of the nuclear attack submarine in the 1950s, the submarine's basic mission has changed. While it still seeks to destroy surface ships, its primary objective is now to sink enemy submarines. The development of the nuclear-powered ballistic missile submarine introduced yet another mission: to attack enemy strategic targets such as missile sites, heavy industry, and rail and other transportation networks with ballistic missiles.	40-41
Submarine Warfare	Explain that fleet ballistic missile submarines carry twenty-four Trident 4000-mile-range sea-launched ballistic missiles (SLBMs). They operate on 120-day rotational cycles. During their submerged patrols they operate completely independently. They are permitted to receive messages, but not to respond. They are manned by two complete crews—Blue and Gold—each with about 155 officers and enlisted men. In a typical cycle, a crew will take its ship on a two-month patrol, return home for a month's leave, have a month of refresher training ashore, and then be ready to start another deployment. While one crew is ashore, the other is on patrol with the boat.	42-43
Review Question	The Review Question is “What is the Aegis designed to do?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	44
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	45
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	46

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Tree Map on Warfare

When: During the Lesson

- In Class: During the lesson, students will fill out a tree map to organize their notes on warfare.

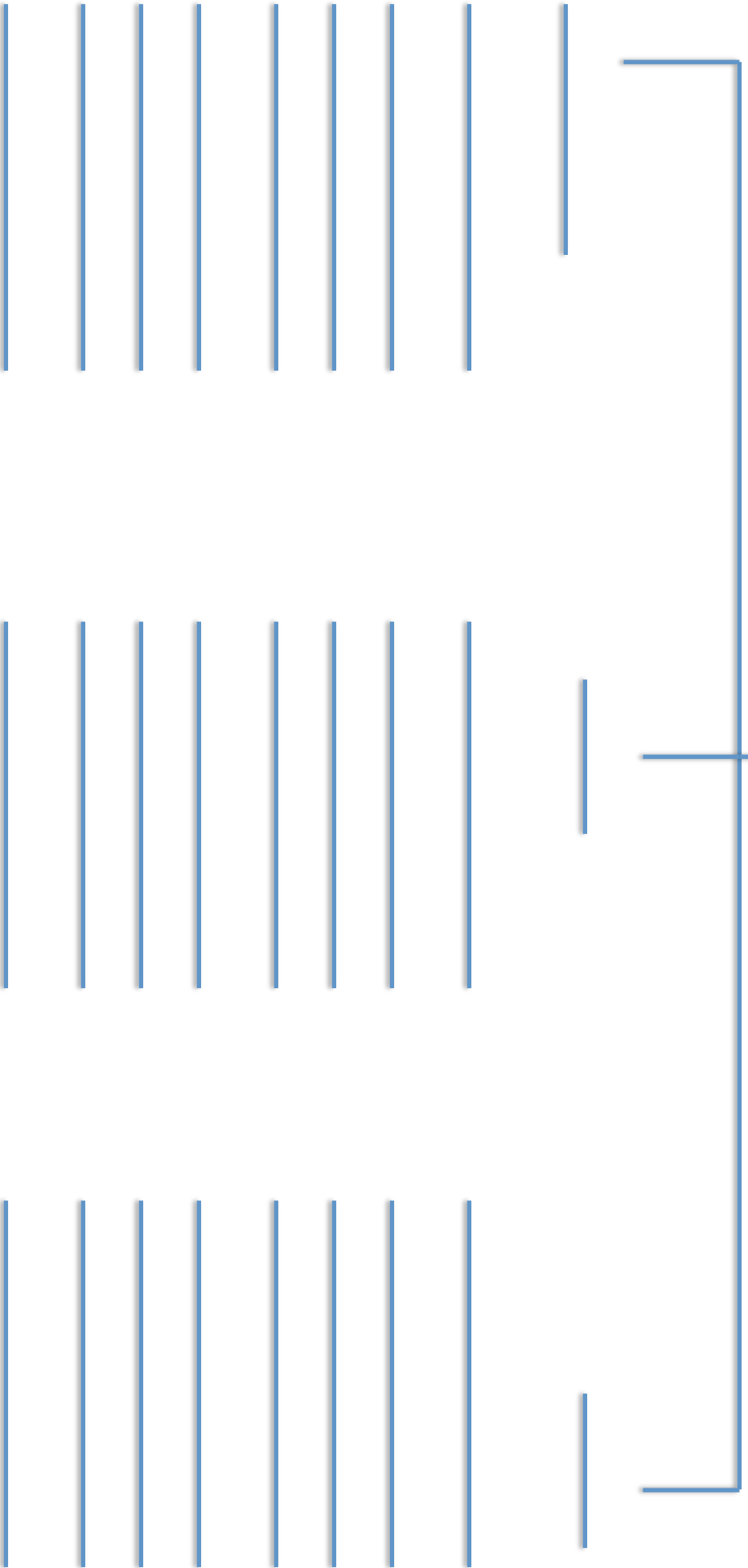
B. Take Home Activity: Cadets will read the story of Gray Lady Down from this US Navy Museum site: <http://www.history.navy.mil/branches/teach/dive/gray2.htm>

Have them answer the questions that follow. (A copy of Gray Lady Down is in the printed handouts for those that do not have access to the internet). Cadets should be prepared to discuss their answers in class with the whole group.

IV. Evaluation - see CPS database for chapter test questions.

Tree Map

WARFARE



Chapter 1 / Section 2: NS3-M1U2C1S2 – Fleet Aviation Organization

Activity 1: Take Home Activity- Gray Lady Down

Name: _____ Date: _____ Class: _____

Directions: Read the stories below and then answer the following questions and prepare for discussion in class.

Gray Lady Down

One of the most terrible things the crew of any Navy ship can hear is that a sister ship is lost at sea. Based solely on her operating configuration as an undersea vessel, the situation may be the worst for a submarine. Since the exact number and location of American submarines worldwide is secret, the actual code for a lost sub is classified.

In the 1970s, the phrase "Gray Lady Down" was used as the title of a movie about efforts to rescue a nuclear submarine that was down or unable to return to the surface. The movie was fiction, but there are two tragic instances of submarine losses under unknown circumstances. In separate incidents, Thresher and Scorpion went down with no survivors. The hulls were later discovered at depths far beyond those the boats and crew could survive.

There is a certain romance to life at sea and an element of danger in every sea voyage. To preserve and protect crew and material, all Navy vessels must be in close-to-perfect operating condition before they are cleared to get underway. But even then there are no guarantees. Two of the saddest chapters in the history of the U.S. Navy chronicle the unexplained loss of Thresher and Scorpion, two nuclear submarines on routine assignments.

USS Thresher

The mission began as a routine deep-dive test, but the crew of the USS Skylark knew something was wrong. Their test submarine had barely reached her assigned test depth when static-filled underwater telephone transmissions from far below told them things were going wrong, very wrong.

On April 10, 1963, the nuclear submarine USS Thresher (SSN-593) and submarine rescue ship USS Skylark (ASR-20) journeyed to the cold waters 200 miles east of Massachusetts for deep-diving testing. Only fifteen minutes after reaching her test depth, Thresher notified Skylark that she was "experiencing difficulties." Within moments, Skylark's crew heard a noise "like air rushing into a tank" and then there was silence. Frantic efforts to reestablish contact with the sub failed. Thresher was down with all hands, which included a crew of 112 and 17 civilian technicians on board to observe the testing. A hastily arranged search group found only bits of debris and a pair of gloves. After four months of searching, the bathyscaph Trieste located broken parts of the sub in over 8,000 feet of water. The photos taken by Trieste in August of 1963 are all that is known of Thresher's fatal accident.

Chapter 1 / Section 2: NS3-M1U2C1S2 – Fleet Aviation Organization

USS Scorpion

The story of USS Scorpion (SSN-589) is a little different, because no observers witnessed this loss. Scorpion played a vital role in the development of nuclear submarine warfare tactics by participating in different testing exercises in the 1960's. She was operating with the 6th Fleet in the Mediterranean Sea in May 1968. On May 21, 1968, Scorpion with her crew of 99 last reported their position about 50 miles south of the Azores. The sub was reported overdue at Norfolk, VA six days later. In October 1968, the research ship Mizar, located Scorpion's splintered hull in 10,000 feet of water 400 miles southwest of the Azores. Although information and pictures collected by the Navy and Trieste record the site and wreckage, no reason for the loss has been recorded. There were no survivors.

Answer the following questions and prepare for discussion in class.

1. How are the two submarine tragedies different? The same?
2. Explain the role of Trieste. Why was it important for the Navy to photograph the wreck sites?
3. Think about why the sinking of a nuclear submarine might be particularly dangerous.
4. What other ship wrecks do you know about and how are they different from Thresher and Scorpion?

Chapter 1 / Section 3: NS3-M1U2C1S3 – Undersea Warfare

(Section 3 of 3)

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe undersea warfare
2. Describe amphibious warfare
3. Describe the principle objectives for amphibious operations
4. Describe information warfare
5. Describe space warfare

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Undersea Warfare (A)	Video Undersea Warfare	Undersea Warfare (B)
Check On Learning A	Amphibious Warfare (A)	Video Amphibious Warfare	Amphibious Warfare (B)	Information Warfare	Check on Learning B	Space Warfare	Review Questions
Closing Questions	Call for Other Questions						

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 2, Chapter 1. Place a checkmark beside the NS3-M1U2C1S3 PowerPoint presentation, and these two CPS question deck files: NS3-M1U2C1S3 - Key Terms and NS2-M1U2C1S3 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 3: NS3-M1U2C1S3 – Undersea Warfare

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the different types of warfare. First we will learn about undersea warfare as well as amphibious warfare. We will discuss information warfare and learn about the revolutionary and comprehensive network system, ForceNet. Lastly, we will talk about space warfare and satellites.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – “RPS”)	<p>This Opening Question is “What do you already know about the Convoy System?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing undersea warfare.</p>	7
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	8
Undersea Warfare	Explain that until 1917 there was no adequate means of finding a submerged submarine. During World War I, however, three major developments established antisubmarine warfare (ASW), now referred to as undersea warfare (USW).	9
Undersea Warfare	Explain that the first of these was the convoy system. This method of grouping ships together for mutual protection with destroyers as escort ships proved to be very effective. Proposed by Admiral William Sims, the convoy system enabled over 2 million American troops to cross the Atlantic to Europe without a single loss of life due to submarine action.	10
Undersea Warfare	Explain that second was the introduction of the directional hydrophone. This was the beginning of effective underwater sound detection equipment. Hydrophones could be lowered from two or three destroyers or submarine chasers at the same time. Using a mathematical process called triangulation, the submarine's location could then be pinpointed by the sounds of its engines and propellers.	11-12
Undersea Warfare	Explain that finally, the depth charge gave the destroyer a weapon that could destroy a submarine underwater. Essentially a large canister of high explosives, the depth charge could be rigged to detonate at a preset depth.	13

Chapter 1 / Section 3: NS3-M1U2C1S3 – Undersea Warfare

Undersea Warfare	Explain that American scientists improved on the hydrophone system during World War II, calling it the sound navigation and ranging system (sonar), or underwater sound ranging system. By bouncing sound pulses off the hull of a submarine and measuring the time lapse until the return of their reflections, the range and bearing of the submarine could be determined almost exactly.	14
Video on Undersea Warfare	Show video on undersea warfare.	15
Undersea Warfare	Explain that since World War II significant advances in USW have been made. The helicopter has become a major USW platform. The highly maneuverable nuclear-powered attack submarine (SSN) has become the most effective USW vessel. The SSN can use sophisticated sensing devices to find and attack enemy submarines with homing torpedoes and a variety of long-range missiles (including subsurface-to-subsurface types).	16
Undersea Warfare	<p>Explain that modern cruisers, frigates, destroyers, and USW aircraft, both shore-based and carrier-based, have a variety of sensors to locate and attack submarines. Some of these include the following:</p> <ul style="list-style-type: none"> • Radio sonobuoys, which contain a hydrophone and radio transmitter to help locate submarines by transmission of a submarine's noises to the aircraft • Magnetic anomaly detection (MAD) gear, which detects variations in the Earth's magnetic lines of force created by a submarine • Dipping sonar, a device lowered into the sea from a hovering helicopter to echo-range a submarine • infrared detection, a method involving electronic detection of heat emitted from submarines towed arrays of sensors that can be streamed behind warships to detect low-level sound emitted from submarines at long range 	17
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	18
Amphibious Warfare	Explain that amphibious warfare, like surface warfare in general, goes back for centuries, to the ancient Greeks and their assault on Troy. Amphibious assaults and withdrawals have played key roles throughout history, including the American Revolution and the Civil War. Undoubtedly the most famous amphibious operation of World War I was the ill-fated Allied invasion of the Gallipoli Peninsula in the Turkish Straits. There, logistics and communications were inadequate, heavy mining caused major ship losses, and strongly entrenched Turkish forces could not be driven from their fortifications. The lessons learned from the disastrous Gallipoli campaign assisted in the development of modern amphibious warfare doctrine.	19-21
Amphibious Warfare	Explain that in World War II amphibious operations were developed into a highly refined military science. The invasion of Normandy in France brought ashore 1 million men, 183,000 vehicles, and 650,000 tons of supplies from 3,000 vessels in the first twenty-eight days of the assault!	22-23
Amphibious Warfare	<p>Explain that there are four principal objectives for amphibious operations:</p> <ul style="list-style-type: none"> • To capture territory from which a land campaign can be launched and supported (it may be to out-flank and surprise, or to gain a base for forward movement of forces) • To capture a land area from which air operations can be launched and supported 	24

Chapter 1 / Section 3: NS3-M1U2C1S3 – Undersea Warfare

	<ul style="list-style-type: none"> To prevent enemy use of selected territory or facilities To destroy enemy facilities, interrupt their communications, and cause them to spread their forces to try to respond to amphibious raids 	
Amphibious Warfare	Explain that the amphibious operation is highly useful because of its mobility and flexibility. In other words, it has the ability to concentrate forces and to strike with great strength at selected points. It exploits the element of surprise. At the right time, it can strike where the enemy is known to be weak. In fact, the mere threat of an amphibious assault may be sufficient to cause the enemy to disperse his forces and make expensive and wasteful efforts to defend a long coastline. The amphibious striking forces of the United States normally consist primarily of Navy and Marine Corps forces but may include personnel and equipment from every service.	25
Video on Amphibious Warfare	Show video on amphibious warfare.	26
Information Warfare	Explain that the gathering, transmission, storage, processing, and accessing of information has always been of concern to war fighters, and is critical to success in modern warfare. Information warfare, sometimes called information operations, is any action taken to negatively affect the information or information processing capabilities of an enemy, safeguard our own information, or exploit that information militarily. It includes such things as electronic warfare, psychological warfare operations, military deception, computer network defense, and operations security.	27
Information Warfare	Explain that in order to provide timely processing of information at all levels, the Navy is currently implementing a revolutionary new command, control, communications, computers, and intelligence (C4I) network called ForceNet. When fully implemented, it will revolutionize the way in which naval operations are conducted. Based on cutting-edge information and communication technology, ForceNet will use a common database instantly accessible from land, sea, and air to provide real-time access to all information required for the conduct of naval operations. It will link together not only all U.S. forces involved in these operations, but also any allied forces as well.	28
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	29
Space Warfare	Explain that the use of space-based communications, intelligence, and navigation systems has become increasingly important to the Navy. Naval aviators were among the first selected for astronaut training, and they served as crewmen on many of the early space exploration missions, as well as in the space shuttle program.	30-31
Space Warfare	Explain that Navy navigation satellites have been providing global all-weather positioning information to both military and civilian users since the 1960s, and communications satellites have been a mainstay of the Navy communications system for many years. Space satellite systems play a key role in linking widely dispersed forward deployed naval forces with each other, the supporting shore establishment, forces of other services and other nations, and government and nongovernment agencies. They have become indispensable tools in the command and control of naval forces.	32-33
Space Warfare	Explain that space systems provide a unique capability to collect and disseminate large volumes of information. They can provide sustained, covert surveillance of the battlespace to allow timely indications and warning of hostile actions. They can detect, classify, and identify high-interest targets and can help in assessing battle damage. They can provide highly accurate positional data to aid navigation, weapons direction,	34-35

Chapter 1 / Section 3: NS3-M1U2C1S3 – Undersea Warfare

	mapping and charting, and search and rescue. Finally, they can tie together naval, joint, and multinational forces across large areas of the globe by means of high-capacity, secure communications.	
Space Warfare	Explain that because of their extended line of sight, space systems have unique characteristics that make them especially valuable to naval forces. They provide global coverage of areas of interest. Depending on their orbits, satellites can provide either periodic short-duration coverage of specific points on the Earth's surface, or continuous, long-dwell coverage of larger areas. Communications satellites are now the primary means of providing immediate worldwide connectivity to all naval forces at sea, regardless of the location, weather, or type of operation.	36-37
Space Warfare	Explain that the development of increasingly capable satellite systems is continuing and will undoubtedly result in the addition of many more capabilities in the future, including precise targeting and guidance for long-range cruise missiles, large-area electronic surveillance and warfare coordination, and completely passive detection and tracking of enemy ships, aircraft, and missiles. All these will have a great effect on future naval tactics and strategies.	38
Review Question	The Review Question is “Explain why information warfare is important to our country.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	39
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	40
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	41

Chapter 1 / Section 3: NS3-M1U2C1S3 – Undersea Warfare

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handout for Take Home Activity; for In class activity, download the PowerPoint “Name that Sound” using this link:
http://www.dosits.org/files/dosits/DOSITS-Name_That_Sound.zip (Zip File, 12.14 MB) (9.6MB zipped).

When: This activity will take place anywhere in the lesson, but fits with a discussion on Sonar technology.

- In-Class: Cadets will participate in the “Name That Sound” PowerPoint from *Discovery of Sound in the Sea* project, which you have downloaded in advance.
- Students can use CPS devices to answer the questions in this activity.

B. Take Home Activity: Use the handout and have the cadets write an essay that discusses how advancements in technology change the way conflicts are managed and wars are fought. See handout for instructions.

Interesting Resources:

- This [site](http://www.dosits.org/) discusses sound and the ocean. (In Class activity is from this site)
<http://www.dosits.org/>
- Here is a [video](http://www.wideo.fr/video/iLyROoaft87F.html) of a boy who uses echolocation.
<http://www.wideo.fr/video/iLyROoaft87F.html>
- National Geographic [video](http://video.nationalgeographic.com/video/news/us-ocean-floor-mapping-vin?source=relatedvideo) on how scientists use SoNar.
<http://video.nationalgeographic.com/video/news/us-ocean-floor-mapping-vin?source=relatedvideo>

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 3: NS3-M1U2C1S3 – Undersea Warfare

Activity 1: Take Home Activity – Warfare Technology

Name: _____ Date: _____ Class: _____

1. List technologies you learned about for undersea warfare.
2. List technologies you learned about for information warfare.
3. List technologies you learned about for space warfare.

You are to write a five paragraph essay that discusses how advancements in technology change the way conflict in the world is dealt with and/or how wars are fought.

Organize your essay as follows:

- Paragraph one: Introduction
Use a clear and concise topic sentence.
- Paragraph two:
First supporting paragraph.
- Paragraph Three:
Second supporting paragraph.
- Paragraph Four:
Third supporting paragraph.
- Paragraph Five: Conclusion
Reword your three examples that support your topic sentence and conclude your essay.

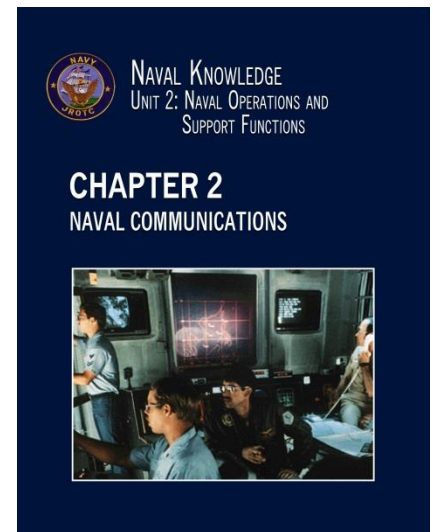
Module 1 Unit 2 Chapter 2: NS3-M1U2C2 – Naval Communications

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe the major functions of naval telecommunications
2. Describe the major telecommunications commands under the Chief of Naval Operations (CNO)
3. Cite ways in which electronic equipment has aided in communication
4. Explain the purpose of International Morse code
5. Describe the advantages of visual communication
6. Describe the various sound and pyrotechnic signaling devices



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.
- W.11-12.10. Write routinely over extended time frames...for a range of tasks, purposes, and audiences.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11-12 reading and content, choosing flexibly from a range of strategies.
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

Next Generation Science Standards (NGSS)

Module 1 Unit 2 Chapter 2: NS3-M1U2C2 – Naval Communications

HS - High School Physical Sciences

- HS-PS4-2. Evaluate questions about the advantages of using a digital transmission and storage of information.

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 2 / Section 1: NS3-M1U2C2S1 – Naval Communications

(Section 1 of 1)

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe the major functions of naval telecommunications
2. Describe the major telecommunications commands under the Chief of Naval Operations (CNO)
3. Cite ways in which electronic equipment has aided in communication
4. Explain the purpose of International Morse Code
5. Describe the advantages of visual communication
6. Describe the various sound and pyrotechnic signaling devices

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction (A)	Video Communications	Introduction (B)
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Naval Tele-Communications (A)	Check On Learning A	Naval Tele-Communications (B)	Video Naval Tele-Communications	Naval Tele-Communications (C)	Check on Learning B	International Morse Code (A)
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Video International Morse Code	International Morse Code (B)	Visual Communications (A)	Video Visual Communications	Visual Communications (B)	Sound and Pyrotechnic Signaling	Review Questions
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Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Chapter 2 / Section 1: NS3-M1U2C2S1 – Naval Communications

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 2, Chapter 2. Place a checkmark beside the NS3-M1U2C2S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U2C2S1 - Key Terms and NS3-M1U2C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the different methods of Naval telecommunications and their importance. We will discuss different forms of communication such as flashlight, flag signals and International Morse Code. Lastly, we will discuss visual communications and sound and pyrotechnic signaling.	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-9
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What would you consider in choosing a method of communication?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing naval communications.	10
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	11
Introduction	Explain that communication means transmitting a message so the receiver understands it accurately. The tools of communication are written and spoken words. In order to communicate well, ideas must be put in the form of words that accurately convey them. This is especially important when the messages are commands or orders.	12

Chapter 2 / Section 1: NS3-M1U2C2S1 – Naval Communications

Video on Communications	Show video on communication.	13
Introduction	Explain that naval communications is the transmission and reception of military instructions and information by sound, electronics, or visual means. The Navy operates worldwide, so it needs a global communications network. A commander must be able to communicate orders to or from ships, shore stations, and aircraft.	14-15
Introduction	Explain that communications makes it possible for a commander to evaluate a situation and determine appropriate courses of action for his units from a central command post. Without the ability to communicate, there could be no coordinated action among ships, aircraft, and ground forces.	16
Introduction	Explain that Naval communications must be reliable, secure, and rapid in both peace and war. Of the three, reliability is the most important; it must never be sacrificed for security or speed. If a choice must be made between security and speed, the originator must decide which of the two is more important.	17-18
Naval Tele-communications	Explain that the term naval telecommunications includes all of the communications effort within the Department of the Navy. These telecommunications are of three types: electrical/ electronic, visual, and sound. The main function of naval telecommunications is to meet the communication needs of the operating forces. Its secondary function is to allow administration of the naval establishment. Telecommunications includes routing, reproducing, distributing, record keeping, and encrypting and decrypting naval messages.	19-22
Naval Tele-communications	Explain that the naval telecommunications system includes all communications facilities on shore. The largest of these facilities are called naval communications stations (NavComSta). They have both transmitting and receiving equipment to give support to the fleet in a specific geographic area. Fleet commanders control all tactical communications of ships and aircraft under their command. For the operating forces, telecommunications is the voice of command in tactical situations.	23-25
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	26
Naval Tele-communications	Explain that it is the way in which ships and aircraft talk to one another. The communications organization aboard ship is under the direct control of the commanding officer. The size of shipboard communications organizations depends on the size and type of the ship. A large ship, such as an aircraft carrier or amphibious command ship, has a separate communications department. In other ships, such as destroyers or auxiliaries, the communications division is part of the operations department. Shipboard communications facilities have ample communications equipment for their needs, plus expansion capabilities in the event of emergency.	27-29
Naval Tele-communications	Explain that today we usually refer to electrical communications as electronics, which has to do with the movement of electrons in a conductor (wire), the dissemination of radio waves in or above our atmosphere, or the generation of sound pulses in water.	30
Naval Tele-communications	Explain that radio is one of the Navy's main forms of communication. Radio circuits are potentially the least secure of all communications, however, so most radio messages are encrypted, that is, sent in code. Most Navy radio messages are now encrypted electronically, so decryption by unauthorized listeners is considered nearly impossible.	31-32

Chapter 2 / Section 1: NS3-M1U2C2S1 – Naval Communications

Naval Tele-communications	Explain that the radiotelephone (voice radio) is considered one of the most basic military communication devices. Because it is easy, direct, and convenient to operate, it is used routinely for tactical communications among surface ships, ground forces, and aircraft. There is almost no delay in transmission, and acknowledgments can be returned immediately. Most tactical R/T equipment has line-of-sight capability only; that is, the radio waves go in straight lines and do not follow the curvature of the Earth. Over-the-horizon (OTH) R/T communication can be done using low frequency radio or communications satellite links. Most R/T transmissions are sent in plain language, so there must be strict circuit discipline. Prescribed frequencies, language, and procedures must be used. Broadcast R/T is considered the least secure means of electronic communications, because anyone within range can copy the message.	33-34
Naval Tele-communications	Explain that for voice communications requiring high security, automatic encryption devices are used that superimpose random noise patterns on the broadcast signal. Only properly equipped receivers can decipher such messages.	35
Video on Naval Tele-communications	Show video on telecommunications.	36
Naval Tele-communications	Explain that those using R/T voice radio communications must pronounce words properly and have a thorough knowledge of the phonetic alphabet. Because the phonetic alphabet is used routinely in the Navy and other services and will often be used during the NJROTC course of study, all cadets should learn it.	37
Naval Tele-communications	Explain that most long distance and data communication in the Navy today is done via satellite. The Navy is very active in space satellite communications research and development. Essentially, satellite communications are an application of long distance radio relay, wherein ships, ground stations, or aircraft can communicate with each other via satellite relay stations high above the Earth. There are several different groups or constellations of military communications satellites presently in orbit and more planned for the future. The services also make use of commercial communications satellites to provide extra capability when needed.	38
Naval Tele-communications	Explain that these links enable instant communications with military units worldwide, and allow for live reception of televised sporting events and personal e-mail and video cam services wherever a service member may be deployed. The Navy and other armed services transmit tactical data among surveillance and weapons control system computers on ships, ground stations and aircraft via transmission of digital data over radio networks called tactical digital information links (TADILs).	39-40
Naval Tele-communications	Explain that data transmitted over these links either directly or via communication satellites can enable geographically dispersed forces to receive a complete tactical picture of everything happening in a designated battle-space for hundreds of miles. Other links transmit tactical data between aircraft, or between air controllers on land or aboard ship and the tactical aircraft they are directing.	41
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	42
International Morse Code	Explain that International Morse Code is used for naval communications transmitted by flashing light.	43
Video on International Morse Code	Show video on International Morse Code.	44

Chapter 2 / Section 1: NS3-M1U2C2S1 – Naval Communications

International Morse Code	Explain that the code is a system in which the characters (letters, numbers, and punctuation marks) are represented by various combinations of dots and dashes. A skilled signalman sends code in evenly timed dots and dashes in which the dash is three times as long as the dot. Many NJROTC cadets may want to learn International Morse Code well enough to send and receive their names or short messages.	45
Visual Communications	Explain that visual communications may be done over short distances, weather conditions permitting. Visual means are often as reliable and convenient as radio, and usually more secure. Radio waves go out in all directions (omni-directional), whereas visual signals can only be received by observers relatively close by, and in the case of flashing light, only those in the line of sight. Visual signals include flaghoist, semaphore, and flashing light (signal light).	46-47
Visual Communications	Explain that visual communication is versatile, reliable, silent, and economical. It can be used to talk with merchant ships or foreign mariners who cannot easily communicate in English, through the use of standardized international codebooks. Further, it has the advantage of using simple equipment that does not often break down. Visual signaling is efficient and economical because it shares the communications load with radio while not using the electronic frequencies.	48
Visual Communications	Explain that the signal bridge can perform all the functions of radio except for long-distance communications. The signal force identifies other shipping and challenges unidentified vessels and sometimes aircraft. Flaghoist signaling is a rapid and accurate system of sending tactical signals or international code during daylight. A flaghoist signal system can send maneuver instructions more uniformly than any other system. Signals are repeated by those receiving them, thus ensuring that the message is received accurately. Meanings of signals that may be sent by flaghoist are contained in classified signal books held by ships in the allied navies and in international codebooks carried by all naval and merchant vessels on the high seas.	49
Visual Communications	Explain that there is a signal flag for each letter of the alphabet, one for each numeral from zero to nine, and others with special uses. A total of sixty-eight flags and pennants can be used to send thousands of signals. Decks of signal cards are available to use in learning the signal flags and pennants.	50
Visual Communications	Explain that signaling by flashing light can be done either by day or night either by using a signal light pointed at an addressee or by yardarm blinkers, which allow it to be seen omnidirectionally (360 degrees). The message is sent by means of International Morse Code, with "dots" and "dashes" of light formed by opening and closing shutters across the face of the signal light. The transmitting signalman sends one word at a time with a slight pause between the letters. The receiving signalman flashes a dash after each word is received, meaning that it has been received and he or she is ready for another.	51
Visual Communications	Explain that flashing light signaling after dark can also be done with infrared lights or filters, which make the signal invisible unless it is viewed through a special optical receiver. Infrared light signaling is called Nancy. It is a very secure method of communication and can be used effectively up to about 7.5 miles.	52
Visual Communications	Explain that semaphore uses hand flags for short-distance communications between ships. It is faster and more secure than flashing light. At night, semaphore can be done using lighted wands. Ships in close steaming formations or alongside for underway transfer and replenishment operations commonly use semaphore.	53
Video on Visual Communications	Show video on visual communications	54

Chapter 2 / Section 1: NS3-M1U2C2S1 – Naval Communications

Visual Communications	Explain that because of its speed, semaphore is better than other visual means for long messages. Speed and security are the major advantages of semaphore. Its major limitation is its short range, limited to only a few hundred yards.	55
Visual Communications	Explain that a signalman sends semaphore signals by moving his or her arms in various positions representing each letter of the alphabet. In order to increase the range and visibility of movements, he or she holds two hand flags attached to short staffs. A good signalman can send or receive about twenty-five letter groups a minute. Only thirty positions need to be learned.	56-59
Visual Communications	Explain that as a point of interest, semaphore is often used as an effective way to communicate with one another by civilian lifeguards manning isolated lifeguard towers along lengthy public beaches.	60
Sound and Pyrotechnic Signaling	Explain that sound communications include whistles, sirens, bells, and underwater acoustics. The first three are used by ships for sending a variety of emergency warning signals. These include navigational signals prescribed by the rules of the road such as fog and maneuvering signals, air raid, breakdown, and collision warnings, and wartime communications between ships in convoy.	61-62
Sound and Pyrotechnic Signaling	Explain that a waterborne sound communications method called Gertrude uses an underwater telephone system associated with submarine or destroyer sonar equipment. It can communicate either by continuous wave (CW) or voice. It is limited in range and not very secure.	63
Sound and Pyrotechnic Signaling	Explain that pyrotechnics are used for emergency signals. They are mainly of the "fireworks" variety: pistol flares; colored shell bursts, including parachute flares; aircraft parachute flares; Roman candles; and a number of colored float- and smoke-type flares. The color of the flare determines the meaning of the signal.	64-65
Sound and Pyrotechnic Signaling	Explain that distress signals indicating that a ship or person needs help are covered in the Rules of the Road unit in this text. All ships at sea are required to maintain a listening watch on radio distress frequencies at all times. It is a fundamental law of the sea that any vessel that sees or hears a distress signal must render assistance if at all possible.	66
Review Question	The Review Question is "Name three visual communications techniques commonly used over short distances." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	67
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	68
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	69

Chapter 2 / Section 1: NS3-M1U2C2S1 – Naval Communications

III. Supplemental Activities -

A. In Class Activity:

Supplies required:

When: This activity will be done as a brainstorming activity and refined as the lesson progresses.

- In-Class: Cadets will fill out the “Say What?” activity as a brainstorming exercise prior to the lesson. They will then go back to the activity during and after the lesson to add ideas they gain through the PowerPoint.
- The instructor can use the Morse Code translator to illustrate how code displays and is transmitted.

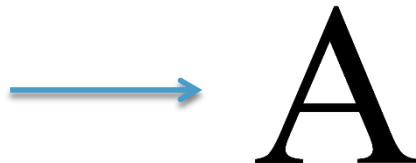
You can find the translator here: <http://morsecode.scphillips.com/jtranslator.html>

B. Take Home Activity: Cadets will construct an alphabet book that uses words and pictures to illustrate the phonetic alphabet and international Morse Code.

Example:

A is for Alpha.

• — —



IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 1: NS3-M1U2C2S1 – Naval Communications

Activity 1: In Class Activity- Say What

Name: _____ Date: _____ Class: _____

Directions: Answer the following brainstorming questions about communication and systems that communicate.

1. List ways people communicate today on a day-to-day basis. Separate them into categories: verbal, non-verbal and written.
2. List ways that you think naval units communicate with one another.
3. Can you group these methods of naval communication into categories?
4. What do you think the challenges are for naval communication?
5. Brainstorm other careers that require an intricate system of communication.
6. Why do these careers require unique forms of communication? Are any of these reasons similar to the reasons the Navy uses unique forms of communication? Explain.
7. Think about a typical day. What forms of communication do you use the most? What challenges do you face using these? Do you think these forms of communication are effective? Explain.

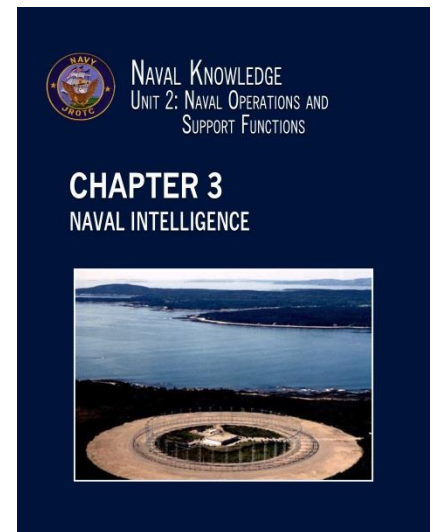
Module 1 Unit 2 Chapter 3: NS3-M1U2C3 – Naval Intelligence

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Provide a general definition of intelligence
2. Describe the roles that planning and direction, collection, processing, analysis and production, and disseminating play in the intelligence cycle process
3. Discuss the types of intelligence to include naval intelligence and air intelligence
4. Describe the makeup of the U.S. intelligence community
5. Describe the Central Intelligence Agency (CIA)
6. Describe the Federal Bureau of Investigation (FBI)
7. Describe the Department of Homeland Security (DHS)
8. Describe Department of Defense (DoD) Intelligence Agencies
9. Describe the role of the Office of Naval Intelligence (ONI)
10. Describe the basis of foreign intelligence organizations
11. Describe the roles of spies and diplomats in espionage operations
12. Define counterintelligence
13. List the three different security classifications
14. Explain the purposes of security clearances
15. Explain the consequences of security breaches



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately...
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...

Module 1 Unit 2 Chapter 3: NS3-M1U2C3 – Naval Intelligence

- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.
- D2.Civ.5.9-12. Evaluate citizens’ and institutions’ effectiveness in addressing social and political problems at the local, state, tribal, national, and/or international level.
- D2.Civ.12.9-12. Analyze how people use and challenge local, state, national, and international laws to address a variety of public issues.

Dimension 2. Economic Decision Making

- D2.Eco.5.9-12. Describe the consequences of competition in specific markets.

Dimension 2. History

- D2.His.1.9-12. Evaluate how historical events and developments were shaped by unique circumstances of time and place as well as broader historical contexts.
- D2.His.2.9-12. Analyze change and continuity in historical eras.
- D2.His.14.9-12. Analyze multiple and complex causes and effects of events in the past.

Dimension 3. Gathering and Evaluating Sources

- D3.1.9-12. Gather relevant information from multiple sources representing a wide range of views...

Dimension 4. Communicating Conclusions and Taking Informed Action

- D4.2.9-12. Construct explanations using sound reasoning, correct sequence, examples, and details with significant and pertinent information and data...
- D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.
- D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems...

Next Generation Science Standards (NGSS)

HS - High School Physical Sciences

Module 1 Unit 2 Chapter 3: NS3-M1U2C3 – Naval Intelligence

- HS-PS4-2. Evaluate questions about the advantages of using a digital transmission and storage of information.

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 3 / Section 1: NS3-M1U2C3S1 – The Intelligence Cycle

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Provide a general definition of intelligence
2. Describe the roles that planning and direction, collection, processing, analysis and production, and disseminating play in the intelligence cycle process
3. Discuss the types of intelligence to include naval intelligence and air intelligence
4. Describe the makeup of the U.S. intelligence community
5. Describe the Central Intelligence Agency (CIA)
6. Describe the Federal Bureau of Investigation (FBI)
7. Describe the Department of Homeland Security (DHS)
8. Describe Department of Defense (DoD) Intelligence Agencies

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	General Definitions (A)	Video Intelligence
General Definitions (B)	The Intelligence Cycle	Check On Learning A	Types Of Intelligence (A)	Video1 Types Of Intelligence	Types Of Intelligence (B)	Video 2 Types Of Intelligence	Types Of Intelligence (C)
Check on Learning B	The U.S. Intelligence Community	DoD Intelligence Agencies	Review Questions	Closing Questions	Call for Other Questions		

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 3 / Section 1: NS3-M1U2C3S1 – The Intelligence Cycle

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 2, Chapter 3. Place a checkmark beside the NS3-M1U2C3S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U2C3S1 - Key Terms and NS3-M1U2C3S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.	1-5
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	6
Key terms - Definitions	Reinforce the correct definition for each key term.	7-9
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What do you think is the difference between information and intelligence?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing naval intelligence.	10
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	11
Introduction	Explain that intelligence, or information about an actual or potential enemy, can give government and military leaders the knowledge they need to make good decisions. Intelligence can reduce the possibility of surprise, evaluate enemy strength, and predict an enemy area of operation. It can mean the difference between peace and war. In the event of war, it can be the difference between victory and defeat.	12-13
General Definitions	Explain that in general terms, intelligence is knowledge upon which a political or military decision or course of action may be based. Intelligence information covers many subjects: geography, transportation, telecommunications, political and	14

Chapter 3 / Section 1: NS3-M1U2C3S1 – The Intelligence Cycle

	economic conditions, armed forces, technical developments, and biographical data on leaders. All these different areas fit together like parts of a puzzle. It is necessary to consider each part in relation to others.	
General Definitions	Explain that the Encyclopedia Britannica defines military and political intelligence as "that information acquired on a national scale, usually about a rival, but sometimes about an ally or a neutral country." There is an important difference between information and intelligence. Raw information is the material collected from all sources about a given subject or country. This information becomes intelligence after it is gathered together and analyzed in order to be useful to a political or military leader in making decisions.	15
General Definitions	Explain that intelligence is often considered to be a mysterious and dangerous activity undertaken by glamorous spies. The famous story of Mata Hari, the beautiful German spy of World War I, and the fictional adventures of James Bond, Agent 007 of the British Secret Service, have given intelligence gathering a "cloak-and-dagger" image. Intelligence collection has had its moments of intrigue, mystery, and danger, but most such work is like work in any other military staff job. The main difference is that governments do not disclose how their intelligence organizations work. The practice has been to protect intelligence activity by strict security regulations.	16
Video on Intelligence	Show video on intelligence.	17
General Definitions	Explain that Espionage is the attempt to obtain information about a foreign government covertly (in secret), through the use of spies and other undercover operations. Counterintelligence, or security, is the protection of a nation's secrets. It is designed to prevent foreign countries from getting vital diplomatic, economic, and industrial information as well as military information of intelligence value. Counterintelligence, therefore, is a continuing need in peace and war.	18
The Intelligence Cycle	Explain that the intelligence cycle is the process by which information is acquired, gathered, transmitted, evaluated, analyzed, and made available as finished intelligence for policy makers and military commanders to use in decision making and action. There are five steps in the intelligence cycle: <ol style="list-style-type: none"> 1. Planning and Direction 2. Collection 3. Processing 4. Analysis & Production 5. Dissemination 	19
The Intelligence Cycle	Explain that planning and direction involves the management of the entire intelligence effort from identification of the need for data to the final delivery of an intelligence product to a consumer.	20
The Intelligence Cycle	Explain that collection involves the gathering of raw information from which finished intelligence will be produced. There are many sources of this information. Open sources include such things as radio and TV broadcasts, newspapers, periodicals, and books. Covert sources are agents and spies and, on occasion, defectors who are willing to provide valuable information obtainable in no other way. Technical collection, such as by the use of surveillance electronics and satellite photography, has also come to play an indispensable part in modern intelligence collection.	21-23
The Intelligence Cycle	Explain that processing involves the conversion of the vast amount of information coming into the system from all sources to a form more suitable for producing finished intelligence, such as through decryption and language translations. Information that	24

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	does not go directly to analysts is sorted and made available for rapid computer retrieval. Processing also refers to data reduction and interpretation of information gathered on film and tape through the use of highly refined photographic and electronic analysis processes.	
The Intelligence Cycle	Explain that analysis and production refers to the conversion of basic information into finished intelligence. It includes the assembly, evaluation, and analysis of all available data, and the preparation of a variety of intelligence products. Intelligence data is frequently incomplete and at times can be confusing. Various analysts who are subject-matter specialists in various areas weigh the information in terms of reliability, validity, and relevance. They integrate the various pieces of data into a meaningful whole, put the information in context, and produce finished intelligence that includes assessments of events or developments and judgments about the implications of the information to the end user.	25
The Intelligence Cycle	Explain that dissemination is the last step in the cycle, which logically feeds into the first, is the distribution of the finished intelligence to the consumers whose needs initiated the process. Typically, dissemination is accomplished by means of various distribution lists, each made up on a "need to know" basis. Intelligence may be disseminated by oral briefings, messages or written reports, published studies, and photographs and other media. The continuous flow of accurate, timely naval intelligence is essential to planning successful naval operations. Good intelligence, properly used by commanders, has saved thousands of lives and won many battles.	26
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	27
Types of Intelligence	Explain that intelligence may be classified according to source, such as signals (SIGINT), communications (COMINT), electronics (ELINT), photo (PHOTINT), and human intelligence (HUMINT). Another way to classify intelligence is by area. Information of interest to the Navy is collected by the Office of Naval Intelligence (ONI).	28
Types of Intelligence	Explain that Naval intelligence is concerned mainly with collecting information of interest to the Navy. It includes information about foreign (both friendly and unfriendly) ships, weapon systems, naval strategies and tactics, harbor and port facilities, and any other data that might help the Navy carry out its mission. Intelligence collected at sea or during battles is tactical in nature. By using such intelligence, a commander can try to decide what the intentions of the enemy are, and modify the battle plan accordingly.	29-30
Types of Intelligence	Explain that air intelligence is information about the offensive and defensive capabilities of actual or potential enemies and their vulnerability to air attack. Such intelligence may be both strategic and tactical. Air intelligence officers work with specially trained photo interpreters. They study photographs made by satellites and aircraft to try to learn as much as possible about an area of interest.	31-32
Video 1 on Types of Intelligence	Show video 1 on types of intelligence.	33
Types of Intelligence	Explain that during the 1960s and 1970s, special secret high-speed jet aircraft such as the U-2 and SR-71 Blackbird were developed that could fly above the ceilings of most defensive weapons and photograph wide bands of the surface with special high-resolution cameras. When these "spy planes" returned from their missions, air intelligence officers could examine the resulting film and learn a great deal about such	34

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	things as enemy fortifications, bombing damage to enemy facilities, troop dispositions, and the like. This type of intelligence was extensively used during the Vietnam War and many of the other conflicts involving U.S. forces since then.	
Video 2 on Types of Intelligence	Show video 2 on types of intelligence.	35
Types of Intelligence	Explain that during these same years the Navy used "stand-off" reconnaissance aircraft such as the EA-3, RA3, and EP-3 to gather intelligence by flying near the enemy's borders and coastlines. Supersonic aircraft such as the RF-8, RF-4, and RA-5C were used over land areas to gather photo intelligence and bomb damage assessment (BDA) immediately following air strikes on enemy targets.	36-37
Types of Intelligence	Explain that in the 1980s and 1990s continuing advances in photographic and space technology made possible the use of Earth satellites to obtain much of the kind of photo intelligence previously available only from reconnaissance aircraft and spy planes. Today's spy satellites can spot objects as small as a grapefruit from their orbits. Some are "steerable," meaning that their orbits can be changed at will to observe any area on Earth of particular interest to our intelligence agencies. Some are equipped with infrared detectors that can "see" and instantly report such things as the heat of a missile launch, bomb blast, a ship or even a submarine operating at shallow depths at sea.	38
Types of Intelligence	Explain that much use is being made of remote-controlled unmanned aerial vehicles (UAVs) for reconnaissance and intelligence-gathering purposes, as well as clandestine launch platforms for missile attacks on enemy personnel and other high-value targets. They range in size from small drone aircraft to large model airplanes, and can be launched by ships or from impromptu airstrips adjacent to areas of operations. In 2008 the US military services had some 6,000 of these UAVs, and they flew a total of some 400,000 hours of missions over Iraq and Afghanistan. Even smaller UAVs fitted with miniature cameras for battlefield intelligence are available for use by ground troops.	39-40
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	41
The U.S. Intelligence Community	Explain that the U.S. intelligence community consists of all the agencies and individuals who produce intelligence in the United States. The modern community began to take shape with the passage of the National Security Act of 1947, which, in addition to reorganizing the U.S. armed services, created the National Security Council (NSC) and the Central Intelligence Agency (CIA). The intelligence community as we know it today was established by an executive order of President Ronald Reagan in 1981. As a result of analysis of the failures and shortcomings of the community following the terrorist attacks of 11 September 2001, relationships within the community were greatly modified by the Intelligence Reform and Terrorism Prevention Act of 2004 (IRTPA).	42-43
The U.S. Intelligence Community	Explain that one of the major provisions of the act was the establishment of a Director of National Intelligence (DNI), who would henceforth set priorities and manage the budget of the national intelligence community. He is also the intelligence advisor to the NSC. The NSC sets domestic, foreign, and military policy related to national security. It is chaired by the president, and its regular attendees include the vice president, secretaries of state, defense, and treasury, and the DNI. The chairman of the Joint Chiefs of Staff is its military advisor, and other heads of departments and senior officials are invited to attend when appropriate.	44-47

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The U.S. Intelligence Community	Explain that the mission of the Central Intelligence Agency (CIA) is to provide the President, National Security Council, and other policy-making government and military officials with comprehensive foreign intelligence on matters related to national security. It also conducts counterintelligence activities and other missions related to foreign intelligence and national security, as directed by the President. Because it is a separate agency, it serves as an independent source of analysis on topics of concern to intelligence consumers at all levels of government and in the military services.	48-49
The U.S. Intelligence Community	Explain that the Federal Bureau of Investigation (FBI) is the primary agency of the U.S. Department of Justice. It serves as the chief federal criminal investigative service, as well as the main domestic intelligence agency. Its major priorities are protection against domestic terrorism, espionage and other foreign intelligence operations carried out in the United States, and cyber warfare; protection of civil rights; and combating organized, white-collar, and significant violent crime. Headquartered in Washington, D.C. with 56 field offices in major cities throughout the U.S., it employs some 30,000 agents, supervisors, lab technicians, and support personnel.	50-51
The U.S. Intelligence Community	Explain that the Department of Homeland Security (DHS) was established in 2002 to better coordinate all civilian activities related to both defense of the American homeland against terrorist attacks; and emergency disaster response, following the September 2001 terrorist attacks on the Pentagon and World Trade Centers. It includes more than twenty formerly separate government agencies, including the US Coast Guard, Customs Service, Secret Service, Immigration and Naturalization Service, and the Federal Emergency Management Agency (FEMA).	52
The U.S. Intelligence Community	Explain that at the time of its creation it represented the largest reorganization of the federal government in American history, and the most extensive reorganization of government agencies since the National Security Act of 1947. The act creating it also established the Homeland Security Council, consisting of the President, Vice President, the head of DHS, and several other cabinet members. With over 200,000 employees, DHS ranks as the third largest cabinet department; after the Department of Defense and Department of Veterans Affairs.	53
The U.S. Intelligence Community	Explain that the DHS has oversight responsibility for many aspects of national security and intelligence functions previously scattered among many different federal departments, including domestic terrorist threat assessment, immigration and customs enforcement, border and port security, and response to natural disasters and incidents involving nuclear materials, biological or chemical agents.	54
The U.S. Intelligence Community	Explain that as a means of keeping the American public advised as to the current level of terrorist threat activity, the DHS issued alerts under a program called the National Terrorism Advisory System (NTAS).	55
The U.S. Intelligence Community	<p>Explain that there are three types of alert:</p> <ul style="list-style-type: none"> • Imminent Threat: Warns of a credible, specific, and impending terrorist threat against the United States • Elevated Threat: Warns of a credible terrorist threat against the United States • Sunset Provision: An individual threat alert is issued for a specific time period and then automatically expires; could be extended 	56
DoD Intelligence Agencies	Explain that eight of the agencies comprising the U.S. intelligence community are within the Department of Defense (DOD). These are the Defense Intelligence Agency (DIA), the National Security Agency (NSA), the National Reconnaissance Office (NRO), the National Imagery and Mapping Agency (NIMA), and the various military service intelligence organizations. Also serving important intelligence roles within DOD are the Defense Attaché System, the Defense Investigative Service (DIS), and the investigative	57-58

Chapter 3 / Section 1: NS3-M1U2C3S1 – The Intelligence Cycle

	services of each of the military services, including the Naval Criminal Investigative Service (NCIS).	
DoD Intelligence Agencies	Explain that the Defense Intelligence Agency (DIA) is a designated combat support agency and the senior military intelligence component of the intelligence community. Established in 1961, its primary mission is to provide all-source intelligence to the U.S. armed services, and coordinate all military intelligence resources. Key areas of emphasis include targeting and battle-damage assessment, weapons proliferation, warning of impending crises, support to peacekeeping operations, maintenance of databases on foreign military organizations and their equipment, and as necessary, support to UN operations and U.S. allies.	59-60
DoD Intelligence Agencies	Explain that the chain of command for the DIA runs from the secretary of defense through the Joint Chiefs of Staff to the director of the DIA. Headed by a three-star military officer, its staff of both military and civilian personnel is mainly located at the Defense Intelligence Analysis Center at Bolling Air Force Base in Washington, D.C.	61
DoD Intelligence Agencies	Explain that the National Security Agency (NSA) was founded in 1952 by then-President Harry Truman. As a separately organized combat support agency within DOD, NSA plans, coordinates, directs, and performs signals intelligence and information security functions in support of both defense and nondefense U.S. government activities.	62
DoD Intelligence Agencies	Explain that the mission of the National Reconnaissance Office (NRO) is to coordinate the spaceborne reconnaissance needs of the U.S. government. Its mission is accomplished through research, development, acquisition, and operation of the nation's intelligence satellites. Throughout the cold war years the work of the NRO was so secret that even its existence was classified until 1992.	63
DoD Intelligence Agencies	Explain that the director of the NRO is appointed by the President and confirmed by Congress as the Assistant Secretary of the Air Force for Space. The Secretary of Defense has the responsibility, together with the Director of Central Intelligence, for the management and operation of NRO. It is staffed by personnel from the CIA, the military services, and DOD.	64
DoD Intelligence Agencies	Explain that the National Geospatial-Intelligence Agency, formerly the National Imagery and Mapping Agency (NIMA), was established in late 1996. The mission of NIMA is to centralize responsibility for the imagery and mapping needs of the U.S. government, a function that before its creation was spread among a dozen different government agencies. Some 9,000 people is staffed by mostly civilian professionals in fields such as cartography, imagery analysis, the physical sciences, and computer and telecommunications engineering.	65
DoD Intelligence Agencies	Explain that each military service within DOD, including the U.S. Marine Corps, has its own intelligence organization that concentrates on tactical intelligence unique to its specialized needs. <ul style="list-style-type: none"> • Office of Naval Intelligence (ONI) • Army Intelligence and Security Command (INSCOM) • Air Force ISR (Intelligence, Surveillance and Reconnaissance) Agency (AFISR Agency) • Marine Corps Intelligence Department 	66
DoD Intelligence Agencies	Explain that the U.S. Defense Attaché System (DAS) operates under the DIA. All military personnel assigned to attaché posts are members of the ambassador's staff and have diplomatic passports and status. The mission of a military attaché in a foreign	67

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	country is to collect military and political information and report it to the DIA and the parent service of the attaché. This is done legally and overtly (openly), not as espionage.	
DoD Intelligence Agencies	Explain that the senior armed forces attaché on a diplomatic post is the defense attaché. Other officers are the U.S. Naval attaché, U.S. Army attaché, and U.S. Air Force attaché. The defense attaché may be of any service and is responsible for the supervision and coordination of all attachés assigned. In addition to collecting and reporting information of intelligence interest, attachés represent the DOD to the host government and its armed forces.	68
Review Question	The Review Question is “Which military services fall under the umbrella of the DoD?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	69
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	70
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	71

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handout “CIA Intelligence Cycle Note –taking sheet”

When: This activity can be done during the lesson

- In-Class: Cadets will fill out the CIA Intelligence Cycle note-taking sheet during the lesson

B. Take Home Activity: This lesson is taken from the CIA lesson planning website:

<https://www.cia.gov/kids-page/parents-teachers/teacher-resources/index.html#lesson-plan-b-gathering>

Cadets will use the In Class assignment, “CIA Intelligence Cycle” to reference during this activity.

After cadets have completed the “Back in My Day” activity, the teacher should break the class into small groups and have students compare their findings with one another and then have the group’s report to the class. Ask students to talk about the process of gathering information and analyzing the data. What would they have done differently? What additional questions should have been asked? What have they learned about their day-to-day lives versus their subject’s? Finally, give cadets the assignment to add a paragraph about what they learned from the final group discussion about the intelligence cycle.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 1: NS3-M1U2C3S1 – The Intelligence Cycle

Activity 1: In Class Activity- CIA Intelligence Cycle Note Taking Sheet

Name: _____ Date: _____ Class: _____

Directions: Listed below are the five components to the intelligence cycle. During the lesson, record what you learned about each component.

PLANNING AND DIRECTION:

COLLECTION

PROCESSING

ANALYSIS AND PRODUCTION

DISSEMINATION

Chapter 3 / Section 1: NS3-M1U2C3S1 – The Intelligence Cycle

Activity 1: Take Home Activity – Back In My Day

Name: _____ Date: _____ Class: _____

Directions: Now that you understand the CIA Intelligence Cycle, and the different components that make up the cycle, you are going to interview a grandparent or parent to gather information about what life was like “back in their day.”

First, conduct the interview. Some sample questions might be:

1. Where did you live?
2. What did you do after school?
3. What did you do for fun?
4. Where did you go with your friends?
5. How did you communicate with your friends?
6. Family photos can also be sources of information –
 - Where did the family vacation when they were younger?
 - How does that compare to where the family vacations now?
 - What can we learn from this information?
1. How important is geography? Why do you live in this city or town? Is it driven by economics?
2. How has technology impacted lives of kids today versus when you were a kid?
3. How has the educational process changed? Or has it?

Feel free to add your own questions.

Next, write three paragraphs comparing your current day-to-day life to their subject’s life at the same age.

Chapter 3 / Section 2: NS3-M1U2C3S2 – Naval Intelligence

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe the role of the Office of Naval Intelligence (ONI)
2. Describe the basis of foreign intelligence organizations
3. Describe the roles of spies and diplomats in espionage operations
4. Define counterintelligence
5. List the three different security classifications
6. Explain the purposes of security clearances
7. Explain the consequences of security breaches

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Naval Intelligence	Foreign Intelligence Organizations	Check On Learning A
Espionage Operations (A)	Video Espionage Operations	Espionage Operations (B)	Counter Intelligence and Security	Check on Learning B	Security Classifications	Security Clearance	Consequences of Security Breaches (A)
Video1 Consequences of Security Breaches	Consequences Of Security Breaches (B)	Video2 Consequences of Security Breaches	Consequences Of Security Breaches (C)	Review Questions	Closing Questions	Call for Other Questions	

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 3 / Section 2: NS3-M1U2C3S2 – Naval Intelligence

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 2, Chapter 3. Place a checkmark beside the NS3-M1U2C3S2 PowerPoint presentation, and these two CPS question deck files: NS3-M1U2C3S2 - Key Terms and NS3-M1U2C3S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the different types of Naval Intelligence. We will discuss the history of espionage. We will also discuss the importance of security classifications and clearance and finish with an understanding of the consequences of security breaches.	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Name three key DoD agencies that are part of the Intelligence Community.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing naval intelligence.	9
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	10
Naval Intelligence	Explain that the director of the Office of Naval Intelligence (ONI) is responsible for carrying out the intelligence mission of the Navy. When capitalized, the term Naval Intelligence refers to this organization. When referring to the information gathered and processed, the term naval intelligence is not capitalized.	11-12

Chapter 3 / Section 2: NS3-M1U2C3S2 – Naval Intelligence

Naval Intelligence	Explain that located primarily in the National Maritime Intelligence Center in Suitland, Maryland, ONI is the national production center for global maritime intelligence. It is the center of the Navy's expertise for all maritime surface, subsurface, and air-related intelligence issues.	13
Naval Intelligence	Explain that the Naval Criminal Investigative Service (NCIS) is the counterintelligence and investigative arm of the Navy. Its purpose is to investigate personnel and situations when requested by higher authority. NCIS concentrates its efforts solely on criminal and security investigations. Matters investigated must be directly related to the Navy and Marine Corps and must be serious enough to be felony offenses punishable under military law. Typical investigations involve arson, black-marketing, espionage, sabotage, narcotics violations, and losses of classified information.	14-15
Foreign Intelligence Organizations	Explain that the general organization of intelligence agencies in most foreign countries is quite similar to the United States. A central directing organization in the home capital deals with political, economic, and industrial intelligence, security, and military intelligence. Since the main job of the security organization is to safeguard the country's intelligence system and operating methods, details about these organizations in foreign countries are usually scarce. Intelligence organizations are represented abroad by attachés at embassies and other diplomatic posts. Military intelligence is managed by the service intelligence chiefs.	16
Foreign Intelligence Organizations	Explain that while these aspects of intelligence are similar in most countries, security methods are usually considerably different. In the democracies, security measures are limited by laws that apply to all citizens. In authoritarian countries such as Cuba, China, and Iran, however, various kinds of secret police organizations such as the old Soviet KGB are responsible for internal security. Secret police agents are placed in all levels of society in order to get information about their own citizens and to try to stifle any opposition to the government.	17-18
Foreign Intelligence Organizations	Explain that activities known to fall within the scope of these agencies include arrest, detention, interrogation, and confiscation. Internal or external include sabotage, political and military assassination, and sponsorship of terrorists, spy groups, intelligence groups, and propaganda and agitation groups.	19
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	20
Espionage Operations	Explain that almost all nations have espionage organizations. Many of their operations are carried out by secret agents called spies. They are usually well-trained specialists in either political or military affairs, the two main categories of espionage. They must have a great deal of self-discipline, courage, patience, and ability to see and accurately report important matters. A person who becomes a spy usually does so for one of these reasons: love of own country, hatred of a country or its form of government, or need for money. In addition, fear is often used as a motivator. This is either fear for the spy's own safety or, more commonly, fear that his or her family or relatives will suffer if the individual does not perform satisfactorily.	21-22
Espionage Operations	Explain that there is no question about the effectiveness of foreign espionage around the world. Spy rings have been uncovered in the highest levels of government and in the military services of most Western nations. Information about the latest computers, nuclear weapons, submarine quieting systems, and missiles has been stolen by both foreign and domestic spies in America and Western Europe. Radio bugging devices have been found in our embassies in many foreign capitals throughout the world.	23-24

Chapter 3 / Section 2: NS3-M1U2C3S2 – Naval Intelligence

Espionage Operations	Explain that political espionage attempts to get important information about politics, industry, commerce, agriculture, labor, transportation, and other such matters. More recently, industrial espionage has become a major threat to companies developing new technologies in electronics, weapons systems, computers, and various high-value consumer products.	25
Video on Espionage Operations	Show video on espionage operations.	26
Espionage Operations	Explain that in peacetime diplomats from all countries are expected to observe and report what goes on in the places they are stationed. They must report current events in the host country to their home governments, simply because this information helps maintain relationships between the two countries.	27
Espionage Operations	Explain that so long as these diplomats conduct themselves in an open (overt) manner and do not attempt to bribe officials, steal documents, or sneak photos of forbidden areas, the host country welcomes them and gives them special privileges. If they are caught violating this trust, however, the host country may demand that they be recalled (sent home). Overt collection activities are considered the legitimate duties of diplomats, so they are not considered to be spies under international law.	28-29
Espionage Operations	Explain that espionage, however, does not involve just a few spies and diplomats trying to gather military information. Rather, it is a mass effort, carried out in all fields, by thousands of people. Many of these are one-time informants. The intelligence organizations gather up bits and pieces of information from all over the globe and slowly piece together a story. A single fact dropped unintentionally may prove to be the missing piece of an important puzzle.	30-31
Espionage Operations	Explain that the Navy has much valuable information, so it can be expected that attempts are always being made to get answers from naval personnel. New electronic equipment, training exercises, readiness, amount and types of supplies and ammunition aboard, sailing dates and operational schedules, among many other things, are common topics of conversation among Sailors. The person in uniform must always be alert. In the past, agents have been found at naval installations taking pictures and stealing documents, bugging telephones, and talking to personnel when they are off duty.	32-34
Counter Intelligence and Security	Explain that espionage is combated by counterintelligence. Counterintelligence can be defined as the identification and neutralization of the threat posed by foreign intelligence services, and the manipulation of those services for the manipulator's benefit. The main job of counterintelligence personnel is to prevent espionage and treacherous acts and to seek out and arrest spies. The chief of naval operations controls all policies relating to the security of classified matter in the Navy. Instructions on the security system are issued by the CNO in a publication called the Security Manual. Classified information is compromised if it is disclosed to a person who is not authorized for access.	35-37
Counter Intelligence and Security	Explain that classified material may be compromised by one of the following means: <ul style="list-style-type: none"> • Capture or salvage • Theft, espionage, observation, or photography • Interception of communications traffic • Electronic tracking devices • Communications traffic analysis • Cryptanalysis (breaking of codes) • Carelessness of personnel 	38-39

Chapter 3 / Section 2: NS3-M1U2C3S2 – Naval Intelligence

Counter Intelligence and Security	Explain that despite the Cold War having ended, the United States remains a primary intelligence target for many countries and terrorist organizations, including some traditional allies who have increased their attempts to acquire economic and corporate secrets. What has changed in the post–Cold War world is the ease with which intelligence gatherers can operate in the United States. The relaxation of tension, plus continual advances in spying technology, have made it increasingly difficult for the United States to implement successful counterintelligence measures.	40-41
Check on Learning Questions B (Lesson questions 5-6)	Check in on student’s understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	42
Security Classifications	Explain that in the United States, official material that must be protected in the interest of national defense may be classified in one of three ways, in descending order of importance: top secret, secret, and confidential. These classifications indicate the degree of protection to be given the material, equipment, or information. The appropriate classification is determined by the originator of the material, based on its content. Top secret is used for material that could result in great damage to the nation if revealed. Secret is for material that could cause serious damage. Confidential is for material that could be harmful to national security.	43-46
Security Classifications	Explain that some classified publications have very limited distribution. These are called registered publications. Each one is assigned an account number and is delivered either by an officer in the Armed Forces Courier Service or from special registered publications vaults. At regular intervals, each of these publications must be accounted for by the command's registered publications custodian, and a report made to higher headquarters. Matter that usually falls into this category includes code and cipher books, communications books, tactical publications, and intelligence manuals.	47-48
Security Classifications	Explain that each ship, large aircraft, and naval facility has an emergency destruction bill for classified materials in the event of imminent capture by an enemy. Aboard ship, if there is no time for burning or shredding them, documents may be placed in weighted bags with holes and dropped into deep water. Coding devices and other classified equipment may be smashed and parts scattered in deep water, or melted by chemical bombs that are ignited by electric batteries.	49-50
Security Clearance	Explain that before anyone is allowed to receive, see, or use classified information, he or she must have a security clearance. This is a document indicating that the person's background has been properly investigated by the government and stating for which classification level the person is cleared. Persons who have authorized access to classified information must be of unquestionable loyalty, integrity, trustworthiness, and character	51-52
Security Clearance	Explain that the handling of classified material is a matter requiring the utmost trust and confidence, for the welfare of the whole nation could be at stake.	53
Security Clearance	Explain that no person is entitled access to classified matter solely because of his or her rank, office, position, or because he or she has a certificate of clearance. The latter only establishes eligibility for access. To whom information can be disclosed is determined not only by the classification of the material and the security clearance of the person, but also, above all, by whether the person has a need to know the information to do a job.	54
Consequences of Security Breaches	Explain that there have been several highly publicized incidents of serious security breaches (losses of classified materials or information) in the Navy and other government agencies over the years. One of the worst of these involved the compromise of secret ballistic missile submarine communications systems and other	55-56

Chapter 3 / Section 2: NS3-M1U2C3S2 – Naval Intelligence

	highly classified technology by a ring of individuals led by a Navy warrant officer named John Walker during the 1970s and early 1980s. It was widely concluded that much of the Soviet Navy's rapid advancements in submarine quietness technology in the 1980s could be directly related to the disclosures of Walker and the other members of his group.	
Video 1 on Consequences of Security Breaches	Show video 1 on consequences of security breaches.	57
Consequences of Security Breaches	Explain that another serious case that surfaced in 1994 was that of a former CIA employee Aldrich Ames and his wife, who were charged in that year with obtaining more than \$2.5 million from the Soviet and later the Russian governments for espionage activities they carried out for over nine years. Among other things, they passed to the Soviets the identities of hundreds of U.S. agents in Soviet-controlled countries, some of who were without doubt killed as a result during these years.	58
Video 2 on Consequences of Security Breaches	Show video 2 on consequences of security breaches.	59
Consequences of Security Breaches	Explain that these individuals were convicted of security violations and are presently serving lengthy sentences in federal prisons: <ul style="list-style-type: none"> • Aldrich Ames • Jerry Whitworth • Robert Hanssen 	60
Consequences of Security Breaches	Explain that every Navy person should be continually aware of the damage that a security breach can do to our Navy and our nation, and take all precautions possible to safeguard any classified material or knowledge that may be entrusted to him or her. Should any Navy person be contacted for potential espionage purposes, or should they wish to report any possible espionage activities or incidents, there is a toll-free phone number that they can call anytime to report such suspicions.	61
Review Question	The Review Question is “If classified information is compromised, what are the possible damages to the nation?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	63
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	64
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	65

Chapter 3 / Section 2: NS3-M1U2C3S2 – Naval Intelligence

III. Supplemental Activities -

A. In class Activity:

Supplies required: Internet access or a downloaded copy of the TED interview; handout for take home activity

When: This activity can take place before, during or after the lesson.

- Cadets will watch the TED interview with Edward Snowden regarding American rights around surveillance and internet freedom.
- The interview can be found on this website:
https://www.ted.com/talks/edward_snowden_heres_how_we_take_back_the_internet

B. Take Home Activity: Have the cadets use the handout and conduct a survey gathering public opinion about spying and espionage. Once students have conducted an adequate data, have them create a report showing their findings and drawing conclusions from the results with graphs and text.

This lesson is adapted from The Spy Museum:

<http://www.spymuseum.org/education-programs/educators/lesson-plans-activities/>

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 2: NS3-M1U2C3S2 – Naval Intelligence

Activity 1: Take Home Activity – Spying and Espionage

Name: _____ Date: _____ Class: _____

Directions: Conduct a survey gathering public opinion about spying and espionage. Once you have an adequate data supply, create a report showing your findings and the conclusions from the results with graphs and text.

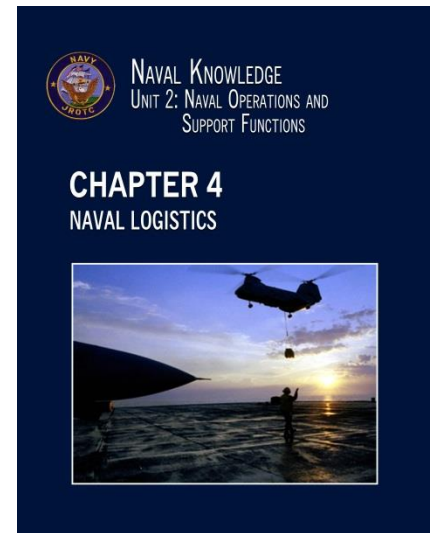
Module 1 Unit 2 Chapter 4: NS3-M1U2C4 – Naval Logistics

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe the Navy's logistics supply and service system that began during World War I
2. Describe the principles of logistics that come into play in logistics planning at all levels
3. Describe the six functional areas of logistics
4. Explain the following four elements of logistics: acquisition, distribution, sustainment and disposition
5. Describe logistics in modern warfare



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.
- W.11-12.10. Write routinely over extended time frames...for a range of tasks, purposes, and audiences.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Module 1 Unit 2 Chapter 4: NS3-M1U2C4 – Naval Logistics

Dimension 2. Geography

- D2.Geo.2.9-12. Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions and their political, cultural, and economic dynamics.
- D2.Geo.4.9-12. Analyze relationships and interactions within and between human and physical systems to explain reciprocal influences that occur among them.
- D2.Geo.12.9-12. Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.

Dimension 4. Communicating Conclusions and Taking Action

- D4.2.9-12. Construct explanations using sound reasoning, correct sequence, examples, and details with significant and pertinent information and data...
- D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.
- D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 4 / Section 1: NS3-M1U2C4S1 – Naval Logistics

(Section 1 of 1)

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe the Navy's logistics supply and service system that began during World War I
2. Describe the principles of logistics that come into play in logistics planning at all levels
3. Describe the six functional areas of logistics
4. Explain the following four elements of logistics: acquisition, distribution, sustainment and disposition
5. Describe logistics in modern warfare

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction (A)	Video Naval Logistics	Introduction (B)
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Logistics Planning (A)	Check On Learning A	Logistics Planning (B)	Check on Learning B	Logistics Planning (C)	Video Logistics Planning	Logistics in Modern Warfare	Review Questions
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Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Chapter 4 / Section 1: NS3-M1U2C4S1 – Naval Logistics

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 2, Chapter 4. Place a checkmark beside the NS3-M1U2C4S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U2C4S1 - Key Terms and NS3-M1U2C4S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the importance of Naval logistics. We will talk about logistics planning and we will learn about the importance of logistics in modern warfare.	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What types of supplies do you think a deployed unit needs replenished regularly?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing naval logistics.	9
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	10
Introduction	Explain that World Wars I and II approached in scope what has since been defined as total war, in which the entire resources of the participant countries are called upon for victory. Such emphasis on logistics made these wars unique in the history of the world. Modern logistics may be said to have begun in World War I, when the United States was required to support a large American expeditionary force in Europe.	11-13
Introduction	Explain that World War II was fought thousands of miles from the United States, with	14

Chapter 4 / Section 1: NS3-M1U2C4S1 – Naval Logistics

	the exception of antisubmarine warfare along the Atlantic seaboard; logistics became the key to victory. In fact, it took 12 tons of food and equipment to supply each soldier sent overseas, and another ton every month to keep him going.	
Video on Naval Logistics	Show video on naval logistics.	15
Introduction	Explain that today, just as it has since World War II, military planning must consider logistics along with strategy and tactics. Strategy, as discussed earlier in this book, is concerned with the general plan for the employment of the fighting forces. Tactics involves the specific maneuvers and techniques of fighting—the operational execution of the strategic plan. Logistics refers to the total process by which the resources of a nation, both material and human, are mobilized and directed toward achieving military goals. Thus, while strategy provides the scheme for the conduct of military operations, logistics provides the means.	16-17
Introduction	Explain that logistics as it applies to the support of naval ships and the shore establishment is referred to as naval logistics.	18
Logistics Planning	Explain that were total war to come, the whole national economy would have to be mobilized efficiently. The U.S. national economy is complex. The experience of the last century has indicated that logistic problems of the future probably cannot be solved by plans made hurriedly under stress of war.	19
Logistics Planning	Explain that believing that any future war would require total effort and place great strain on our economy, Congress incorporated the lessons of World War II into the national security organization. The National Security Act of 1947 recognizes clearly that responsibility for national security is a matter of concern for the entire nation and is not confined to the military forces alone. This act provides for a comprehensive U.S. security program integrating policies, procedures, and functions of all elements of the government related to national security.	20-21
Logistics Planning	Explain that the Secretary of Defense advises the President concerning the coordination of military, industrial, and civilian mobilization. This includes manpower, effective use of natural and industrial resources for military needs, and the organization of the national economy for war.	22
Check on Learning Questions A (Lesson questions 3-4)	Check in on student’s understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	23
Logistics Planning	Explain the following: <ul style="list-style-type: none"> • Responsiveness—providing the right support at the right time, at the right place • Simplicity—avoiding unnecessary complexity in preparing, planning, and conducting logistic operations • Flexibility—adapting logistic support to changing conditions • Economy—employing logistic support assets effectively • Attainability—acquiring the minimum essential logistics support to begin combat operations • Sustainability—providing logistics support for the duration of the operation • Survivability—ensuring that the logistic infrastructure survives in spite of degradation and battle damage 	24-30

Chapter 4 / Section 1: NS3-M1U2C4S1 – Naval Logistics

Logistics Planning	Explain within the Department of the Navy, logistics planning is the responsibility of the Operational Commander, who must ensure that his or her logistics experts coordinate all operational and logistical plans.	31
Logistics Planning	Explain that when given a mission, the commander's planning staff analyzes the situation, developing and proposing several possible alternative courses of action. The Commander then selects from these the one he or she judges most likely to succeed. In many cases, logistic limitations and plans will become the deciding factor.	32
Logistics Planning	<p>Explain that all logistics plans take into account six functional areas:</p> <ul style="list-style-type: none"> • Supply—includes design, procurement, contracting, receipt, storage, inventory control, and issuance of end items (ships, planes, tanks, etc.), spare parts, and consumables • Maintenance—actions necessary to preserve, repair, and ensure continued operation and effectiveness of equipment, both afloat and ashore • Transportation—the movement of units, personnel, equipment, and supplies from the point of origin to the final destination • Engineering—the construction, damage repair, combat engineering, and maintenance of facilities • Health services—the provision of medical and dental supplies, blood and blood products, and facilities and services in both combat and noncombat environments • Other services—the provision of administrative and personnel support to operational forces, including record keeping, disbursing, food services, and legal services 	33-38
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	39
Logistics Planning	<p>Explain that within each of the functional areas described above, there are four elements of logistics that come into play. These are as follows:</p> <ul style="list-style-type: none"> • Acquisition • Distribution • Sustainment • Disposition 	40
Logistics Planning	Explain that acquisition pertains to procurement of commodities, such as food, petroleum, oils, and lubricants (POL), and repair parts; facilities, such as buildings and piers; ordnance, like missiles, ammunition, and mines; and major weapons and end items, such as ships, aircraft, and electronic systems. For the Navy the principal acquisition organizations are the various systems commands, the Defense Logistics Agency (DLA), the General Services Administration (GSA), and the Naval Facilities Engineering Command (NAVFACENGCOM).	41-43
Logistics Planning	Explain that distribution concerns the methods used to get logistics support to the operating forces, taking into account what is being moved, its origin and destination, the lift assets available, and the urgency assigned. A single unified command, the U.S. Transportation Command, is in overall charge of strategic transportation for all U.S. armed services. For deployed forces, some 90 percent of all strategic lift is done by civilian-crewed ships of the Navy's Military Sealift Command. High-priority cargo, mail,	44-48

Chapter 4 / Section 1: NS3-M1U2C4S1 – Naval Logistics

	and passengers are transported by strategic airlift provided by the Air Force's Air Mobility Command. Once in theater, further transportation is provided by combat logistic force ships that operate with the operating forces, and by boats, vehicles, and aircraft belonging to the deployed forces.	
Logistics Planning	Explain that sustainment pertains to the provision of adequate logistic support to permit continuous operations without interruption, as long as required. Forward-deployed naval forces carry with them sufficient initial stocks to support operations, but these must be replenished as they are consumed. Establishing and maintaining a reliable flow of matériel, resources, and support services to operating forces is accomplished through the operation and management of supply systems, naval maintenance assets, and bases. In the Navy this element is a primary responsibility of the Naval Supply Systems Command, and for the Marine Corps, the Marine Corps Logistic Command.	49-51
Logistics Planning	Explain that disposition concerns the handling, storage, retrograde (removal from the theater of operations), and disposal of matériel and resources. A major aspect of disposition is the avoidance of any damage to the environment, especially by oil pollution or other hazardous materials. The Navy oil spill response team is one of the largest in existence and has deployed to every major U.S. oil spill in the last three decades, along with personnel of the Coast Guard, the primary service responsible for oil-pollution response. The process of disposition begins with the first piece of equipment or major item that must be removed from the operating theater for repair, replacement, or as excess for further distribution, and ends when the last forces depart, which are often the naval forces assigned to most operations.	52-55
Video on Logistics Planning	Show video on logistics planning.	56
Logistics in Modern Warfare	Explain that each of the major U.S. commands in the Atlantic and Pacific regions have formalized contingency plans for what their forces would do and how they would be supported logistically in the event of a future general war. To enable rapid deployment to distant locations, prepositioning of war matériel and ammunition have been prepositioned at key locations such as certain U.S. bases in northern Europe and moored cargo ships at Diego Garcia in the Indian Ocean.	57-59
Logistics in Modern Warfare	Explain that selecting sites is an ongoing task as world conditions change. Though there is some risk of capture of these supplies by potential enemies in the regions should war break out, the necessity of timely resupply of U.S. and allied forces already in theater overrides this concern. Such prepositioned stocks would, it is hoped, be sufficient to sustain military operations until further resupply could be accomplished, most likely by seaborne transport from the United States.	60
Logistics in Modern Warfare	Explain that the methods and timing of resupply in any future general war are of growing concern to U.S. planners today because fuel and ammunition and other key consumables would be rapidly expended in the first days of modern warfare. Almost certainly, one major consequence of the shortage of available merchant ships in any large-scale future war would be a severe reduction of civil air transportation, since most large U.S. airliners would be needed to carry military supplies and personnel. Continuous analysis and planning are required to ensure adequate logistic support of all U.S. and allied armed forces in any future war scenario.	61-63

Chapter 4 / Section 1: NS3-M1U2C4S1 – Naval Logistics

Review Question	The Review Question is “What should be weighed when choosing a site for prepositioning of supplies?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	64
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	65
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	66

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handouts for in class and take home activities

When: This will take place anytime during the lesson. It could be used as an anticipatory set or as a practice activity during or at the end of the lesson.

- Cadets will complete the “Hike the Appalachian Trail” activity in small groups to either be introduced to the Logistics Principles or to practice them at the end of the lesson.

B. Take Home Activity: Using the handout, “Naval Logistical Planning” have the cadets summarize what they know about Naval Logistical Planning. This can be done in paragraph, picture, diagram, concept map, etc. Tell them to be creative. Make sure to they include Logistics Principles, Functions, and Elements.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 4 / Section 1: NS3-M1U2C4S1 – Naval Logistics

Activity 1: In Class Activity- Hiking the Appalachian Trail

Name: _____ Date: _____ Class: _____

Directions: You and your friends are going to hike the Appalachian Trail in the Eastern United States. You will be gone for months as you traverse this 2,168 mile trail through various climate challenges including snow, rain and heat. You will also encounter inconveniences such as insects and wild animals. Because you cannot take months of supplies on your back from the start, you will need to logistically plan for restocking your supplies periodically. Using the Naval Logistic Principles, how will you do this? You may need to use the internet to research hiking the Appalachian Trail. Use the form below.

1. Responsiveness: Providing the right support at the right time at the right place.

Where might you get supplies along the trail when your supply runs low? How will you get them? How will you know what you need before you need it?

2. Simplicity: Avoiding unnecessary complexity in preparing, planning and conducting logistic operations.

Make a list of the things that you will need for your trip. Be specific as possible. Remember, you have to carry everything you need and want on your back. Think about restocking your supplies. What might be the simplest way to do this?

3. Flexibility: Adapting logistic support to changing conditions.

If you start your trip in the Spring, it is likely that you will not finish your trip until the Fall, how might your needs for resupplying change?

Chapter 4 / Section 1: NS3-M1U2C4S1 – Naval Logistics

4. Economy: Employing logistic support assets effectively

What assets will you need to support your trip over the course of a few months? How do you effectively employ this support?

5. Attainability: Acquiring the minimum essential logistic support to begin combat operations.

Although you certainly hope to not be in combat while on the trail, it is possible that you will run into some dangers that might impact your supplies or change your supply needs. How do you plan for attaining these needs as they arise in a minimal way?

6. Sustainability: Providing logistic support for the duration of the operation.

How will you sustain your plan? What happens if someone you rely on can no longer help or you lose another asset needed to keep your trip going?

7. Survivability: Ensure that the logistic infrastructure survives in spite of challenges to the trip.

What steps will you take to ensure that you survive the trip from beginning to end and that your restocking plan will survive the entire time?

Chapter 4 / Section 1: NS3-M1U2C4S1 – Naval Logistics

Activity 1: Take Home Activity – Naval Logistical Planning

Name: _____ Date: _____ Class: _____

Directions: Summarize what you know about Naval Logistical Planning. This can be done in paragraph, picture, diagram, concept map, etc. Be creative. Make sure you include Logistics Principles, Functions, and Elements.

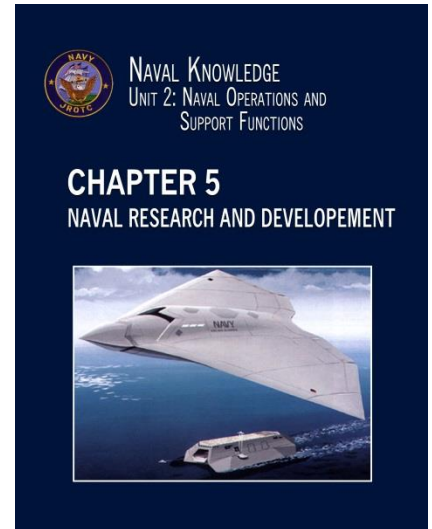
Module 1 Unit 2 Chapter 5: NS3-M1U2C5 – Naval Research and Development

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe the Research and Development (R&D) program of the Department of Defense(DoD)
2. Describe the management of the Navy’s R&D programs
3. Explain the role of the Office of Naval Research(ONR) in naval research and development
4. Describe the role of the Naval Research Laboratory(NRL) in naval research and development
5. Describe the objectives of the naval oceanographic research program
6. Describe the current advanced research and development project areas



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says ...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately...
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...

Module 1 Unit 2 Chapter 5: NS3-M1U2C5 – Naval Research and Development

- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.9.9-12. Use appropriate deliberative processes in multiple settings.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 2. Economic Decision-Making

- D2.Eco.13.9-12. Explain why advancements in technology and investments in capital goods and human capital increase economic growth and standards of living.

Dimension 2. History

- D2.His.1.9-12. Evaluate how historical events and developments were shaped by unique circumstances of time and place as well as broader historical contexts.
- D2.His.2.9-12. Analyze change and continuity in historical eras.
- D2.His.3.9-12. Use questions generated about individuals and groups to assess how the significance of their actions changes over time and is shaped by the historical context.

Dimension 4. Communicating Conclusions and Taking Informed Action

- D4.2.9-12. Construct explanations using sound reasoning, correct sequence, examples, and details with significant and pertinent information and data...
- D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.
- D4.8.9-12. Apply a range of deliberative and democratic strategies and procedures to make decisions and take action in their classrooms, schools, and out-of-school civic contexts.

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 5 / Section 1: NS3-M1U2C5S1 – Naval Research and Development

(Section 1 of 1)

What Students Will Learn to Do:

Demonstrate knowledge of the major organizations of the Navy, how communication among naval units is accomplished, the value of good intelligence and the need to protect that intelligence

Skills and Knowledge to be Gained:

1. Describe the Research and Development (R&D) program of the Department of Defense (DoD)
2. Describe the management of the Navy's R&D programs
3. Explain the role of the Office of Naval Research(ONR) in naval research and development
4. Describe the role of the Naval Research Laboratory(NRL) in naval research and development
5. Describe the objectives of the naval oceanographic research program
6. Describe the current advanced research and development project areas

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	Naval R&D Management	Check On Learning A
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Office Of Naval Research	Naval Research Library	Naval Oceanographic Research Program	Check on Learning B	Advanced Research	Video Advanced Research	Review Questions	Closing Questions
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Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 5 / Section 1: NS3-M1U2C5S1 – Naval Research and Development

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 2, Chapter 5. Place a checkmark beside the NS3-M1U2C5S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U2C5S1 - Key Terms and NS3-M1U2C5S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss Navy Research and Development. We will learn about the Office of Naval Research and the Naval Research Library. We will also learn about the Naval Oceanographic Research Program and what DARPA as well as discuss what this special agency of the Defense Department does.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Why do you think that research and development efforts are important in the military and Navy?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing naval research and development.	9
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	10
Introduction	Explain that the scientific and military strength of the United States depends to a large extent on a successful and comprehensive research program. Research and development (R&D) in the Department of Defense and its military branches is a major effort in terms of personnel, money, and materials.	11

Chapter 5 / Section 1: NS3-M1U2C5S1 – Naval Research and Development

Introduction	Explain that all military services conduct various R&D programs in their areas of responsibility. In recent years, increasing numbers of these programs have been conducted jointly by the services, as, for example, the development of the next-generation joint strike fighter. The U.S. Coast Guard is also an active participant in the research and development program.	12-13
Naval R&D Management	Explain that under the Secretary of Defense, the Secretary of the Navy has policy control over the Navy R&D organization. Ultimate responsibility rests with that person. The Assistant Secretary of the Navy for research, development, and acquisition is responsible for management and control of R&D matters. The top adviser to these two civilian leaders is the Chief of Naval Research. The Chief of Naval Research is in charge of the basic research program of the Navy, coordinating all Navy efforts with the systems commands. Under the CNO, the Long-Range Objectives Group prepares operational objectives for 15 years into the future.	14-16
Naval R&D Management	Explain that the basis of the Long-Range Objectives Group are: <ul style="list-style-type: none"> • Predicted threats • Trends in national policy • State of the technical arts 	17
Naval R&D Management	Explain that these long-range objectives are stated in terms of research and development. The CNO issues requirements based on the stated needs of the operating forces.	18
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	19
Office of Naval Research	Explain that in 1946 Congress authorized the formation of the Office of Naval Research (ONR) in compliance with an earlier recommendation by Navy Secretary James Forrestal. The office was charged with planning and conducting a coordinated research effort in every field of basic science, in conjunction with the applied research and engineering development programs of the Navy.	20
Office of Naval Research	Explain that the principal source of fundamental scientific knowledge in the United States traditionally had been the university research laboratory. Wartime experience showed that there was a need for a mechanism whereby university scientists could help find answers to the Navy's most pressing operational problems. The ONR thus started what was for a time the largest peacetime research program ever supported by a federal agency at educational and nonprofit institutions. This Navy program was an outstanding example of effective and beneficial government-sponsored research, and it continues to this day.	21
Office of Naval Research	Explain that known as the contract research program, this ONR-sponsored activity advances the search for new knowledge in those fields of science and engineering vital to naval needs and national security. Under auspices of the program, the nation's finest scientists conduct research for the Navy at nearly every well-known scientific laboratory in the country.	22
Office of Naval Research	Explain that departments within the ONR conduct research and development in information, electronics, and surveillance technologies; ocean, atmosphere, and space technology; engineering, materials, and physical science; human systems; expeditionary warfare; industrial and corporate programs; and industrial programs. It also oversees several special technical programs, among which are ongoing research into future naval capabilities, special science and technology programs, and grand challenges in science and technology for the future.	23

Chapter 5 / Section 1: NS3-M1U2C5S1 – Naval Research and Development

Office of Naval Research	Explain that under the auspices of ONR, areas of focus within the Naval Science and Technology program in recent years include power generation and energy; maritime domain studies; information, analysis, and communication; naval warrior performance and protection; survivability and self-defense, including missile and torpedo defense; defense against IEDs; and many other cutting edge technologies pertinent to naval warfare.	24
Naval Research Library	Explain that the Naval Research Laboratory (NRL) in Washington, D.C., is the corporate research and development laboratory of the Office of Naval Research. It conducts a broadly based multidisciplinary program of scientific research and advanced technological development directed toward maritime applications of new and improved materials, techniques, equipment, systems, and ocean, atmospheric, and space sciences and related technologies.	25-26
Naval Research Library	Explain that the NRL engages in research for the physical, engineering, space, and environmental sciences. It conducts exploratory and advanced development programs in response to the Navy's present and future needs and furnishes broad, multidisciplinary support to the Naval Air Warfare Center, the Naval Command, Control and Ocean Surveillance Center, the Naval Surface Warfare Center, and the Naval Undersea Warfare Center.	27
Naval Oceanographic Research Program	Explain that the primary military objective of the Navy's oceanographic program is to advance the knowledge of ocean, coastal, and seabed areas for the purpose of increasing the effectiveness of naval as well as other military weapons systems. This objective includes the design of ships and other equipment to satisfy oceanographic data collection requirements.	28
Naval Oceanographic Research Program	Explain that a secondary, nonmilitary objective is to advance the knowledge of all aspects of the ocean, coastal, and seabed areas to enable successful exploitation of those areas for economic, scientific, social, political, and prestige gains. This includes cooperation in formulating proposed international law applying to the high seas, territorial seas, continental shelves, and seabed areas.	29
Naval Oceanographic Research Program	Explain that National defense takes priority over other goals of the oceanographic effort. The Navy, however, is obligated to support the nonmilitary objectives of the national oceanographic program, so it manages ships and facilities to meet both requirements. The largest portion of knowledge gained from Navy oceanographic activities is not classified and is made available to national, international, and private organizations. Consistent with its own effort, the Navy also cooperates with national and private organizations devoted to the study of the marine environment.	30-31
Naval Oceanographic Research Program	Explain that some of the Navy's work is carried out by private oceanographic organizations such as the Scripps Oceanographic Institute in California and Woods Hole Oceanographic Institute in Massachusetts. Other work is done by universities and various technical agencies. Much of the basic and applied research supported by ONR relates closely to the programs of a number of other federal agencies.	32-33
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	34
Advanced Research	Explain that projects in advanced research are conducted by the Defense Advanced Research Projects Agency (DARPA), a special agency of the Defense Department. The purpose of this agency is to prevent technological surprise from harming U.S. security by sponsoring research in areas of high risk in terms of commercial applicability and profit potential. Private enterprises are reluctant to take on such projects.	35

Chapter 5 / Section 1: NS3-M1U2C5S1 – Naval Research and Development

Advanced Research	Explain that DARPA's program is structured in three major areas: national-level problems involving threats to U.S. national security; operational dominance, wherein advanced systems and technologies are developed that will give U.S. military forces a decisive edge over prospective enemies; and high-risk high-payoff technologies that will enable quantum leaps in U.S. military capabilities.	36
Advanced Research	Explain that under the national-level problem areas are programs that provide support for the global war on terrorism, and protection against biological warfare, among other things. Current operational dominance projects include development of advanced manned and unmanned combat systems, advanced C4 (command, control, communications, and computer) systems, and sensors.	37-38
Advanced Research	Explain that areas being addressed under high-risk high-payoff technologies include advanced networking, brain-machine interface technology, biochemistry and biomagnetics, and microelectromechanical systems.	39
Video on Advanced Research	Show video on advanced research.	40
Review Question	The Review Question is “Describe the role and objectives of the Office of Naval Research (ONR).” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	41
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	42
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	43

III. Supplemental Activities -

A. In Class Activity:

Supplies required:

When: at the end of the lesson

- Divide cadets into 5 different groups. Assign each group a current project that the US military is currently researching and designing (F-35, remote mine detectors, unmanned combat systems, c4 systems, Ground-X vehicle technology, etc.). As a group, the cadets will research the topic they were given and fill out the R and D sheet. They will then report their findings back to the class.
- After the groups have presented their projects, the class can vote for the projects using different criteria. (Most creative, most needed, saves most lives, etc.)

Chapter 5 / Section 1: NS3-M1U2C5S1 – Naval Research and Development

B. Take Home Activity: The NRL has made many distinguished contributions to military science and technology and to the transition of that science and technology to practical application. Using the Handout “NRL Legacy”, have the cadet’s research about the NRL legacy through a sampling of accomplishments which can be found on their website. Have the cadets pick one of the accomplishments and write a one page document on that accomplishment and explain why they found it the most interesting.

The NRL accomplishments can be found at: <http://www.nrl.navy.mil/accomplishments/>

- Awards & Recognitions - The accomplishments of the NRL and its staff are highlighted through a listing of achievements and honors.
- Timeline - A visual chronicle of important NRL discoveries, inventions and contributions.
- Systems - Information about historical achievements in radary, communications and navigation systems.
- Rockets - Groundbreaking NRL achievements in early space programs.
- Solar & Lunar Studies - A look at fifty years of NRL research on phenomena associated with the sun and recent landscapes of the moon.
- Astronomy - NRL achievements in the fields of astronomy and cosmic ray physics.
- Ocean & Environment - Accomplishments in ocean research, ozone studies, meteorology and storm prediction.
- Materials - NRL materials that have shaped the way we live and build towards a better future.
- 90 Years of Innovation

IV. Evaluation - see CPS database for chapter test questions.

Chapter 5 / Section 1: NS3-M1U2C5S1 – Naval Research and Development

Activity 1: In Class Activity- Research and Design Activity

Name: _____ Date: _____ Class: _____

Describe your project:

Why is your project important?

Who will your project benefit?

Why is there a need for this project?

What technology is involved/used in your project?

What branch of the military will most likely be using this technology?

How will this technology help the United States solve conflict and/or keep peace?

Chapter 5 / Section 1: NS3-M1U2C5S1 – Naval Research and Development

If you were on the Research and Development team for this project how would you change it?

If you were on the Research and Development team for this project, what would you most like to work on?

Do you think this project will be helpful? Explain.

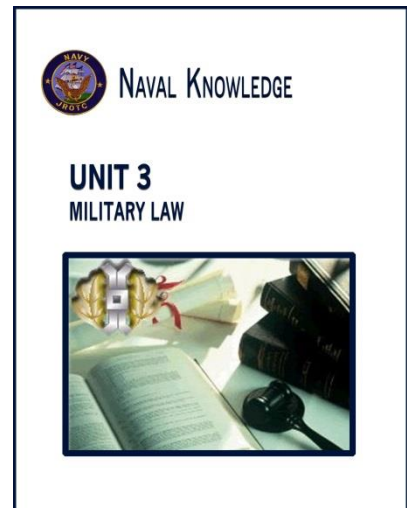
Do you think this project will be successful? Explain

MODULE 1; UNIT 3: Military Law

Unit Overview

Unit Objective:

Demonstrate an understanding of military justice and how it relates to the Navy.



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Military Law	NS3-M1U3C1S1 – Introduction to Military Law
2	Discipline and Punishment	NS3-M1U3C2S1 – Discipline and Reports
		NS3-M1U3C2S2 – Disciplinary Actions
		NS3-M1U3C2S3 – Review of Courts-Martial

Module 1 Unit 3 Chapter 1: NS3-M1U3C1 – Introduction to Military Law

What Students Will Learn to Do:

Demonstrate an understanding of military justice and how it relates to the Navy

Skills and Knowledge to be Gained:

1. Explain the history of law codes as it pertains to the Navy
2. Describe the relationship between the U.S. Constitution and military law
3. Define Navy Regulations
4. Describe important Navy regulations
5. Explain the purpose of the Uniform Code of Military Justice (UCMJ)
6. Cite the composition of the UCMJ articles

Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...
- RI.11-12.9. Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance ...

Writing

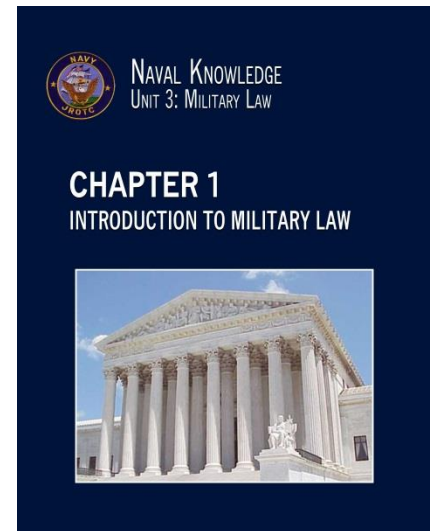
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.7. Conduct short as well as more sustained research projects to answer a question or solve a problem...
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...



Module 1 Unit 3 Chapter 1: NS3-M1U3C1 – Introduction to Military Law

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.
- D2.Civ.10.9-12. Analyze the impact and the appropriate roles of personal interests and perspectives on the application of civic virtues, democratic principles, constitutional rights, and human rights.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 4. Communicating Conclusions and Taking Informed Action

- D4.2.9-12. Construct explanations using sound reasoning, correct sequence, examples, and details with significant and pertinent information and data...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 1/ Section 1: NS3-M1U3C1S1 – Introduction to Military Law

(Section 1 of 1)

What Students Will Learn to Do:

Demonstrate an understanding of military justice and how it relates to the Navy

Skills and Knowledge to be Gained:

1. Explain the history of law codes as it pertains to the Navy
2. Describe the relationship between the U.S. Constitution and military law
3. Define Navy Regulations
4. Describe important Navy regulations
5. Explain the purpose of the Uniform Code of Military Justice (UCMJ)
6. Cite the composition of the UCMJ articles

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Introduction	History of Law Codes	Check On Learning A
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The U.S. Constitution and Military Law	Navy Regulations	Check on Learning B	The Uniform Code of Military Justice (UCMJ)	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 3, Chapter 1. Place a checkmark beside the NS3-M1U3C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U3C1S1 - Key Terms and NS3-M1U3C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1/ Section 1: NS3-M1U3C1S1 – Introduction to Military Law

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that there must be a code of law and rules by which members of a group conduct themselves. This would apply to any group in society including community, school, sports and your NJROTC unit. There are different types of code of law. Civil law is the body of laws of a state or nation regulating ordinary private matters, a distinct from laws regulating criminal, political or military matters. Other types of code of law include constitutional law, criminal law, international law, and military law.	1-3
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will learn about the history of law codes as it pertains to the Navy. We will discuss the relationship between the U.S. Constitution and military law. We will also learn about important Navy regulations. Lastly, we will discuss the Uniform Code of Military Justice.	4-7
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	8
Key terms - Definitions	Reinforce the correct definition for each key term.	9-11
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Why is important that all people are equal under the law?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on military law.	12
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	13
Introduction	Explain that the force of government behind customs and codes of law transforms them into practical laws regulating the daily lives of people. These laws are further defined by court decisions and rulings by judges. To introduce the study of military law, the following sections will briefly cover the development of our various law codes and how they relate to each other in our society.	14
History of Law Codes	Explain that civil law has a history going back to the first known code compiled by King Hammurabi of Babylon in about 1700 s.c. Roman law, drawn up by Emperor Justinian I (A.D. 527-565), developed into the basic civil law of most European countries. After twelve centuries of legal refinement, it was finally codified by Emperor Napoleon I of France in 1804. It is probably the greatest legacy passed on to modern society by that great leader. Napoleon's Civil Code, as it was called, has become the basic civil law of	15-17

Chapter 1/ Section 1: NS3-M1U3C1S1 – Introduction to Military Law

	much of the world. Under the Civil Code, the accused must, to a large extent, prove himself or herself innocent of any charges filed against him or her by the state.	
History of Law Codes	Explain that the development of law in English-speaking countries was different. England's King John I was obliged to sign the Magna Carta in 1215. From this beginning, a body of common law developed from decisions in the king's courts. Later, the burden of both criminal and civil cases became too great for a single court system, so civil cases were referred to the Court of Chancery. This developed into the body of civil or equity law in England, most of the British Commonwealth, and the United States. It is used to restore rights, compensate damages, and correct injuries in civil cases.	18-20
History of Law Codes	Explain that criminal law, retained by the King's Court, was derived from that part of English common law designed to punish or deter wrongdoers by bringing them to court for justice. Trial by a jury of peers—citizens of equal status under the law—is a specific right under English common law and guaranteed to each American citizen in the Sixth Amendment to the U.S. Constitution. A fundamental feature of English and U.S. law is that the accused is presumed innocent until the evidence brought before the jury proves guilt beyond any reasonable doubt. This codified system of law is both revolutionary and evolutionary as compared to the Napoleonic Code.	21
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	23
The U.S. Constitution and Military Law	Explain that In the United States, all law is based on the Constitution, or, as it is called, constitutional law. The Constitution guarantees the rights of all citizens to equitable treatment under the law. It gives the Congress the power to provide and maintain a Navy and to establish rules and regulations for its operation, which collectively are referred to as military law.	24-25
The U.S. Constitution and Military Law	Explain that some acts considered rights in a civilian society might be offenses in a military society. For instance, "telling off the boss" is not unlawful for an American civilian, but in the military services it could be an offense punishable by court-martial. Civilians can quit their jobs if they do not like them; in the military, that constitutes a major offense called desertion. In civilian life, if people decide to jointly protest their working conditions or pay, they may strike; in the naval service, that action constitutes the offense of mutiny.	26
The U.S. Constitution and Military Law	Explain that The defense of the nation is not the kind of business in which citizens can do their own thing when, or if, it pleases them. The demands of military service are such that positive control and an established code of conduct are required always. Readiness for emergencies, as well as coping with the emergency itself, demands a code of law differing in some degree from the normal civil code.	27
The U.S. Constitution and Military Law	Explain that military law is the law regulating the military establishment, including the military justice system. It is designed to preserve good order and discipline within the military service, in the same way that state and federal laws are designed to preserve good order in the civilian community. U.S. military law, like U.S. civil law, requires that the rights of each individual be protected and seeks to assure every person in uniform equal justice under the law.	28
The U.S. Constitution and Military Law	Explain that the laws that govern the United States Navy had their origin in 1775, when the "Rules for the Regulation of the Navy of the United Colonies" were first established. These first laws were based largely on British common and Royal Navy admiralty law. Over the years since their formulation, the U.S. Navy laws have undergone constant modification and improvement to meet changing requirements	29

Chapter 1/ Section 1: NS3-M1U3C1S1 – Introduction to Military Law

	up to the present day.	
Navy Regulations	Explain that this is the set of basic laws governing the Navy today. Navy Regulations provides the broad guidelines for the organization and administration of the Navy, and specifies particular actions that can and cannot be done, and how the chain of command should handle these actions.	30
Navy Regulations	Explain that on all ships and stations, the most important articles of Navy Regulations are posted on bulletin boards or included in the Ship's Organization and Regulations Manual. Often, selected articles are quoted in the Plan of the Day, which is a chronology of planned events and important notes published daily and posted throughout the command. Some Navy regulations often posted and quoted are excerpted below:	31-32
Navy Regulations	Explain Article 1110. Standards of Conduct All Department of the Navy personnel are expected to conduct themselves in accordance with the highest standards of personal and professional integrity and ethics.	33
Navy Regulations	Explain Article 1145. Service Examinations Persons in the Department of the Navy, without proper authority, shall not have in their possession, obtain, sell, publish, give, purchase, receive or reproduce any examination paper, or any copy thereof, or answer sheet thereto, for any examination whatsoever which has been, is, or is to be, administered within the Department of the Navy.	34
Navy Regulations	Explain Article 1151. Direct Communication with the Commanding Officer The right of any person in the naval service to communicate with the commanding officer in a proper manner, and at a proper time and place, shall not be denied or restricted.	35
Navy Regulations	Explain Article 1162. Alcoholic Beverages Except as may be authorized by the Secretary of the Navy, the introduction, possession or use of alcoholic beverages on board any ship, craft, aircraft, or in any vehicle of the Department of the Navy is prohibited.	36
Navy Regulations	Explain Article 1164. Equal Opportunity and Treatment Equal opportunity shall be afforded to all on the basis of individual effort, performance, conduct, diligence, potential, capabilities and talents without discrimination as to race, color, religion, creed, sex or national origin	37
Navy Regulations	Explain Article 1165. Fraternization Prohibited Personal relationships between officers and enlisted members that are unduly familiar and that do not respect differences in grade or rank are prohibited.	38
Navy Regulations	Explain Article 1167. Supremacist Activities No person in the naval service shall participate in any organization that espouses supremacist causes; attempts to create illegal discrimination based on race, creed, color, sex, religion, or national origin; advocates the use of force or violence against the government of the United States or the government of any state, territory, district, or possession thereof ... or otherwise engages in efforts to deprive individuals of their civil rights.	39
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	40

Chapter 1/ Section 1: NS3-M1U3C1S1 – Introduction to Military Law

The Uniform Code of Military Justice (UCMJ)	Explain that the trial and punishment of offenders in the U.S. Armed Forces are covered by a set of laws named the Uniform Code of Military Justice (UCMJ). The word uniform here means that the code is the same for all the services. The Manual for Courts-Martial, United States (MCM) and the Manual of the Judge Advocate General supplement the UCMJ and deal particularly with the administration of the law as decreed in Navy Regulations and the UCMJ.	41-42
The Uniform Code of Military Justice (UCMJ)	Explain that all military leaders, especially officers, are responsible for ensuring that their knowledge of the code is adequate. They must know the fundamentals of military law. Officers must know the basics of court procedures, for they may be called upon at any time to participate in the conduct of a military court, or to investigate matters that have some bearing in such a court.	43
The Uniform Code of Military Justice (UCMJ)	Explain that since Navy personnel agree to abide by the Navy's law and regulations in their oath of enlistment, it stands to reason that each Navy person must learn what these laws are. Congress and the Navy have taken steps to ensure that all persons entering the Navy will know the laws and regulations most likely to affect them at their ship or station. Article 137 of the UCMJ directs that particular articles of the code be carefully explained to every enlistee at the time of entry on active duty, after six months of active duty, and at the time of reenlistment. It also requires that a complete copy of the UCMJ be made available to every enlisted person.	44-45
The Uniform Code of Military Justice (UCMJ)	Explain that according to UCMJ Article 137: Articles of the Code should be carefully explained to every enlistee: <ul style="list-style-type: none"> • At the time of entry on active duty • After six months of active service • At the time of reenlistment 	46
The Uniform Code of Military Justice (UCMJ)	Explain that the 146 articles making up the UCMJ are divided into twelve groupings. The first nine deal with general provisions, rules for apprehension and restraint, and the conduct of non-judicial punishment (NJP) and courts-martial. Group 10, comprised of articles 77-134 and dealing with specific infractions of military law, is known as the punitive articles. These articles address acts that are in direct violation of acceptable military and, in many cases, civil law, and that would constitute a court-martial offense. They include offenses such as murder, assault, and larceny, and infractions against military behavior such as disobedience of lawful orders, absence without leave, and insubordination.	47-48
The Uniform Code of Military Justice (UCMJ)	Explain that under Article 55 of the UCMJ, cruel and unusual punishments are prohibited. In the days of sail, punishments by flogging, branding, or tattooing on the body were not uncommon. Today they are strictly forbidden. Public punishments that might tend to ridicule—such as shaving the head, placing offenders in the stocks, tying them up by the thumbs, and forcing them to carry about placards or heavy loads—are also prohibited by the UCMJ. Placing a prisoner "in irons," except for handcuffs when traveling in custody, is likewise not allowed.	49
Review Question	The Review Question is "What is meant by a trial by a jury of peers?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	50
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	51

Chapter 1/ Section 1: NS3-M1U3C1S1 – Introduction to Military Law

Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	52
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III. Supplemental Activities -

A. In class Activity:

Supplies required: White Board; Handout for take home activity

When: This is a good activity to do at the beginning of class.

- With the class: The military has a unique requirement to protect the United States from enemies abroad. When called on to defend the US, the military must act decisively and quickly to meet those objectives. If the military does not respond correctly and as needed, both military personnel and the country could be placed at greater risk. For this reason the military has its own rules and regulations.
- What rules or regulations do you think would be good to have in place for the US military? (make a list)
- Do the military rules take precedence over federal law?
- Do the military rules take precedence over state laws?
- Do military members give up some rights when they join the military? (list)
- Do military members have any additional rights or protections? (list)

B. Take Home Activity: Compare and contrast a UCMJ article with its equivalent state or federal law. If there is no equivalent law describe how it adds or subtracts to the military members legal rights.

IV. Evaluation - see CPS database for chapter test questions.

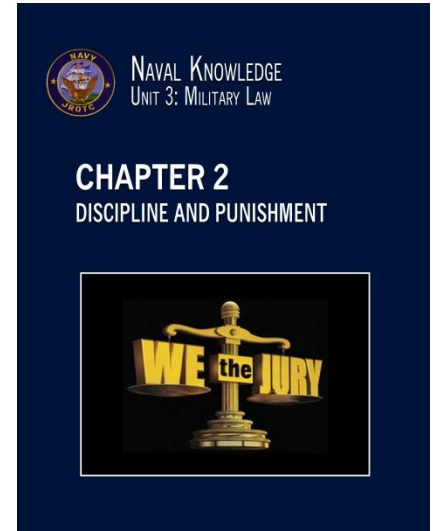
Module 1 Unit 3 Chapter 2: NS3-M1U3C2 – Discipline and Punishment

What Students Will Learn to Do:

Demonstrate an understanding of military justice and how it relates to the Navy

Skills and Knowledge to be Gained:

1. Describe the procedures for applying discipline and punishment in the Navy
2. Describe the procedures for initiating and preferring charges on enlisted personnel aboard a U.S. Navy ship or shore station
3. Describe the process of apprehension, arrest, restriction and confinement used in the Navy
4. Describe the procedure for preliminary inquiry leading to captain's mast.
5. Cite two basic classes of official naval disciplinary actions
6. Describe the features of nonjudicial punishment
7. Cite the three types of military courts-martial
8. Explain the method for reviewing courts-martial
9. Describe the relationship between civil jurisdiction and military justice
10. Cite the methods used for disciplinary separations from the service



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...
- RI.11-12.9. Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance ...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...

Module 1 Unit 3 Chapter 2: NS3-M1U3C2 – Discipline and Punishment

- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.
- D2.Civ.10.9-12. Analyze the impact and the appropriate roles of personal interests and perspectives on the application of civic virtues, democratic principles, constitutional rights, and human rights.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 3. Gathering and Evaluating Sources

- D3.1.9-12. Gather relevant information from multiple sources representing a wide range of views while using the origin, authority, structure, context, and corroborative value of the sources to guide the selection.

Dimension 4. Communicating Conclusions and Taking Action

- D4.2.9-12. Construct explanations using sound reasoning, correct sequence, examples, and details with significant and pertinent information and data...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 2 / Section 1: NS3-M1U3C2S1 – Discipline and Reports

(Section 1 of 3)

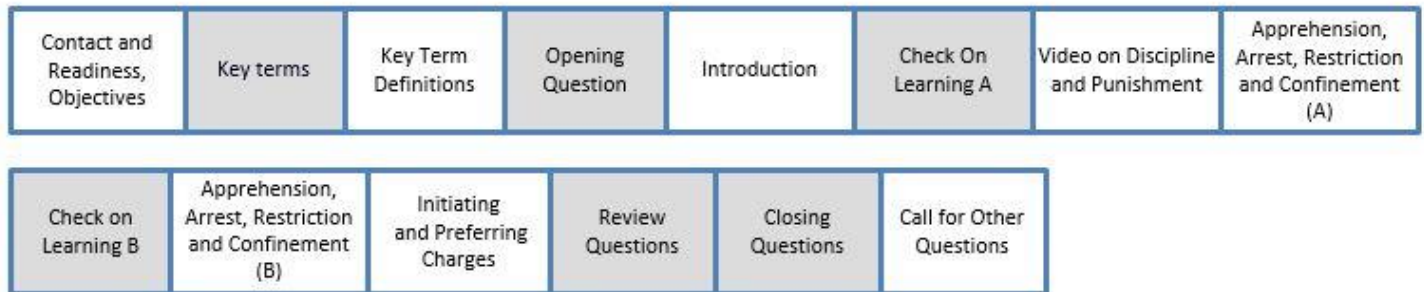
What Students Will Learn to Do:

Demonstrate an understanding of military justice and how it relates to the Navy

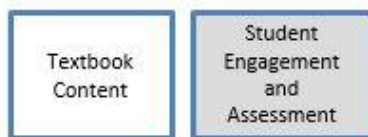
Skills and Knowledge to be Gained:

1. Describe the procedures for applying discipline and punishment in the Navy
2. Describe the procedures for initiating and preferring charges on enlisted personnel aboard a U.S. Navy ship or shore station
3. Describe the process of apprehension, arrest, restriction and confinement used in the Navy
4. Describe the procedure for preliminary inquiry leading to captain's mast.

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 3, Chapter 2. Place a checkmark beside the NS3-M1U3C2S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U3C2S1 - Key Terms and NS3-M1U3C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 1: NS3-M1U3C2S1 – Discipline and Reports

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will learn about the procedures for applying discipline and punishment in the Navy. We will discuss the procedures for initiating and preferring charges on enlisted personnel aboard a U.S. Navy ship or shore station We will learn about the process of apprehension, arrest, restriction and confinement used in the Navy. Finally, we will learn about the procedure for preliminary inquiry leading to captain’s mast.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Describe examples of military discipline. What is the value of discipline?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on discipline and punishment.	9
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	10
Introduction	Explain that military leaders must be alert to all actions by subordinates, praising when a good job is done, but correcting, and even punishing, if poor work or breaches in military discipline occur. The senior's approach must be one of continuing alertness, with consistent and fair actions taken in all cases.	11
Introduction	Explain that a breach of discipline cannot be disregarded one day and rebuked the next. Under such conditions, personnel do not know where they stand and cannot establish a pattern of conduct that is consistent. If rules are ignored or regulations disobeyed and no one in authority seems to care, there is bound to be confusion. If regulations cannot or will not be enforced, it is better not to issue them in the first place.	12
Introduction	Explain that discipline can be strict without being stiff and formal. For a first offense, a light punishment that is prompt and just may serve far better than a severe one; a private reprimand at the start of a potential problem may prevent a later appearance	13

Chapter 2 / Section 1: NS3-M1U3C2S1 – Discipline and Reports

	at mast or court-martial. Timely action is essential, since it leaves no doubt in the mind of the offender about the reason for the punishment. Delay fosters resentment toward the system.	
Introduction	Explain that punishment must be just. In order to accomplish its purposes, it must be recognized as just and fair by the offender and shipmates. Penalties imposed must not be out of proportion to the seriousness of the offense. If the leader is exacting but fair, subordinates will not only live up to the leader's demands, but also respect and admire his or her attitude.	14
Introduction	Explain that the Bluejacket's Manual states that when offenses against good order and discipline are punished by proper Naval authority, punishment is imposed for three reasons: to deter offenders from breaking the rules again, to encourage them to do their duty, and to set an example. Note that these are positive reasons, not negative ones.	15
Introduction	Explain that the desired goal of the Navy is positive discipline based on respect for leaders, confidence in their justice and fairness, and the compulsion of moral force. Discipline based on force alone cannot endure. Long-term discipline must be stimulated or induced from within the individual. True discipline develops loyalty and intelligent initiative.	16
Introduction	Explain that punishment is not personal, and it is not vindictive. It is not inflicted as revenge for misconduct, nor can it serve to right any wrong that might have resulted from any dereliction of duty. When seniors find it necessary to reprimand or place a person on report, they are officially doing their duty. All personnel in the Navy are obliged to obey and strictly follow the regulations, and to do so promptly. Therefore, lawful punishments imposed because of derelictions of duty should be expected. When fair punishment is meted out, it should be accepted and regarded constructively; that is, a lesson should be learned from the experience.	17
Introduction	Explain that George Washington, like all great leaders, was a sound disciplinarian. He counseled his officers in 1776, "The best general advice I can give is to be strict in your discipline; that is, to require nothing unreasonable of your officers and men, but to see that whatever is required be punctually complied with. Reward and punish every man according to his merit, without partiality or prejudice."	18
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	19
Video on Discipline and Punishment	Show Video on Discipline and Punishment	20
Apprehension, Arrest, Restriction and Confinement	Explain that apprehension is the taking of a person into custody. Arrest is the restraint of a person by an order directing that person to remain within certain specified limits. Arrest is not imposed as punishment for an offense; the restraint is binding upon the arrested person by virtue of a moral and legal obligation to obey the arrest order, not by physical force. If under arrest, a person cannot be required to perform full military duty.	21
Apprehension, Arrest, Restriction and Confinement	Explain that instead of arrest, an accused person may be restricted to specified areas. The person may be required to perform all usual military duties while under such restriction. This is the usual form of restraint for persons awaiting captain's mast, or for persons awaiting court-martial on other than the most serious charges.	22

Chapter 2 / Section 1: NS3-M1U3C2S1 – Discipline and Reports

Apprehension, Arrest, Restriction and Confinement	Explain that persons under arrest or confinement must be advised that they have the right to consult with a lawyer, that the lawyer may be present at any investigations, and that the lawyer may be either retained at the individual's own expense or appointed by the military authority without cost.	23-26
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	27
Apprehension, Arrest, Restriction and Confinement	Explain that no self-incriminating statement made in violation of Article 31 is admissible in a trial by court-martial.	28
Initiating and Preferring Charges	Explain that in the Navy the usual procedure for initiating and preferring charges against enlisted personnel consists of submitting a written report detailing the alleged offense to the executive officer, or other officer designated by the commanding officer. The form utilized is called a Report and Disposition of Offenses Slip. It contains all the necessary information to process the case, including names of witnesses. Any commissioned officer or petty officer who sees a breach of discipline afloat or ashore may place naval personnel on report. For example, in the case of lateness in returning to the ship from liberty, the officer of the deck would place the offender on report as that person came aboard.	29
Initiating and Preferring Charges	Explain that the formal written report consists of two parts: the technical charge and the specification(s). The charge tells what article of the UCMJ the accused is alleged to have violated. The specifications set forth the specific facts and circumstances involved with the violation. The executive officer (XO) must check the charges and specifications to ensure they are legally correct. The XO advises the accused of all particulars in the case, including the charges, witnesses, accuser, constitutional rights under the UCMJ, and rights concerning possible NJP/court martial proceedings.	30-31
Initiating and Preferring Charges	Explain that after the executive officer reviews the charges, a preliminary investigation of the charges is effected, either by the executive officer or by an investigating officer he or she appoints. If the facts in the case are found to warrant disciplinary action, the investigating officer will fill out a charge sheet. If the investigating officer feels that a court-martial is not warranted, as is the case for most reported offenses, the facts are reported to the executive officer, and the accused is brought to nonjudicial punishment (captain's mast) for the alleged offense	32
Review Question	The Review Question is "Describe the procedure for initiating and preferring charges against enlisted personnel." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	33
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	34
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	35

Chapter 2 / Section 1: NS3-M1U3C2S1 – Discipline and Reports

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Form NAVPERS 1626/7 and the handout – “Discipline and Reports”

When: This is a good activity to do at the end of class

- Using the Form NAVPERS 1626/7 and the supplied information, file out the Report and Disposition of Offense.
- SSN: 123-45-6789
- On 4 July 2014 MM3 (SW) John Doe was reported to have not actually completed his engineering rounds in the main engine room and falsely reported the bearing temperatures for the main shaft. MM3 Doe has been onboard USS NEVER SAIL for 2 years 1 month 4 days and has been working in M division for the entire time. This is MM3 Doe's first ship and he reported to the ship directly after A school and boot camp (6 months). Petty officer Doe is a bright Sailor joining the Navy right after high school and scoring an 88 on his AFQT. He is recently married, but has no children and will turn 21 next week. This is the second time Petty Officer Doe has been placed on report, however, the first time was 18 months ago. He missed a watch (the report was dismissed at XOI with EMI). This is his first enlistment (4 year enlistment) and he states that he really enjoys being in the Navy, and wants to make a career out of the Navy.
- MM1 (SW) Jonathan, the M division Leading Petty Officer stated that he was in the main engine room the entire time working on gear right next to the bearing that PO3 Doe was supposed to take a reading on. MMFN Katherine stated that she saw PO3 Doe on the mess decks for several hours during his watch.
- The Commanding Officer CDR Strick has stated that his policy is a zero tolerance for falsifying records.
- The Executive Officer LCDR Nice believes everyone deserves a second chance.
- Fill out the NAVPERS 1626/7 form as if you were the CO and the XO. Be prepared to justify your recommendations.

B. Take Home Activity: Use the handout – “Rules and Regulations”

Ask the cadets the following questions:

Why do you think it is important to, or should we not have a military set of rules and regulations? Why does neither the federal, state, or local laws provide either enough or not clear enough guidance for the military?

Have them write a one page essay stating their position, supporting it with at least 2 UCMJ or federal/state laws as an examples. Last have them include in their paper the answer to the question: Does the military system support greater discipline and improve the performance of the organization?

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 1: NS3-M1U3C2S1 – Discipline and Reports

Activity 1: In Class Activity- Discipline and Reports

Name: _____ Date: _____ Class: _____

- Using the Form NAVPERS 1626/7 and the supplied information, file out the Report and Disposition of Offense.
- SSN: 123-45-6789
- On 4 July 2014 MM3 (SW) John Doe was reported to have not actually completed his engineering rounds in the main engine room and falsely reported the bearing temperatures for the main shaft. MM3 Doe has been onboard USS NEVER SAIL for 2 years 1 month 4 days and has been working in M division for the entire time. This is MM3 Doe's first ship and he reported to the ship directly after A school and boot camp (6 months). Petty officer Doe is a bright Sailor joining the Navy right after high school and scoring an 88 on his AFQT. He is recently married, but has no children and will turn 21 next week. This is the second time Petty Officer Doe has been placed on report, however, the first time was 18 months ago. He missed a watch (the report was dismissed at XOI with EMI). This is his first enlistment (4 year enlistment) and he states that he really enjoys being in the Navy, and wants to make a career out of the Navy.
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- The Commanding Officer CDR Strick has stated that his policy is a zero tolerance for falsifying records.
- The Executive Officer LCDR Nice believes everyone deserves a second chance.
- Fill out the NAVPERS 1626/7 form as if you were the CO and the XO. Be prepared to justify your recommendations.

Chapter 2 / Section 1: NS3-M1U3C2S1 – Discipline and Reports

Activity 1: Take Home Activity – Rules and Regulations

Name: _____ Date: _____ Class: _____

Why do you think it is important to, or should we not have a military set of rules and regulations? Why does neither the federal, state, or local laws provide either enough or not clear enough guidance for the military?

Write a one page essay stating your position, supporting your position with at least 2 UCMJ or federal/state laws as an examples. Does the military system support greater discipline and improve the performance of the organization?

REPORT AND DISPOSITION OF OFFENSE (S)

To: Commanding Officer, _____ Date of Report: _____

1. I hereby report the following named person for the offense(s) noted:

NAME OF ACCUSED	SERIAL NO.	SOCIAL SECURITY NO.	RATE/GRADE	BR. & CLASS	DIV/DEPT

PLACE OF OFFENSE(S)	DATE OF OFFENSE(S)

DETAILS OF OFFENSE(S) (Refer by article of UCMJ, if known. If unauthorized absence, give following info: time and date of commencement, whether over leave or liberty, time and date of apprehension or surrender and arrival on board, loss of ID card and/or liberty card, etc.):

NAME OF WITNESS	RATE/GRADE	DIV/DEPT	NAME OF WITNESS	RATE/GRADE	DIV/DEPT

(Rate/Grade/Title of person submitting report)

(Signature of person submitting report)

I have been informed of the nature of the accusation(s) against me. I understand I do not have to answer any questions or make any statement regarding the offense(s) of which I am accused or suspected. However, I understand any statement made or questions answered by me may be used as evidence against me in event of trial by court-martial (Article 31, UCMJ).

Witness: _____ Acknowledged: _____
 (Signature) (Signature of Accused)

PRE-TRIAL RESTRAINT	<input type="checkbox"/> PRE-TRIAL CONFINEMENT	<input type="checkbox"/> RESTRICTED: You are restricted to the limits of _____ in lieu of arrest by order of the CO. Until your status as a restricted person is terminated by the CO, you may not leave the restricted limits except with the express permission of the CO or XO. You have been informed of the times and places which you are required to muster.
	<input type="checkbox"/> NO RESTRICTIONS	

(Signature and title person imposing restraint)

(Signature of Accused)

INFORMATION CONCERNING ACCUSED

CURRENT ENL. DATE	EXPIRATION CURRENT ENL. DATE	TOTAL ACTIVE NAVAL SERVICE	TOTAL SERVICE ON BOARD	EDUCATION	GCT	AGE
MARITAL STATUS	NO. DEPENDENTS	CONTRIBUTION TO FAMILY OR QTRS ALLOWANCE (Amount required by law)		PAY PER MONTH (Including sea or foreign duty pay, if any).		

RECORD OF PREVIOUS OFFENSE(S) (Date, type, action taken, etc. Nonjudicial punishment incidents are to be included.)

PRELIMINARY INQUIRY REPORT

From: Commanding Officer

Date: _____

To: _____

1. Transmitted herewith for preliminary inquiry and report by you, including, if appropriate in the interest of justice and discipline, the preferring of such charges as appear to you to be sustained by expected evidence.

REMARKS OF DIVISION OFFICER (Performance of duty, etc.)

NAME OF WITNESS	RATE/GRADE	DIV/DEPT	NAME OF WITNESS	RATE/GRADE	DIV/DEPT

RECOMMENDATION AS TO DISPOSITION:

REFER TO COURT MARTIAL FOR TRIAL OF ATTACHED CHARGES
(Complete Charge Sheet (DD Form 458) through Page 2)

DISPOSE OF CASE AT MAST

NO PUNITIVE ACTION NECESSARY OR DESIRABLE

OTHER

COMMENT (Include data regarding availability of witnesses, summary of expected evidence, conflicts in evidence, if expected. Attach statements of witnesses, documentary evidence such as service record entries in UA cases, items of real evidence, etc.)

(Signature of Investigation Officer)

ACTION OF EXECUTIVE OFFICER

DISMISSED

REFERRED TO CAPTAIN'S MAST

SIGNATURE OF EXECUTIVE OFFICER

RIGHT TO DEMAND TRIAL BY COURT-MARTIAL
(Not applicable to person attached to or embarked in a vessel)

I understand that nonjudicial punishment may not be imposed on me if, before the imposition of such punishment, I demand in lieu thereof trial by court-martial. I therefore (do) (do not) demand trial by court-martial.

WITNESS

SIGNATURE OF ACCUSED

ACTION OF COMMANDING OFFICER

- DISMISSED
- DISMISSED WITH WARNING (Not considered NJP)
- ADMONITION: ORAL/IN WRITING
- REPRIMAND: ORAL/IN WRITING
- REST. TO _____ FOR _____ DAYS
- REST. TO _____ FOR _____ DAYS WITH SUSP. FROM DUTY
- FORFEITURE: TO FORFEIT \$ _____ PAY PER MO. FOR _____ MO(S)

- CONF. ON _____ 1, 2, OR 3 DAYS
- CORRECTIONAL CUSTODY FOR _____ DAYS
- REDUCTION TO NEXT INFERIOR PAY GRADE
- REDUCTION TO PAY GRADE OF _____
- EXTRA DUTIES FOR _____ DAYS
- PUNISHMENT SUSPENDED FOR _____
- ART. 32 INVESTIGATION
- RECOMMENDED FOR TRIAL BY GCM

DETENTION: TO HAVE \$ _____ PAY PER MO. FOR (1, 2, 3,) MO(S) DETAINED FOR _____ MO(S)

AWARDED SPCM AWARDED SCM

DATE OF MAST:

DATE ACCUSED INFORMED OF ABOVE ACTION:

SIGNATURE OF COMMANDING OFFICER

It has been explained to me and I understand that if I feel this imposition of nonjudicial punishment to be unjust or disproportionate to the offenses charged against me, I have the right to immediately appeal my conviction to the next higher authority within 5 days

SIGNATURE OF ACCUSED

DATE

I have explained the above rights of appeal to the accused.

SIGNATURE OF WITNESS _____ DATE _____

FINAL ADMINISTRATIVE ACTION

APPEAL SUBMITTED BY ACCUSED

FINAL RESULT OF APPEAL:

DATED: _____

FORWARDED FOR DECISION ON _____

APPROPRIATE ENTRIES MADE IN SERVICE RECORD AND PAY ACCOUNT ADJUSTED WHERE REQUIRED

FILED IN UNIT PUNISHMENT BOOK:

DATE: _____ (Initials)

DATE: _____ (Initials)

Chapter 2 / Section 2: NS3-M1U3C2S2 – Disciplinary Actions

(Section 2 of 3)

What Students Will Learn to Do:

Demonstrate an understanding of military justice and how it relates to the Navy

Skills and Knowledge to be Gained:

1. Cite two basic classes of official naval disciplinary actions
2. Describe the features of nonjudicial punishment
3. Cite the three types of military courts-martial

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Disciplinary Actions	Nonjudicial Punishment (A)	Video 1 Nonjudicial Punishment	Nonjudicial Punishment (B)
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Video 2 Nonjudicial Punishment	Nonjudicial Punishment (C)	Video 3 Nonjudicial Punishment	Check On Learning A	Video 4 Nonjudicial Punishment	Nonjudicial Punishment (D)	Video 5 Nonjudicial Punishment
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Nonjudicial Punishment (E)	The Military Courts-Martial (A)	Video The Military Courts-Martial	The Military Courts-Martial (B)	Check on Learning B	The Military Courts-Martial (C)	Review Questions	Closing Questions
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Call for Other Questions

Key:

Textbook Content

Student Engagement and Assessment

Chapter 2 / Section 2: NS3-M1U3C2S2 – Disciplinary Actions

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 3, Chapter 2. Place a checkmark beside the NS3-M1U3C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M1U3C2S2 - Key Terms and NS3-M1U3C2S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will learn about the classes of official naval disciplinary actions. We will also learn about the different the features of nonjudicial punishment. Lastly we will discuss the different types of military courts-martial.	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	4-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Based on your knowledge from the last chapter, what leadership qualities can ensure good discipline?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on disciplinary actions.	9
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	10
Disciplinary Actions	Explain that there are two basic classes of official naval disciplinary action: nonjudicial punishment, better known as captain’s mast, and courts-martial. Captain’s mast, often simply referred to as “mast,” is a name that has come down from early sailing days. At that time, the usual setting for naval justice was on the weather deck, at the foot of the ship’s mainmast. Often the whole crew was assembled to hear the proceedings and to observe the punishment, sometimes flogging with a cat-o’-nine tails. In the	11-12

Chapter 2 / Section 2: NS3-M1U3C2S2 – Disciplinary Actions

	Marine Corps, captain's mast proceedings are referred to as "office hours."	
Disciplinary Actions	Explain that commanding officers (COs) may impose nonjudicial punishment for minor offenses upon subordinate officers and enlisted personnel. This authority cannot be delegated unless COs are generals or flag officers or have unique senior responsibility in which they exercise general court-martial jurisdiction. Captain's mast is the cornerstone of the whole structure of naval justice and discipline.	13
Disciplinary Actions	Explain that military offenses, as distinguished from common misdemeanors or minor crimes, may be divided into two classes: those involving neglect of duty, and those involving deliberate violations of instructions, orders, or regulations. Offenses classified as neglect of duty may result in punishment ranging from loss of liberty to that awarded by a court-martial. Deliberate violations of instructions, orders, or regulations are usually tried by court-martial. Such an offense is often of concern more for the defiance of authority it displays than for the consequences of the act itself. Offenses involving moral turpitude, such as theft, forgery, or serious acts against others, invariably result in adjudication by court-martial.	14-16
Disciplinary Actions	Explain that military courts are conducted with the same care and formality as civilian courts. Great responsibility rests upon the officers or petty officers assigned court duties. The court must be conducted with dignity and ensure swift, efficient administration of justice. Being dealt with fairly and forthrightly in all matters brought before a court is the right of each person accused under the Constitution, the Uniform Code of Military Justice, and the Manual for Courts-Martial.	17-18
Nonjudicial Punishment	Explain that prior to a captain's mast, the executive officer (XO) will normally hold a preliminary mast. Often called the screening mast, it is usually conducted almost exactly like captain's mast, except that the executive officer's purpose is to determine the gravity of the case and to ascertain the facts so that action may be recommended to the commanding officer. XOs may not assign punishment, but if conditions justify, they may dismiss the charges, since they have the responsibility for the routine, efficiency, and discipline of their units under their commanding officers.	19-20
Video 1 on Nonjudicial Punishment	Show video 1 on Nonjudicial Punishment	21
Nonjudicial Punishment	Explain that following the screening mast, the XO will furnish the CO with a list of any personnel upon whom charges have been preferred, whom the XO believes should appear at mast. The captain will hold captain's mast at a time and place most convenient for all concerned. All arrangements, including notification of the accused and witnesses and the accused person's division officer and leading petty officer, will be made by the executive officer and staff, including the master-at-arms force, the legal yeoman, and the personnel officer.	22
Video 1 on Nonjudicial Punishment	Show Video 2 on Nonjudicial Punishment	23
Nonjudicial Punishment	Explain that at the start of captain's mast, the captain will first warn the accused and any witnesses about the possible effect of their answers and explain their rights. These rights are similar to those recited by an investigating officer in a preliminary inquiry. As each individual case is called before the CO, the accused and his or her division officer step forward. The charges and specifications (details of the infraction) are read, and the accused is asked if these charges are understood. The captain then hears the	24

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	accused person's statement and that of any witnesses. The captain may ask the person's division officer and leading petty officer for comments concerning performance of duty. The personnel officer will provide the person's official record to the captain so that careful review can be made before any decision in the matter is reached. At all times during the procedure, the dignity, formality, and seriousness of a higher court are strictly maintained.	
Nonjudicial Punishment	Explain that in passing judgment, the commanding officer may dismiss the case, officially warn the accused, administer an oral or written admonition or reprimand, administer punishment, or order the accused to be tried by court-martial.	25
Video 3 on Nonjudicial Punishment	Show Video 3 on Nonjudicial Punishment	26
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	27
Nonjudicial Punishment	Explain that punishments that may be awarded at captain's mast to enlisted personnel include an official admonition or reprimand, confinement on bread and water for a period not exceeding three days (E-3 and below), correctional custody not exceeding thirty days, forfeiture of one-half pay not exceeding two months, restriction not exceeding sixty days, and reduction in pay grade to the next inferior level. The commanding officer may apportion the punishment among two or more of the above options.	28
Video 4 on Nonjudicial Punishment	Show Video 4 on Nonjudicial Punishment	29
Nonjudicial Punishment	Explain that officers may be awarded nonjudicial punishment by senior officers in command, but they may not be confined, put in correctional custody, given extra duty, or reduced in rank.	30
Video 5 on Nonjudicial Punishment	Show Video 5 on Nonjudicial Punishment	31
Nonjudicial Punishment	Explain that they may be placed under arrest in quarters, often referred to as "being in hack," or restricted from going ashore on liberty. One-half of their pay may be forfeited for not more than two months. In any event, an official letter to the chief of naval personnel by the commanding officer is required, and notation on the officer's next fitness report will be made.	32
The Military Courts-Martial	Explain that when nonjudicial punishment is considered to be inadequate for an offense charged, the commanding officer may refer the case to one of three types of court-martial. In increasing order of severity, these are the summary, special, and general courts-martial. Severity, in this case, means the maximum punishments that may be awarded by the court.	33
The Military Courts-Martial	Explain that a summary court-martial is convened by a commanding officer to administer prompt justice for relatively minor offenses through a simple court procedure. Only enlisted personnel may be tried by a summary court-martial. A summary court consists of one commissioned officer appointed by the commanding officer, preferably in naval courts a lieutenant or senior. This officer should be neither the accuser nor the investigator in the case, and should not be associated closely with	34

Chapter 2 / Section 2: NS3-M1U3C2S2 – Disciplinary Actions

	the accused.	
The Military Courts-Martial	Explain that during the trial the summary court represents both the government and the accused; in other words, that person is both prosecuting attorney and defense counsel. Although the accused is not entitled to a military defense council, he or she may hire a civilian lawyer at his or her own expense. The summary court investigates both sides of the matter and ensures that the interests of both the government and the accused are safeguarded. Investigation beyond fair inquiry and ensuring that the person understands the charges is not required if the accused pleads guilty. If found guilty, the accused is advised of the right to present matters in extenuation or mitigation, to be considered by the summary court when awarding punishment.	35-36
The Military Courts-Martial	Explain that punishments authorized by the summary court are similar to those that may be awarded by the commanding officer at mast: confinement for not more than thirty days, forfeiture of two-thirds pay for one month, and reduction in pay grade. At the end of the trial, the verdict is announced, and if the accused has been convicted, the sentence of the court is pronounced. A record of the conviction and any punishment awarded is made in the individual's service record. Following the proceedings, the person is restored to duty within the limitations imposed by the summary court's punishment.	38
Video on The Military Courts-Martial	Show Video on The Military Courts-Martial	39
The Military Courts-Martial	Explain that a special court-martial can be convened by a commanding officer to try cases involving offenses that warrant greater punishment than a summary court can award. The special court-martial has jurisdiction to try anyone subject to the UCMJ for any noncapital offense made punishable by the code, and some capital offenses if authorized by the president. The commanding officer, as convening authority for the court, draws up a convening order that specifies the time and place of meeting of the special court and appoints not less than three members to it.	40
The Military Courts-Martial	Explain that the convening authority may also have a military judge—a law officer certified by the judge advocate general—appointed to the court, if available. After consultation with the defense counsel, the accused may request to have only this military judge serve as the special court. If the judge approves, he or she will serve as a one-person special court, with sole responsibility for conduct of the trial. An accused enlisted person may also request that one-third of the special court be made up of enlisted personnel. The convening authority may grant this if enlisted people with suitable qualifications are available from another unit to sit on the court. All members of any court should be senior to the accused.	41
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	42
The Military Courts-Martial	Explain that the convening authority appoints an officer as trial counsel to conduct the case for the government; this person acts as prosecuting attorney. Another officer is appointed to act as defense counsel for the accused. The accused is afforded the right to have their own counsel for the defense. The accused can choose a civilian counsel paid at his or her own expense, military counsel of his or her own selection if such is reasonably available, or the appointed defense counsel.	43

Chapter 2 / Section 2: NS3-M1U3C2S2 – Disciplinary Actions

The Military Courts-Martial	Explain that the senior member of the special court-martial is the president, unless a military judge is detailed. Then that person will be the president of the court, even if the judge is not the senior member assigned. The grade of the president should be lieutenant or above. The president rules on legal procedures during the trial and instructs the court on the elements of each offense charged prior to closure of the court for vote, as well as what constitutes the presumption of innocence, reasonable doubt, and burden of proof. Before closure of the court for the vote on the sentence, the president advises it regarding the maximum authorized punishment for each offense. If president, the military judge is not considered a member of the court and does not vote on the guilt or innocence of the accused, so there must be at least three other individuals serving as members.	44-46
The Military Courts-Martial	Explain that the accused, on advice of counsel, may exercise what is known as a peremptory challenge of any member of the court. If exercised, the challenged member is dismissed from court duties by the president. No reason for the peremptory challenge need be given. If such challenge reduces the court membership below three, the convening authority must appoint another member.	47
The Military Courts-Martial	Explain that members of the special court-martial hear the evidence, determine the guilt or innocence of the accused, and, if guilty, render a proper sentence. In most cases, convictions and sentences require a two-thirds majority. Voting is by secret ballot, and all members must vote.	48-49
The Military Courts-Martial	Explain that a special court-martial may adjudge punishment including a bad conduct discharge (BCD), confinement not exceeding twelve months, forfeiture of pay not exceeding two-thirds pay per month for up to twelve months, or (for enlisted) reduction to the lowest pay grade. Apportionment of punishments may be made as by a summary court-martial.	50
The Military Courts-Martial	Explain that a general court-martial is the highest military tribunal. It may be convened only by the President, the Secretaries of the various services, a flag officer in command of a unit or activity of the Navy or Marine Corps, a general officer in command, the commanding officer of a naval station or larger shore activity beyond the continental limits of the United States, and other commanding officers specifically designated by the president or service secretary. A general court-martial consists of a military judge and at least five members. Enlisted members may serve on the court if the accused requests. As with a special court-martial, the accused may request in writing, subject to the approval of the military judge, that the case be heard by the military judge alone.	51-52
The Military Courts-Martial	Explain that a general court-martial has jurisdiction to try persons subject to the UCMJ for any offense punishable by the code. A general court-martial may also try any person who might be subject to trial by military tribunal, including civilians in situations in which martial law has been officially declared because of a breakdown of normal civilian authority.	53
The Military Courts-Martial	Explain that court procedures and responsibilities of the judge and members of the court and counsel are the same as in a special court-martial. The principal difference between the two is the greater severity of punishment possible in the general court-martial. These include all those punishments authorized in the UCMJ for the offenses the accused is found to have committed. These include death (for desertion in time of war, mutiny, sedition, or spying), confinement for life, dishonorable discharge, bad conduct discharge, dismissal of an officer, and total forfeiture of pay during the remaining period of a person's obligated service.	54-55

Chapter 2 / Section 2: NS3-M1U3C2S2 – Disciplinary Actions

Review Question	The Review Question is “Describe the three types of military courts-martial.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	56
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	57
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	58

III. Supplemental Activities -

A. In class Activity:

Supplies required: handout for take home activity

When: This is a good activity to do at the end of the lesson

- Conduct a mock NJP
 - Students should play all parts except the CO. Each level of the chain of command should make their recommendation to the CO.
 - The accused is suspected of falsifying a log during their watch (they did not actually verify a gauge reading, they just wrote down a value about what it would normally be)
 - Direct supervisor has had problems with this Sailor in the past and has reported it to their Chief
 - Chief has verbally counseled the accused but has not made a formal report to the division officer. The division officer has been told of the issues.
 - Division officer only sees the accused occasionally on watch and thinks they are doing a great job and they have a lot of potential.
 - The Department head does not stand watch with the accused and does not know much about the accused.
 - The CMC (NSI) is recommending CO mast, but is very angry that the chain of command had not acted on earlier smaller infractions.
 - At XO1 the accused stated that it was the first time they had done this, but the reading had been very consistent and they were running behind and just wanted to complete their rounds on time. Although the XO would have actually made their recommendation to the CO in order for the CO to decide if they were going to have NJP, we will do the recommendation as part of NJP.
 - Class discussion, what should the CO do? SNSI, what would you have done

Chapter 2 / Section 2: NS3-M1U3C2S2 – Disciplinary Actions

B. Take Home Activity: Have the cadets research and write a paper answering the following questions. Have them be specific and give examples.

1-What are the advantages or disadvantage of the courts-martial over Non Judicial punishment?

2-Why might a Sailor desire one over the other?

3-Which process may affect the Sailors life forever? That is, it may be a permanent record that could affect their lives after the Navy?

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 3: NS3-M1U3C2S3 – Review of Courts-Martial

(Section 3 of 3)

What Students Will Learn to Do:

Demonstrate an understanding of military justice and how it relates to the Navy

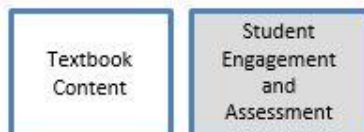
Skills and Knowledge to be Gained:

1. Explain the method for reviewing courts-martial
2. Describe the relationship between civil jurisdiction and military justice
3. Cite the methods used for disciplinary separations from the service

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 3, Chapter 2. Place a checkmark beside the NS3-M1U3C2S3 PowerPoint presentation, and these two CPS question deck files: NS3-M1U3C2S3 - Key Terms and NS3-M1U3C2S3 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 3: NS3-M1U3C2S3 – Review of Courts-Martial

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss and review what happens after a court-martial has been completed. We will learn about the relationship between civil and military jurisdiction. Lastly, we will discuss the methods used for disciplinary separations from the service.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Describe the differences between a court-martial and non-judicial punishment.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on review of courts-martial.	6
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	7
Review of Courts-Martial	<p>Explain that after a court-martial has been completed, the convening authority performs an automatic review of each court-martial they convene to see that the trial court acted correctly, the accused person was not denied any rights to which they were entitled, and any sentence adjudged was not illegal or too severe. Recommendations from a staff judge advocate or legal officer will be given as necessary. After this careful review the convening authority may approve or disapprove the findings and sentence, and change either or both of them. He or she may reduce or suspend the sentence, or change it to a different one providing the severity of the punishment is not increased. When a trial results in an acquittal (finding of not guilty), the convening authority may not change it, or send the case back for retrial.</p>	8-9
Review of Courts-Martial	Explain that this review process is similar to the appeal of a civil court conviction, except that in the military the review is done by higher authority in the chain of command, and is automatic. An appeal of a civil court conviction is made to a higher court in the system, and will only be granted if reasonable grounds for one can be shown.	10-11

Chapter 2 / Section 3: NS3-M1U3C2S3 – Review of Courts-Martial

Review of Courts-Martial	Explain that in the case of a summary or special court-martial, the convening authority forwards the trial record, along with recommendations, to the next superior with general court-martial jurisdiction for that officer's review. There, the staff legal officer furnishes a second legal opinion on the case. The senior may override the convening authority's recommendation if an error is found, call for a retrial, set aside in whole or in part findings of guilt and the sentence, or mitigate or suspend any part of an unexecuted portion of the sentence. Again, an acquittal may not be changed, nor any punishment increased.	12-13
Review of Courts-Martial	Explain that a finding of any court-martial that awards a bad-conduct discharge must be sent beyond the officer exercising general court-martial jurisdiction to the Office of the Judge Advocate General (JAG) of the Navy. There, a Court of Military Review consisting of a three-judge appellate review panel carefully reviews every case in which an approved sentence affects a flag officer, or in which a sentence imposing the death penalty, dismissal of an officer, a dishonorable or bad-conduct discharge, or confinement for one year or more has been imposed.	14-16
Review of Courts-Martial	Explain that above the Court of Military Review is a "supreme court" of military justice, the Court of Military Appeals. This court is composed of three civilian judges appointed by the president and confirmed by the U.S. Senate. An offender whose conviction has been upheld by the Court of Military Review has the right to petition the Court of Military Appeals to review the case. Such appeals are not automatic. If the petition is granted, the convicted person is entitled to a lawyer who will prepare a brief and argue the case before the court. Civilian counsel may be employed if desired.	17-18
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	19
Civil Jurisdiction	Explain that military service does not free a person from the obligation to obey laws governing the civilian population when he or she is among them. Military personnel are subject also to civil courts when they are within civil jurisdiction. In general, offenses committed by a service person off base in civilian clothes against a civilian, or against some element of the civil government, lack the necessary service connection to make them military offenses punishable under the UCMJ. Since there are many possible sets of circumstances, it is often necessary for a court to make the determination as to whether or not the offense was service connected.	20
Civil Jurisdiction	Explain that examples of civil cases of this type that have occurred include not paying personal debts, wrecking a borrowed car, damaging furniture in a hotel, speeding on city streets, assault, and disorderly conduct out of uniform in a public place. While these cases may initially fall strictly within civilian jurisdiction, they may also become involved with military law. For instance, suppose a speeding, drunken, and disorderly charge is filed by the local police, and the service person is held in jail pending disposition of the case. If that imprisonment extends beyond the time of authorized leave or liberty, the service person is then chargeable under the UCMJ for unauthorized absence. Additionally, the person could be charged under Article 111 for drunken or reckless driving and under the General Article for bringing discredit upon the Navy.	21
Civil Jurisdiction	Explain that if a service member is held by civil authorities, immediate steps should be taken to notify the commanding officer. If the person is acquitted of the charges, military charges normally will not be filed for the period of enforced absence. If the accused is found guilty and detained, the entire period of absence is considered as lost time for pay purposes, and that period is charged as unexcused absence.	22

Chapter 2 / Section 3: NS3-M1U3C2S3 – Review of Courts-Martial

Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	23
Separations from the Service	Explain that as mentioned earlier, separation from the military service by award of court-martial is considered an extremely severe punishment. A bad-conduct discharge may be awarded by either a special court-martial or general court-martial; a dishonorable discharge may be awarded only by a general court-martial.	24
Separations from the Service	Explain that less severe separations from the service, however, may be administered in special cases under the UCMJ and other legislation and statutes established by Congress. Officers may have their commissions revoked prior to the time they complete three continuous successful years of commissioned service. This may be for disciplinary reasons or for other overriding needs of the service. Regular Navy officers holding permanent commissions may be discharged if their performance is adjudged unsatisfactory at any time prior to completion of twenty years of service. Lieutenants (junior grade) and lieutenants are subject to discharge if they twice fail selection for promotion. An officer facing disciplinary action may submit a resignation from the service; separation will be effected if the resignation is accepted by the secretary of the Navy.	25-26
Separations from the Service	Explain that the "character" of the discharge from the naval service is very important. The separation may be "under honorable conditions" or "under conditions other than honorable." The character of the discharge represents the opinion of the Navy concerning the circumstances of the separation. This character is very important in connection with veterans' benefits such as G.I. Bill education, reemployment rights, and pensions. Further, many employers are inclined to refuse employment to persons who have an inferior type of separation from the armed forces. Most large employers and professional schools inquire searchingly into armed forces experience and the character of the separation received. They often prevent entry into their company or school if the conditions are other than honorable.	27-29
Separations from the Service	Explain that administrative separations with either character of discharge are also legally permissible under certain conditions. Broadly grouped under a heading of "undesirable," such conditions include incompatibility with service life, educational level and potential below-minimum standards (which precludes advancement to higher pay grade), persistent irresponsibility in financial management (which tends to bring discredit upon the Navy), and immoral standards of conduct evidenced by drug use or alcohol abuse, failure to pay just debts, repetitive sexually transmitted disease infections, or other abnormal social behavior.	30
Review Question	The Review Question is "Discuss the purpose and process of the review of courts-martial." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	31
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	32
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	33

Chapter 2 / Section 3: NS3-M1U3C2S3 – Review of Courts-Martial

III. Supplemental Activities -

A. In class Activity:

Supplies required: Whiteboard or Mobi Tablet

When: This is a good activity to do at the beginning of class

- In class have a discussion about the different possible types of discharges and separations. As you discuss list them each the white board.
 - Honorable
 - Administrative
 - Incompatibility with service life
 - Performance below standards
 - Financial irresponsibility
 - Immoral conduct
 - Abnormal social behavior
 - Other than Honorable
 - Bad conduct
 - Dishonorable

What are the consequences of each of these types of discharges on their life after the military? Can you go to Courts-Martial and be tried in civilian court?

B. Homework Activity: Courts-Martial cases sometimes are significant enough that they are reported on the national news stations. Additionally, the military reports to the public on a regular bases the results of Courts-Martials. These results can be found on the internet. Find a case that has made the news and has more than one article reporting information about the case. After reading about the reported facts of the case, or the situation, find out what the result of the Courts-Martial was. Realizing that you do not have access to the actual facts of the case, do you believe the results of the Courts-Martial were in line with the assumed facts of the case? Do you think the result would have been the same in a civil trial?

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 3: NS3-M1U3C2S3 – Review of Courts-Martial

Activity 1: Take Home Activity – Courts-Martial

Name: _____ Date: _____ Class: _____

Directions: Courts-Martial cases sometimes are significant enough that they are reported on the national news stations. Additionally, the military reports to the public on a regular bases the results of Courts-Martials. These results can be found on the internet.

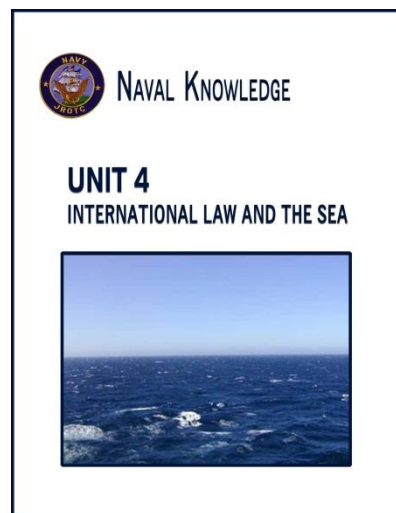
Find a case that has made the news and has more than one article reporting information about the case. After reading about the reported facts of the case, or the situation, find out what the result of the Courts-Martial was. Realizing that you do not have access to the actual facts of the case, do you believe the results of the Courts-Martial were in line with the assumed facts of the case? Do you think the result would have been the same in a civil trial? Give specific rationalization for your answers.

MODULE 1; UNIT 4: International Law and the Sea

Unit Overview

Unit Objective:

Demonstrate an understanding of international law as it applies to countries using the sea.



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Fundamentals of International Law	NS3-M1U4C1S1 – International Law and Diplomacy
		NS3-M1U4C1S2 – Rights and Duties of Sovereign States
		NS3-M1U4C1S3 – The United Nations
2	International Law of the Sea	NS3-M1U4C2S1 – Customary International Laws of the Sea
		NS3-M1U4C2S2 – Law of the High Seas
3	Law of War at Seas	NS3-M1U4C3S1 – Rules of War on Land and Sea
		NS3-M1U4C3S2 – War at Seas

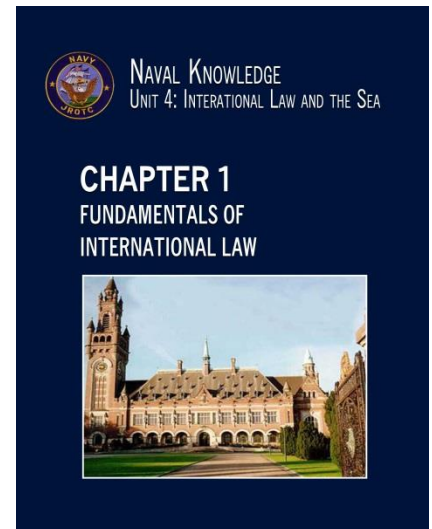
Module 1 Unit 4 Chapter 1: NS3-M1U4C1 – Fundamentals of International Law

What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

Skills and Knowledge to be Gained:

1. Identify the United States' role in international relations
2. Explain the purpose of international law and diplomacy
3. Describe the history of diplomacy as it relates to international law and the sea
4. Describe the sources of international law which bind independent nations
5. Identify three specific characteristics sovereign nations have in common
6. Identify the rights and duties of sovereign states under international law
7. Describe the process of diplomatic recognition
8. Describe the guidelines pertinent to military and naval attachés under international law
9. Describe how international problems are solved through the effective use of international law
10. Explain the concept of collective security
11. Describe the United Nations (UN)
12. Describe international, regional and collective arrangements recognized by the UN
13. Describe modern collective security trends and the issues that revolve around such trends



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

Module 1 Unit 4 Chapter 1: NS3-M1U4C1 – Fundamentals of International Law

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.
- D2.Civ.12.9-12. Analyze how people use and challenge local, state, national, and international laws to address a variety of public issues.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 2. Geography

- D2.Geo.2.9-12. Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions and their political, cultural, and economic dynamics.
- D2.Geo.11.9-12. Evaluate how economic globalization and the expanding use of scarce resources contribute to conflict and cooperation within and among countries.
- D2.Geo.12.9-12. Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.

Dimension 3. Gathering and Evaluating Sources

- D3.1.9-12. Gather relevant information from multiple sources representing a wide range of views while using the origin, authority, structure, context, and corroborative value of the sources to guide the selection.

Dimension 4. Communicating Conclusions and Taking Action

- D4.1.9-12. Construct arguments using precise and knowledgeable claims, with evidence from multiple sources, while acknowledging counterclaims and evidentiary weaknesses.
- D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.
- D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems...

Module 1 Unit 4 Chapter 1: NS3-M1U4C1 – Fundamentals of International Law

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

(Section 1 of 3)

What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

Skills and Knowledge to be Gained:

1. Identify the United States' role in international relations
2. Explain the purpose of international law and diplomacy
3. Describe the history of diplomacy as it relates to international law and the sea
4. Describe the sources of international law which bind independent nations
5. Identify three specific characteristics sovereign nations have in common

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	International Law and Diplomacy (A)
Video International Law and Diplomacy	International Law and Diplomacy (B)	Check On Learning A	History of Diplomacy	Sources of International Law (A)	Check on Learning B	Sources of International Law (B)	Video Sources of International Law
The Sovereign State	Review Questions	Closing Questions	Call for Other Questions				

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 4, Chapter 1. Place a checkmark beside the NS3-M1U4C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U4C1S1 - Key Terms and NS3-M1U4C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that Just as there are dealings, arrangements, and contracts between people and companies, so there are international relations among the different countries of the world. These relations have evolved over many centuries, during which time the countries have developed their own culture, language, traditions, and codes of law. Each nation has always considered its most important objective the protection of its people and its boundaries against outside threat.	1-3
Unit Overview	Explain that various countries have devised many concepts and policies to assist in this endeavor, such as isolationism, alliances, diplomacy, and powerful armed forces. They have worked out commercial and trade agreements to benefit their economies. They have cooperated to exchange culture and science. They have established the International Court of Justice and the United Nations as means of settling disputes. And they have gone to war with each other for good reasons and bad, both to survive and to conquer.	4
Unit Overview	Explain that during the course of these events, the nations of the world have developed a body of rules under which they deal with each other. These rules, and their application, are called international law. Some of this law is formal, set forth in treaties and agreements, and some is informal, unwritten yet legally binding because of tradition and custom.	5
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the importance of international law and diplomacy. We will delve into the history of international law as well as the sources. We will finish the lesson discussing the sovereign state including its characteristics and definition.	6-9
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	10
Key terms - Definitions	Reinforce the correct definition for each key term.	11-16

Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

Opening Question(Random Pick a Student – “RPS”)	<p>This Opening Question is “Explain why you think there’s a need for a structure of international law.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the fundamentals of international law.</p>	17
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	18
Introduction	<p>Explain that in order for nations to be able to conduct relations with each other on matters such as trade, exchange of money, tourists, boundary questions, communications, mail, and a host of other subjects, each of the contracting parties must be an independent and sovereign state. This means that the nation is free of foreign control and is able to conduct its own business in a legal manner.</p>	19
Introduction	<p>Explain that in the United States, the Department of State handles most of our government’s relations with other nations. Often, the business between our nation and others is conducted by our ambassadors—accredited persons who represent our government in the capitals of the foreign country. These ambassadors, on direction of our government, often engage in talks called negotiations with representatives of the host government. From these negotiations come treaties of friendship, military alliances, and commercial agreements that are mutually beneficial.</p>	20-22
International Law and Diplomacy	<p>Explain that in order to reach an understanding of what international law is, it might be helpful to consider the two component words individually. International means between nations, or between citizens of different nations. Law may be defined as "all the rules and principles of human conduct established and enforced by the authority, legislation, or custom of a recognized governing power." In combination, the words international law have been defined as "the system of rules and principles, founded on treaty, custom, precedent, and consensus, which civilized sovereign nations recognize as binding on the mutual relations between them."</p>	23
International Law and Diplomacy	<p>Explain that international law is divided into public and private bodies of law. The former deals with relations between sovereign states, and the latter with relations between individuals in different countries. Public international law will be the main focus of this text.</p>	24
International Law and Diplomacy	<p>Explain that the United States has always regarded international law as an important part of our national laws. In fact, the Constitution itself directs that treaties form part of the supreme law of the land. Likewise, the Supreme Court has ruled that "international law is part of our law, and must be administered by the courts of justice" whenever legal questions arise in litigation.</p>	25-26
Video on International Law and Diplomacy	<p>Show video on international law and diplomacy.</p>	27

Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

International Law and Diplomacy	Explain that the law plays a vastly more important role in world affairs than occurs to most people. It provides international goals to which we must bend our national efforts ... forms the basis for collective action by which nations guard the peace ... knits together countries in an ever stronger fabric of agreements about common policies and goals ... [and] provides the tools with which mankind can deal with the utterly new problems we encounter on the Earth and in space around it.	28
International Law and Diplomacy	Explain that diplomacy is defined in the Oxford English Dictionary as "the management of international relations by negotiation, and the method by which these relations are adjusted and managed by ambassadors and envoys." The main point to emphasize is the method of negotiation. Diplomacy is a substitute for force. It is the means of obtaining the maximum benefit to the nation without resort to force, while keeping and perhaps improving friendly relations with other nations.	29
International Law and Diplomacy	Explain that diplomacy always depends in some degree on the power-military, economic, moral, or allied-of the state for which the diplomat is acting. There may or may not be a threat of force, but without any power behind it, there is no likelihood of meaningful success in any diplomatic negotiations over important issues between nations.	30
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	31
History of Diplomacy	Explain that the pharaohs of Egypt and other early rulers had agreements with rulers of other states concerning sovereignty, military assistance, refugees, and immigrants. The Greek city-states of Athens and Sparta built on this early experience, and by the time of Plato, about 400 B.C., they had developed and defined treaty law and methods of negotiation, principles of international arbitration, the rights and duties of aliens, the immunity of ambassadors, and the right of asylum.	32-33
History of Diplomacy	Explain that during the Middle Ages, relationships based on diplomacy began between the kingdoms on the Italian peninsula. Venice, Florence, Genoa, Rome, and Naples, among others, were essentially independent city-states that were either at war or in alliances with each other much of the time. Agents called ambassadors were sent from one city-state to another to conduct the relations between them. The dwellings in which they lived on the foreign soil became known as embassies.	34-36
History of Diplomacy	Explain that In the beginning, many of these ambassadors were merely spies, for many used bribes, lies, and other disreputable means to steal political documents or gain information of potential value to their rulers.	37
History of Diplomacy	Explain that undoubtedly the most famous of these early diplomats was Niccolo Machiavelli of Florence. In 1513 he wrote a book called The Prince, which described his experiences and the diplomatic practices of the time, many of which were unscrupulous. Not all European ambassadors went to such extremes, but there is little doubt that the term machiavellian, which to this day is used to describe unethical political activities, applied to many of the royal courts of that time. Being an ambassador in these early days was not always conducive to long life, since bearers of bad news were sometimes executed	38-39
History of Diplomacy	Explain that in the late fifteenth century the Republic of Venice became the first government to establish permanent resident embassies in other countries. During the sixteenth century many of the Italian states developed two specialized government services: the diplomatic service, which looked after political matters, and the consular service, which concerned itself with trade and commerce. These two services together brought about closer relations between the states and formed the basis for modern	40-41

Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

	international law.	
Sources of International Law	Explain that international law is not compiled into a handy text that one can draw from the library. It is, rather, a body of law that has developed from a number of sources, a portion of which is unwritten.	42
Sources of International Law	Explain that The International Court of Justice in The Hague, Netherlands, which rules in cases on the basis of "internationally accepted law," has provided that international law may be based on: <ul style="list-style-type: none"> • Conventions and treaties • Customs and general practice • Court decisions • Commonly accepted teachings • Decisions of national courts 	43-45
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	46
Sources of International Law	Explain that one of the sources of international law is a document by the commonly accepted teachings of Hugo Grotius, who in 1625 published the treatise The Law of War and Peace, which earned for him the title "Father of International Law"	47
Sources of International Law	Explain that additionally, certain diplomatic correspondence contributes to the body of international law, in that these papers are a source of information regarding the attitude of states toward particular problems. Over a period of time, this correspondence can gain international acceptance as definitions of what the law is concerning particular issues.	48
Sources of International Law	Explain that treaties, conventions, and agreements are sources of law that bind countries together just as a contract binds the parties to it under national law. A treaty is a contract between independent nations and depends for its enforcement on the interests and honor of the governments that are parties to it. Breaking a treaty will normally result in international repercussions at the least, and, in extreme cases, may lead to war. Treaties mostly cover the more vital areas of international relations, such as political commitments, military alliances, and settlement of territorial claims. They are considered primary sources of international law.	49
Sources of International Law	Explain that Navy Regulations indicates the importance of treaties to naval commanders: "On occasions where injury to the United States or to citizens thereof is committed or threatened, in violation of the principles of international law or treaty rights, the senior officer present shall consult with the diplomatic or consular representatives of the United States, if possible, and shall take such action as the gravity of the situation demands. The responsibility for any action taken by a naval force, however, rests wholly upon the senior officer present."	50
Video on Sources of International Law	Show video on sources of international law.	51
The Sovereign State	Explain that the terms state, nation, and country are commonly thought of as synonymous, but there are subtle differences in precise meanings. The term country generally refers to the territorial limits or geographic boundaries on a map. Nation pertains to people and their common blood ties, language, customs, and, perhaps, religion. The word state stresses the governmental authority of the political entity. A political entity is something that has a real existence; having a definite policy or system	52

Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

	of government. Nation pertains to people and their common blood ties, language, customs and perhaps, religion	
The Sovereign State	<p>Explain that in discussing international law, we normally are talking about the relationships between sovereign states—that is, legal entities that are considered capable of speaking for themselves. Under international law a sovereign state has three specific characteristics:</p> <ol style="list-style-type: none"> 1. It is a permanently organized legal society or government 2. It is a fixed territory, free from control of any other state 3. It has the ability to enter into associations with other states 	53
The Sovereign State	Explain that the traditional doctrine of sovereignty also includes the right of a state to decide how to conduct its international affairs, and to resort to war when judged necessary to defend its national interests.	54
The Sovereign State	Explain that sovereign states send diplomats to other sovereign states and conclude treaties with one another without interference. They are expected to live up to their treaty commitments, though an absolute definition of the term sovereignty would imply complete freedom to break treaties as well as make them if it is in the national interest of the state to do so.	55
The Sovereign State	Explain that while most of the world today is composed of sovereign states, there are some political entities that have a status that differs somewhat from the strict definition of the word. Switzerland, for instance, has been officially regarded as a neutralized state since the Congress of Vienna in 1815. It has been successful in maintaining its neutrality, and consequently, any invasion of its territory or involvement in any war, since that time.	56
The Sovereign State	Explain that Formal permanent status of neutrality or neutralization by a treaty guaranteed by other states differs from self-proclaimed neutrality, which is the voluntary nonparticipation in a particular war. There are no guarantees in such neutrality other than the rights normally granted to neutrals in time of war by international law.	57
The Sovereign State	Explain that The Commonwealth of Nations (formerly known as the British Commonwealth) is a unique group in international law. Composed mainly of nations that were at one time under British colonial rule, Great Britain and her Dominions of Australia, Canada, New Zealand, and some fifty other countries enjoy complete sovereignty and independence in their internal and external affairs, but acknowledge an ideological allegiance to the British Crown based on common tradition and economic interest.	58
Review Question	The Review Question is “Explain the concept of diplomacy.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	59
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	60
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	61

Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

III. Supplemental Activities -

A. In class Activity:

Supplies required: Hand out “Vocabulary Review”

When: This activity should be done at the end of the class

- Have students complete the vocabulary review activity.

B. Take Home Activity: Copy and distribute the Handout “Current Travel Warnings”. Explain that one of the things that the US Embassy department does is issue travel alerts for American citizens travelling abroad. Have the cadets visit the webpage www.usembassy.gov and click on the Current Travel Warnings Link on the right side of the page. They will note current warnings posted for given areas of your choosing and be prepared to share the next class period why caution might be needed when traveling to that region, in light of current events.”

IV. Evaluation - see CPS database for chapter test questions.






Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

Activity 1: In Class Activity- Vocabulary Review

Name: _____ Date: _____ Class: _____

A. Read the definition and write the term from the lesson to which it refers. Choose from the following words:

- | | | | |
|--------------------|--------------|------------------|-------------|
| Asylum | Belligerent | Ambassador | Diplomacy |
| Envoy | Jurisdiction | Treaty | Private Law |
| Diplomatic service | Neutrality | Consular service | |

1		The management of international relations by negotiation, and the method by which these relations are adjusted and managed by ambassadors and envoys
2	<p>_____</p>	(two words) Deals with relations between individuals in different countries
3		A messenger or representative on a diplomatic mission
4	<p>_____</p>	A formally concluded and ratified agreement between countries
5	<p>_____</p> 	(two words) A specialized government service that is concerned with trade and commerce
6		An opponent or nation engaged in warfare against another
7		Protection granted by a nation to someone who has left their native country as a political refugee

Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

8	<p>— — — — — — — — — —</p> <p>— — — — — — — — — —</p>	(two words) A specialized government service that is concerned with political matters
9	<p>— — — — — — — — — —</p> <p style="text-align: right;">○</p>	A diplomatic official of the highest rank, as a representative of a sovereign state
10	<p>— — — — — — — — — —</p> <p>○ — — — — — — — — — —</p> <p style="text-align: right;">○</p>	The official power to make legal decisions and judgments
11	<p>— — — — — — — — — —</p> <p>○ — — — — — — — — — —</p>	The state of nonparticipation in a war

B. Write all the letters circled from above here: _____

Now un-jumble the letters to form an important word from the lesson, and write the word here:

Chapter 1 / Section 1: NS3-M1U4C1S1 – International Law and Diplomacy

Activity 1: Take Home Activity – Current Travel Warnings

Name: _____ Date: _____ Class: _____

One of the things that the US Embassy department does is issue travel alerts for American citizens travelling abroad. Visit the webpage www.usembassy.gov and click on the Current Travel Warnings Link on the right side of the page. Note current warnings posted for the areas given by your instructor and be prepared to share in class why caution might be needed when traveling to that region, in light of current events.”

Chapter 1 / Section 2: NS3-M1U4C1S2 – Rights and Duties of Sovereign States

(Section 2 of 3)

What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

Skills and Knowledge to be Gained:

1. Identify the rights and duties of sovereign states under international law
2. Describe the process of diplomatic recognition
3. Describe the guidelines pertinent to military and naval attachés under international law
4. Describe how international problems are solved through the effective use of international law
5. Explain the concept of collective security

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Warm-Up Question	Rights and Duties of Sovereign States	Recognition	Check On Learning A
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Military and Naval Attachés	International Problems and International Law (A)	Check on Learning B	International Problems and International Law (B)	Collective Security	Review Questions	Closing Questions
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Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 1 / Section 2: NS3-M1U4C1S2 – Rights and Duties of Sovereign States

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 4, Chapter 1. Place a checkmark beside the NS3-M1U4C1S2 PowerPoint presentation, and these two CPS question deck files: NS3-M1U4C1S2 - Key Terms and NS3-M1U4C1S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the rights and duties of the sovereign states. We will discuss what it takes to become recognized as a sovereign state and what happens when one withdraws. We will learn about Military and Naval Attachés. We will discuss international problems and law and finish by discussing collective security.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What is a sovereign state?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the rights and duties of the sovereign state.	9
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	10
Rights and Duties of Sovereign States	Explain that all sovereign states have rights, and with those rights are associated duties. Some rights are regarded as “fundamental”—the right of freedom from interference or intervention, the right of continued existence, and the right of self-defense. These rights are so fundamental that they have always been reserved for interpretation by each state in accordance with its own national policy. To that extent, each state is free to determine its own conduct. This implies that a sovereign state can	11

Chapter 1 / Section 2: NS3-M1U4C1S2 – Rights and Duties of Sovereign States

	do no wrong when acting on these matters in its own behalf—a situation that makes the quest for peace in a warlike world difficult.	
Rights and Duties of Sovereign States	Explain that each state has the right of equal access to international courts. Also, each one can control its diplomatic relations with other countries.	12
Rights and Duties of Sovereign States	Explain that the rights of existence and self-defense are of particular interest to the armed forces of a nation. Of unique importance in this regard is the legal right of a state to respond with military action in self-defense, even before an attack is clearly imminent. Consequently, if a neighboring state builds up its forces, it is considered sufficient grounds for a state to respond with a similar buildup in its own defense. In other words, no state is expected to wait passively until attacked, since the right of self-defense includes the right to prevent attack.	13
Rights and Duties of Sovereign States	Explain that the right to wage war in self-defense is recognized by the United Nations. However, preventive war is considered illegal, since such a war is based on the presumption that there might be an attack, not on the basis of proof of imminent attack.	14
Rights and Duties of Sovereign States	Explain that for each right there is a corresponding duty in international law. For instance, duties of belligerents (states at war with each other) to observe treaties, care for prisoners of war, follow rules of warfare, protect aliens, protect human rights, and so forth are considered duties of states under the law.	15
Rights and Duties of Sovereign States	Explain that the fact that some nations have varying interpretations of the law does not exempt them from their responsibilities. Independence in foreign affairs carries with it the right to diplomatic representation. The right of a state to have representatives in other states for carrying on diplomatic negotiations, and to receive similar representatives from others for the same purposes, is known as the right of legation.	16
Rights and Duties of Sovereign States	Explain that the Vienna Convention on Diplomatic Relations of 1961 established the three classes of heads of diplomatic missions that currently are accepted by the United States and most other nations. These three classes are ambassadors accredited to heads of state, envoys and ministers accredited to heads of state, and chargés d'affaires accredited to ministers for foreign affairs. These are considered equals when serving as heads of missions, except in the areas of precedence and etiquette observed at official functions. An ambassador is the personal representative of the head of state of his or her country. A charge d'affaires is the lowest rank of a head of mission.	17
Recognition	Explain that sovereign status can be attained in a number of ways. A treaty signed by several agreeing states may establish sovereignty. Former colonies may be granted sovereignty by their mother country. The acceptance of the new state into the world community of nations by other sovereign states, however, is largely a matter of their foreign policy.	18-19
Recognition	Explain that The United States considers three factors to be necessary in order for our government to grant diplomatic recognition, which is the formal acknowledgment of national status: <ul style="list-style-type: none"> • Control of the territory claimed • The will of the people reflected in the government • The preparedness of the new state to honor international obligations 	20

Chapter 1 / Section 2: NS3-M1U4C1S2 – Rights and Duties of Sovereign States

Recognition	Explain that when a state meets the U.S. criteria, the government considers the government of the state to be a legal entity existing de jure (by law) under international law. It will then grant diplomatic recognition and exchange ambassadors.	21
Recognition	Explain that there are other criteria that are also used to establish sovereign status and eligibility for diplomatic recognition. Essentially, these criteria include the existence of a government that is capable of exercising control over its people, a degree of stability, an established political existence, and in some cases admission as an independent state into an international organization such as the United Nations.	22
Recognition	Explain that the United States' view is that membership in the United Nations does not, in itself, constitute sufficient grounds for recognition by our government. Our relationships with the Communist governments of North Korea, Cuba, Laos, and Cambodia, for example, are only de facto (understood to exist in fact), but not de jure (by law).	23
Recognition	Explain that a change of recognition reflects changes from one state to another. When meeting U.S. criteria for diplomatic recognition, the state is considered to be an existing de jure under international law. On 1 January 1979, the United States withdrew formal diplomatic recognition of the Taipei government, while retaining cultural and commercial relations with it, and formally recognized the People's Republic as the de jure Chinese government.	24-25
Recognition	Explain that a breach of formal diplomatic relations has existed since 1961, when Fidel Castro announced to the world his Communist affiliations and alliance with the Soviet Union. When diplomatic relations were severed, the United States made it clear that the treaty granting us rights to the naval base at Guantanamo Bay remained in full force. To date, both nations have honored that treaty.	26-27
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	28
Military and Naval Attachés	Explain that according to international law, military and naval attachés are regarded as high-ranking members of the ambassador's official staff. They enjoy the same diplomatic immunities and protection as the ambassador. These include freedom to communicate with the home government; safety and security of self, staff, and family; inviolability of home and embassy; and certain jurisdictional immunities such as freedom from criminal and civil laws.	29-30
Military and Naval Attachés	Explain that the ambassador and each person on the staff must act in a manner befitting their rank and position, conforming to high standards of behavior. If a diplomat repeatedly breaks local laws, the host government may declare him or her persona non grata (not acceptable) and demand his or her removal.	31
Military and Naval Attachés	Explain that Naval and Military attachés of the United States are selected by their services and assigned by the Department of Defense to American legations or embassies overseas.	32
International Problems and International Law	Explain that international law is the set of rules that nations use to maintain and conduct their relations with other countries in the world. The U.S. government looks to international law for the solution of many of the basic problems that face the world.	33
International Problems and International Law	Explain that the North Atlantic Treaty of Organization (NATO) is an international group that has played a tremendous role in supporting global peace.	34

Chapter 1 / Section 2: NS3-M1U4C1S2 – Rights and Duties of Sovereign States

<p>International Problems and International Law</p>	<p>Explain that the following are NATO member countries as of 2014:</p> <ul style="list-style-type: none"> • Albania • Belgium • Bulgaria • Canada • Croatia • Czech Republic • Denmark • Estonia • France • Germany • Greece • Hungary • Iceland • Italy • Latvia • Lithuania • Luxembourg • Netherlands • Norway • Poland • Portugal • Romania • Slovakia • Slovenia • Spain • Turkey • United Kingdom • United States 	<p>35</p>
<p>International Problems and International Law</p>	<p>Explain that collective efforts such as the Organization of American States (OAS) and various UN agencies will likely have to play a major role if tensions between the developed and underdeveloped nations are to continue to be resolved in the future. Current OAS members include all countries in North, Central, and South America. Only if the nations of the world have diplomatic and commercial relationships is there a chance for world peace, and international law provides the rules for such dialogue.</p>	<p>36-37</p>
<p>International Problems and International Law</p>	<p>Explain that it has been through the collective action of many countries that the world has avoided a third major world war thus far. With modern technology affecting the entire environment on planet Earth, nuclear test ban and nuclear weapons nonproliferation treaties must continue in effect to prevent the spread of radioactive byproducts throughout the world, affecting the air we breathe and the food we eat.</p>	<p>38</p>
<p>International Problems and International Law</p>	<p>Explain that cooperation among nations must also play a role in modern scientific endeavors beyond the Earth, in the area of space exploration. A space treaty was signed in 1967 providing for the exploration of outer space for the benefit of all countries and agreeing that no nations would claim sovereignty over celestial bodies. An Astronaut Rescue and Return Agreement has been signed that provides for assistance to astronauts in distress and safe return when rescued.</p>	<p>39</p>
<p>International Problems and International Law</p>	<p>Explain that another frontier that we are beginning to explore and use is the deep ocean floor. The Law of the Sea Agreement was ratified by the United Nations in 1995. It outlines territorial limits, exploitation of the sea bottom, research and exploration of the continental shelves, ocean fishing, and nautical rules of the road.</p>	<p>40</p>

Chapter 1 / Section 2: NS3-M1U4C1S2 – Rights and Duties of Sovereign States

International Problems and International Law	Explain that the worldwide exchange of meteorological information has helped make us better prepared to cope with the violence of storms that care nothing about international boundaries. Many world leaders have declared that international agreements on the law of the sea are the most important task before us at the present time; for it is there that we will probably go before we make widespread explorations into space.	41
Check on Learning Questions B (Lesson questions 5-6)	Check in on student’s understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	42
International Problems and International Law	Explain that interactive computer networks such as the Internet have ushered in an information revolution of instantaneous electronic communication worldwide. International law is only beginning to grapple with some of the legal questions regarding its use for illicit purposes, such as drug trafficking and pornography.	43-45
International Problems and International Law	Explain that the economic development between the rich and poor nations of the world is essential for the survival of all people. We in the West are trying to build a world based on law; as we do so, we enter into a new phase of world history in which all nations must recognize shared interests and accept shared responsibilities. International law is recognized by the world community as the fundamental requirement for orderly relations.	46-48
Collective Security	Explain that the idea of forming an international organization for the purpose of peacefully settling disagreements between nations was proposed after every major war, beginning with the Congress of Vienna following the abdication of Napoleon Bonaparte in 1814. The height of Napoleon’s power in Europe came around 1812.	49-50
Collective Security	Explain that after World War I, substantial progress was made toward this goal with the formation of the League of Nations. Although the league failed to preserve peace and was ultimately disbanded, it provided the world with valuable experience in the association of states to settle political, economic, and social problems by peaceful means. Following World War II, on 24 October 1945, the United Nations Organization officially came into being with the ratification of its charter by the majority of the original 50 member states. There are currently 192 sovereign states as members of the United Nations.	51-53
Review Question	The Review Question is “What is meant by diplomatic immunity for ambassadors, attachés and others of the embassy staff and their families?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	54
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	55
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	56

Chapter 1 / Section 2: NS3-M1U4C1S2 – Rights and Duties of Sovereign States

III. Supplemental Activities -

A. In class Activity:

Supplies required: CPS clickers, blank paper for cadets

When: After completing the PowerPoint presentation on the section content, have cadets keep their CPS clickers.

- Break cadets into groups of 3-4 cadets. On a blank page, have them write 2-3 statements related to the content covered, that are either true or false. After 5 minutes, have them hand in their lists to the instructor.
- Instructor should then engage a CPS session in “Verbal” mode. (Same as engaging with PowerPoint and selecting the CPS lesson questions, but without checking the box for any PowerPoints or lessons) Then instructor should read some of the better questions the cadets have written and have the students respond using their clickers, checking for comprehension and discussing where appropriate.

B. Take Home Activity: Using the handout Spot the Errors, review the instructions at the top of the page. *The United Nations maintains a list of sovereign nations and their capital cities. Find any errors in this list of nations and cities. It may be that the capital doesn't match the country, or that the country doesn't belong on the list at all. Make a note beside any errors you find.*

Answers:

<u>Country</u>	<u>Capital</u>	<u>Error the cadet should find</u>
Austria	Vienna	
Germany	Paris	<i>Capital is Munich</i>
Norway	Oslo	
Romania	Moscow	<i>Capital is Bucharest</i>
St Lucia	Castries	
Pakistan	Islamabad	
United States	Washington	
Taipei	Taiwan	<i>Country and capital are switched</i>
Sierra Leone	Madrid	<i>Capital is Freetown</i>
Sweden	Stockholm	
Peru	Lisbon	<i>Capital is Lima</i>
Nepal	Kathmandu	
Monaco	Monaco	
Texas	Austin	<i>not a country</i>
Vietnam	Hanoi	
Turkey	Ankara	

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 2: NS3-M1U4C1S2 – Rights and Duties of Sovereign States

Activity 1: Take Home Activity - Spot the Errors

Name: _____ Date: _____ Class: _____

Directions:

The United Nations maintains a list of sovereign nations and their capital cities. Find any errors in this list of nations and cities. It may be that the capital doesn't match the country, or that the country doesn't belong on the list at all. Make a note beside any errors you find.

<u>Country</u>	<u>Capital</u>
Austria	Vienna
Germany	Paris
Norway	Oslo
Romania	Moscow
St Lucia	Castries
Pakistan	Islamabad
United States	Washington
Taipei	Taiwan
Sierra Leone	Madrid
Sweden	Stockholm
Peru	Lisbon
Nepal	Kathmandu
Monaco	Monaco
Texas	Austin
Vietnam	Hanoi
Turkey	Ankara

Chapter 1 / Section 3: NS3-M1U4C1S3 – The United Nations

(Section 3 of 3)

What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

Skills and Knowledge to be Gained:

1. Describe the United Nations (UN)
2. Describe international, regional and collective arrangements recognized by the UN
3. Describe modern collective security trends and the issues that revolve around such trends

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	The United Nations	Check On Learning A	International, Regional, & Collective Arrangements (A)
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Check on Learning B	International, Regional, & Collective Arrangements (B)	Collective Security Trends	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 4, Chapter 1. Place a checkmark beside the NS3-M1U4C1S3 PowerPoint presentation, and these two CPS question deck files: NS3-M1U4C1S3 - Key Terms and NS3-M1U4C1S3 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 3: NS3-M1U4C1S3 – The United Nations

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss in depth the United Nations. We will learn about international, regional and collective arrangements including pacts and memberships to such organizations as NATO and OAS. Lastly, we will discuss the collective security trends and what the policy entails.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What countries do you think are permanent members of the United Nations Security Council, and why?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the United Nations.	6
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	7
The United Nations	The basic purpose of the United Nations is to: maintain international peace and security, to take effective collective action to prevent and remove threats to world peace, and to cooperate in solving international economic, social, cultural, and humanitarian problems. To accomplish these goals, the principle of the sovereign equality of all members is recognized. All members have agreed to fulfill the obligations of the charter, to settle their international disputes by peaceful means, and to give the United Nations every assistance in any action it takes in accordance with the charter.	8-10
The United Nations	Explain that action in the United Nations is centered mainly in the Security Council. It comprises fifteen members. The five major powers—the United States, Great Britain, France, Russia, and the People's Republic of China—are permanent members, and ten other nonpermanent member nations are elected for two-year terms. Procedural matters acted on by the council require at least nine affirmative votes for passage. In all substantive measures, however, the nine affirmative votes must include those of the five permanent major powers for passage. If any one of the so-called Big Five casts a negative vote, called a veto, the measure is defeated. Known as the Yalta Formula,	11-14

Chapter 1 / Section 3: NS3-M1U4C1S3 – The United Nations

	<p>this voting arrangement was based on the assumption that if the Security Council was to carry out its responsibility effectively in the United Nations, agreement of the five major world powers was essential for any real action.</p>	
The United Nations	<p>Explain that the Security Council can make recommendations and pass measures to maintain or restore international peace and security whenever it determines the existence of any threat to the peace, breach of the peace, or act of aggression. These measures may be actions not involving the use of armed forces, such as interruption of economic relations or severance of diplomatic relations. Or the action may be military operations by air, sea, or land forces to maintain or restore peace. The charter obligates member nations to place armed forces under United Nations command to carry out whatever actions are decided upon by the council.</p>	15-17
The United Nations	<p>Explain that many nations responded to the UN call for forces during the Korean War. In recent years, UN military forces have participated in Operations Desert Shield and Desert Storm in 1991. They have also assisted in the Bosnian conflict, and in several humanitarian interventions in Africa.</p>	18-19
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	20
International, Regional, and Collective Arrangements	<p>Explain that In addition to the power of the Security Council to take action in cases of aggression, the UN charter specifically recognizes the right of members to act in self-defense, individually or collectively. The charter suggests possibilities of such arrangements, including regional associations, and allows such treaties as long as their activities are consistent with the purposes and principles of the United Nations.</p>	21
International, Regional, and Collective Arrangements	<p>Explain that on this legal basis, the United States and most other nations have concluded many such treaties with states having common concerns. Membership in such regional organizations and collective defense pacts has given the United States military and economic commitments with some forty nations throughout the world. In addition, the United States has concluded defense pledges or agreements with about thirty other countries.</p>	22
International, Regional, and Collective Arrangements	<p>Explain that Operation Enduring Freedom in Afghanistan in 2001-2 was an example of a military coalition organized by the United States outside the purview of the United Nations. Our present worldwide collective security system has bound us to defend Latin America, Western Europe, and almost every non-Communist state in the western Pacific.</p>	23-24
International, Regional, and Collective Arrangements	<p>Explain that regional organizations are arrangements between member states designed to address many of the political, technical, cultural, and educational problems that are of concern to the United Nations and its functional organizations. Regional does not necessarily imply a common geographic region, but rather that the countries in the pact have common interests in a given region.</p>	25
International, Regional, and Collective Arrangements	<p>Explain that collective defense pacts are designed, as their name implies, for mutual and collective self-defense. The knowledge that an attack on any member will result in collective and individual action by all parties to such a pact makes aggression much less probable, and consequently such treaties are a strong deterrent to any potential aggressor nation.</p>	26
International, Regional, and Collective Arrangements	<p>Explain that the United States has been closely involved with the security of all the countries in the Western Hemisphere ever since the Monroe Doctrine in 1823. The cornerstones of the Monroe Doctrine include:</p>	27-28

Chapter 1 / Section 3: NS3-M1U4C1S3 – The United Nations

	<ol style="list-style-type: none"> 1. The American continents were no longer available for colonization 2. In the Americas there was a political system different from that of Europe 3. The U.S. would consider dangerous to its peace and safety any interference by European powers in the Americas 4. The U.S. would not interfere with existing colonies nor interfere in internal affairs of Europe nor take part in European wars 	
International, Regional, and Collective Arrangements	Explain that since the Monroe Doctrine in 1823, the United States has been closely involved with the security of all countries in the Western Hemisphere/	29
International, Regional, and Collective Arrangements	Explain that in 1948 an organization that comprised almost all of the independent states of the Western Hemisphere was formed (Cuba dropped out in 1962). Called the Organization of American States (OAS), its aims are to promote peaceful settlement of disputes among member states, to provide for collective security, and to encourage cooperation in economic, social, and cultural matters. Largely anti-Communist in its philosophy, the OAS is based on the general principles of the Monroe Doctrine, especially the provision that an attack on one American state would be considered an attack on all. The OAS also supported American intervention in the Dominican Republic in 1965. The OAS decided to disagree with the U.S. invasion of Grenada in 1982.	30-35
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	36
International, Regional, and Collective Arrangements	Explain that another very important regional defense pact in which the United States is a key member is the North Atlantic Treaty Organization (NATO), formed in 1949. It is somewhat similar to the OAS, except that its primary purpose is collective defense.	37
International, Regional, and Collective Arrangements	Explain that like the OAS treaty, the NATO agreement states that an armed attack against one member shall be considered an armed attack against all members, and it provides for measures to meet such an attack. The North Atlantic treaty also endorses the doctrine of mutual aid, which principle has been the basis of our foreign policy in Western Europe since the treaty became effective. Under this principle, the United States has provided friendly foreign nations with arms and equipment in order to develop their "individual and collective capacity to resist armed attack."	38-39
International, Regional, and Collective Arrangements	<p>Explain that NATO Membership includes:</p> <ul style="list-style-type: none"> • U.S. • Canada • Iceland • Most nations of northern and western Europe • Greece and Turkey • Many of the former satellite states of the old Soviet Union • Other countries that may be invited in the future, including some of the member states of the Russian Federation 	40
Collective Security Trends	<p>There has been much soul-searching in Congress and by prominent commentators of many political persuasions concerning U.S. involvement in collective security arrangements. The questions usually raised revolve around two fundamental issues:</p> <ol style="list-style-type: none"> 1. Do U.S. defense treaties contribute to the nation's security, or do they 	41-42

Chapter 1 / Section 3: NS3-M1U4C1S3 – The United Nations

	<p>unavoidably involve the United States in costly wars where American interests are not at stake?</p> <p>2. Under what circumstances and for the benefit of which nations or governments should Americans be prepared to honor a pledge of defense by going to war?</p>	
Collective Security Trends	Explain that other questions involve the need for overseas bases and large standing military and naval forces, the rising costs of the defense budget, the priority of funds for social and economic problems at home, the moral aspects of arms sales to foreign countries, and concern over the extent to which Congress has been removed from the decision-making process on issues of war and peace.	43
Collective Security Trends	Explain that all U.S. presidents since World War II, however, have been able to maintain a policy of continued commitment to the democratic cause worldwide, but with hope of movement toward greater sharing of the responsibility among the allied nations.	44
Collective Security Trends	<p>Explain that essentially, this evolving policy has three main aspects:</p> <ol style="list-style-type: none"> 1. The United States will honor all of its treaty commitments, both because of their merit and the need to maintain world stability, for to do otherwise would invite aggression. 2. The United States will provide a shield if an aggressor nuclear power threatens the freedom of an ally or if the survival of the nation threatened is considered vital to U.S. security. 3. In cases involving other types of aggression, the United States will furnish military and economic assistance when requested in accordance with treaty commitments. However, the United States will look to that nation directly threatened to assume the primary responsibility of providing the manpower for its own defense. 	45-47
Collective Security Trends	Explain that this policy is dynamic—stable but changing as conditions change, just as the degree of threat to the United States changes. It is likely that collective security will continue to play a significant role in U.S. foreign policy. An attempt to retreat to isolationism would be a flight from reality. It is not likely that the United States will relinquish its claim to world leadership, for that would probably invite aggression worldwide.	48-50
Review Question	The Review Question is “What is the basic purpose of the United Nations?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	51
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	52
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	53

Chapter 1 / Section 3: NS3-M1U4C1S3 – The United Nations

III. Supplemental Activities -

A. In class Activity:

Supplies required: none

When: at the end of the lesson and continue into the homework activity

- A model United Nations simulation will be created.
 - Instructor should lead a discussion which ends in the class choosing an issue of global importance for cadets to focus on, and at least 5 countries with varied perspective on the issue.
 - Assign groups of cadets to represent and research the perspective of each of these 5 United Nations Member States. Explain that the goals of their research are to understand the assigned country and how it would regard the key issues at hand.
 - Research can begin in class, and the take home activity below would be to ask each cadet to write a resolution for the General Assembly with a brief description of the issue, and proposed solution. When the groups return for the next class period, they should spend 15 minutes collating their data and appoint one cadet to represent the country as the “ambassador.”
 - Then convene a meeting of the General Assembly with members from the 5 countries present, with the instructor or a selected cadet acting as the Secretary General who is in charge. No one can speak unless recognized by the Secretary General. Countries present their position and proposed solution. Two-three solutions are chosen as best; a vote is taken.
 - An amicable resolution to the problem would be the optimal outcome.

B. Take Home Activity: See above activity

IV. Evaluation - see CPS database for chapter test questions.

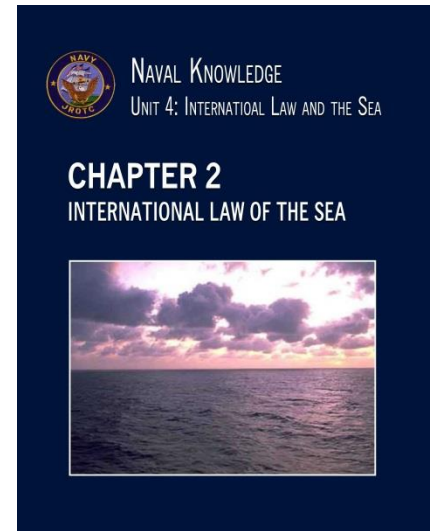
Module 1 Unit 4 Chapter 2: NS3-M1U4C2 – International Law of the Sea

What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

Skills and Knowledge to be Gained:

1. Explain the customs and treaties from 1604 to the present which relate to the international law of the sea
2. Identify the main ideas that have formed customary international law of the sea
3. Describe the four possible adverse impacts of international legal rules affecting the deployment and navigation of naval vessels
4. Explain the increase of sovereign territorial sea jurisdiction
5. Describe the potential hardships for the U.S. Navy in straits and many scattered islands around the world
6. Explain the controversy over where internal bays and gulfs end and territorial seas begin
7. Describe how international law deals with rivers, lakes and canals
8. Explain the law of the high seas
9. Describe the economic zone problems
10. Describe policies on territorial self-defense and rights concerning fisheries
11. Explain the international law on the continental shelf and seabeds of the world



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.7. Conduct short as well as more sustained research projects to answer a question or solve a problem...
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

Module 1 Unit 4 Chapter 2: NS3-M1U4C2 – International Law of the Sea

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**

Dimension 2. Civics and Political Institutions

- D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.
- D2.Civ.6.9-12. Critique relationships among governments, civil societies, and economic markets.
- D2.Civ.11.9-12. Evaluate multiple procedures for making governmental decisions at the local, state, national, and international levels in terms of the civic purposes achieved.

Dimension 2. Geography

- D2.Geo.2.9-12. Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions and their political, cultural, and economic dynamics.
- D2.Geo.11.9-12. Evaluate how economic globalization and the expanding use of scarce resources contribute to conflict and cooperation within and among countries.
- D2.Geo.12.9-12. Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.

Dimension 2. History

- D2.His.14.9-12. Analyze multiple and complex causes and effects of events in the past.

Dimension 4. Communicating Conclusions and Taking Action

- D4.1.9-12. Construct arguments using precise and knowledgeable claims, with evidence from multiple sources, while acknowledging counterclaims and evidentiary weaknesses.
- D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.
- D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 2 / Section 1: NS3-M1U4C2S1 – Customary International Laws of the Sea

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

Skills and Knowledge to be Gained:

1. Explain the customs and treaties from 1604 to the present which relate to the international law of the sea
2. Identify the main ideas that have formed customary international law of the sea
3. Describe the four possible adverse impacts of international legal rules affecting the deployment and navigation of naval vessels
4. Explain the increase of sovereign territorial sea jurisdiction
5. Describe the potential hardships for the U.S. Navy in straits and many scattered islands around the world
6. Explain the controversy over where internal bays and gulfs end and territorial seas begin
7. Describe how international law deals with rivers, lakes and canals

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	Precepts of the Law of the Sea	Check On Learning A
Territorial Seas	Straits and Archipelagoes	Check on Learning B	Bays and Gulfs	Rivers, Lakes, and Canals	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 2 / Section 1: NS3-M1U4C2S1 – Customary International Laws of the Sea

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 4, Chapter 2. Place a checkmark beside the NS3-M1U4C2S1 PowerPoint presentation, and these two CPS question deck files: NS3-M1U4C2S1 - Key Terms and NS3-M1U4C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will learn about the territorial sea zones and jurisdictions. We will discuss the evolution of international law of the sea and the conferences that have met to discuss it. Lastly, we will discuss the different types of water systems and bodies of water in reference to innocent passage and territorial seas.	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “In what ways is navigating the sea important to the United States?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the international law of the sea.	9
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	10
Introduction	Explain that the international law of the sea has evolved over centuries, from both custom and treaty. The most basic tenet of sea law is the principle stated by Hugo Grotius, a Dutch publicist considered to be the Father of International Law, in 1604: "No part of the sea may be regarded as pertaining to the domain of any given nation." This precept grew to become the basis of the "freedom of the seas" advocated by Britain and the United States and is now widely accepted by all maritime nations in the world.	11-12

Chapter 2 / Section 1: NS3-M1U4C2S1 – Customary International Laws of the Sea

Introduction	Explain that western civilization has become increasingly dependent upon the use of the sea for trade, transportation, and communication of ideas. It is not right for any nation to claim or reserve any part of the sea for exclusive use; the sea does not lend itself to possession or occupation, so any attempt to establish ownership would be difficult to defend with logic in court or with military force. Ownership and the ability to use or control are two entirely different things, however.	13
Introduction	Explain that for centuries territorial sea was considered to extend out 3 miles, the approximate range of a cannon shot from a shore battery in the seventeenth century. It was not until the early 1900s, when Imperial Russia claimed a 12-mile exclusive fishing zone, that the 3-mile limit was challenged. The United States joined the majority of other maritime powers in accepting the principle of a 12-mile territorial sea in a Law of the Sea Conference in 1978, conditional upon a law of the sea convention that provides for unimpeded passage through, over, and under international straits overlapped by the 12-mile limit.	14-16
Precepts of the Law of the Sea	<p>Explain that the main ideas that had formed the body of customary international law of the sea met little serious opposition until the middle of the twentieth century. Even then, it was only the extent of the territorial sea and fisheries limits that was disputed, not the fundamental concepts of sea law itself. The main precepts of the international law of the sea that have evolved over the centuries are:</p> <ul style="list-style-type: none"> • The concept of freedom of the high seas, in which no nation may restrict any areas or resources to its exclusive use or sovereignty • The concept of the territorial sea, which contends that coastal states have near-absolute sovereignty over a narrow band of waters adjacent to their coasts • The concept of special contiguous zones, where special limited jurisdiction prevails, such as in the straits and channels, and where neither the rules of the high seas nor territorial seas pertain 	17-20
Precepts of the Law of the Sea	Explain that the United Nations Law of the Sea Conferences have met a number of times since 1973. The stated purpose of these conferences has been "to develop rules for peaceful use of the seabed beyond the continental shelf to the entire spectrum of ocean uses."	21-22
Precepts of the Law of the Sea	<p>Explain that the UN General Assembly recognized that there was minimal chance for agreement, so it made provision for the conference to be postponed or adjourned until recalled whenever significant roadblocks arose. This proved wise indeed, for there was wide disagreement, mainly between the industrialized states and the underdeveloped nations. The principal issues that the conferences have had to deal with are:</p> <ul style="list-style-type: none"> • The breadth of the territorial sea • Passage through straits • Fisheries • The seabed • Marine pollution • Scientific research 	23-25
Precepts of the Law of the Sea	Explain that over the years some conventions have been agreed upon, but no global agreement covering the many items on the agenda has yet been reached.	26

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Precepts of the Law of the Sea	<p>Explain that international legal rules affecting the deployment and navigation of naval vessels have four possible adverse impacts.</p> <ul style="list-style-type: none"> • Limited mobility • Vulnerability to surveillance • Vulnerability to interdiction • Limitations on oceanographic and intelligence-gathering activities 	27
Precepts of the Law of the Sea	<p>Explain that first, the rules may limit mobility. For example, restrictions on passage through international straits may prevent the passage of warships, thus increasing the reaction time in which such naval units could be deployed to specific troubled areas. Timely movement of naval forces may be necessary for self-defense, to defend allies, or to maintain political stability. It is clear that these requirements would best be served by international agreement on the narrowest possible territorial sea.</p>	28
Precepts of the Law of the Sea	<p>Explain that second, legal developments might increase the vulnerability of naval vessels to surveillance. For example, by requiring warships to use only designated sea lanes, surveillance by enemy forces could be made much easier. Aerial reconnaissance, coast watchers, and electronic sensors all could be concentrated on the narrowed sea lanes defined by such law. In the case of many straits with sea lanes wide enough to allow submerged submarine transit, future submerged passage might be prohibited, since "innocent passage" in a territorial sea may not be made while submerged.</p>	29
Precepts of the Law of the Sea	<p>Explain that third, naval vessels may suffer increased vulnerability to interdiction. If the narrow sea-lane were in a strait, mining of that area or attack by enemy naval and air forces would be much simpler than if a broad sea area were involved.</p>	30
Precepts of the Law of the Sea	<p>Explain that fourth, legal developments might impose limitations on oceanographic and intelligence-gathering activities within the 200-mile offshore zones. For example, if authorization is given to regulate scientific research vessels within the 200-mile economic resource zones, naval oceanographic research might be severely restricted or prohibited therein.</p>	31
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	32
Territorial Seas	<p>Explain that the increase of sovereign territorial sea jurisdiction to 12 miles in 1978 placed over a hundred straits previously navigable as high seas in the category of territorial seas. The United States has maintained that transit of such straits, which include Gibraltar and Malacca, "should be regarded in law for what it is in fact: an inherent and inseparable adjunct of the freedoms of navigation and overflight on the high seas themselves."</p>	33
Territorial Seas	<p>Explain that passage through a territorial sea must be continuous and expeditious. Some states require advance notification or authorization. The passage, to be innocent, must be merely transit without entrance to inland waters, and it must not be prejudicial to the peace, good order, or security of the coastal state. A ship may stop and anchor, if these actions are necessary for safe navigation.</p>	34
Territorial Seas	<p>Explain that the littoral (coastal) state must not hinder innocent passage. It must observe the principle of freedom of communication and prevent acts in its territorial sea that are prejudicial to the rights of other countries. It also must give adequate publicity to known dangers to navigation in its territorial sea. It can, however, protect itself from acts harmful to its security and may require that customs and health inspectors board the ship prior to its entry into internal waters, if that is the ship's intention.</p>	35-36

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Territorial Seas	<p>Explain that foreign ships in passage through territorial seas must comply with the laws and regulations of the coastal state, as well as the rules of international law. In particular, such ships must observe rules concerning:</p> <ul style="list-style-type: none"> • The safety of traffic and protection of channels and buoys • Pollution of the waters • Conservation of the living resources of the sea • The rights of fishing and hunting • Hydrographic surveys • Display of the ship's national colors and salutes as prescribed by the coastal state 	37
Territorial Seas	<p>Explain that rules that apply specifically to submarines require that a submarine must transit a territorial sea surfaced, unless a specific bilateral treaty provision exists to the contrary. Under international law, the littoral state may conclude that an unauthorized submarine submerged in its territorial sea constitutes intent to infringe upon its security. It may take whatever defensive actions it deems necessary, including sinking the submarine. Aircraft, including naval aircraft, must request overflight permission over a territorial sea.</p>	38-39
Straits and Archipelagoes	<p>Explain that we have indicated the potential problems for the U.S. Navy that can arise with any extension of the territorial sea. The United States has stood staunchly for unimpeded navigation of warships and aircraft under rules of innocent passage throughout the conversion of many straits to territorial waters. However, without a treaty in place, there are no guarantees. A nation may place restrictions, such as requiring advance notice or banning nuclear-powered vessels</p>	40-41
Straits and Archipelagoes	<p>Explain that if restrictions on passage through straits were imposed, access to and from the Baltic, the Mediterranean, the Persian Gulf, and the Red Sea could be severely impaired. Entry to semi-enclosed sea areas such as the Caribbean and the Sea of Japan could also be affected adversely. Constraints on aircraft overflights, particularly those intended to bring rapid logistic support to allies, could also occur.</p>	42-44
Straits and Archipelagoes	<p>Explain that similar constraints could also apply to the passage of vessels and aircraft through archipelagic nations (nations composed of islands), such as Indonesia and the Philippines, and many smaller groups of islands that have attained sovereign status, such as Tonga, the Maldives, Solomon Islands, and Fiji. The United States backs the right of "archipelagic sea lanes passage," either on routes designated by the nation or on routes normally used for safe international navigation.</p>	45
Check on Learning Questions B (Lesson questions 5-6)	<p>Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.</p>	46
Bays and Gulfs	<p>Explain that there has been much controversy over the question of where internal waters of bays and gulfs end and where territorial seas begin. A gulf is larger than a bay and extends deeper into the land. By established convention, if the entrance to a bay or gulf is 24 miles or less in width, a line can be drawn seaward of the narrows at the entrance. A number of states persist in claiming that certain bays and gulfs are internal waters. Rarely are these claims upheld by international law.</p>	47-49
Bays and Gulfs	<p>Explain that the United Nations lists three basic elements that must exist before any such claim can be deemed valid:</p> <ol style="list-style-type: none"> 1. An effective claim to sovereignty by a national government 2. A continuous exercise of the authority claimed 3. Acquiescence by other nations. 	50

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Bays and Gulfs	Explain that Libya has claimed the Gulf of Sidra unsuccessfully. Canada has long claimed Hudson Bay, with an entrance 50 miles wide, but many countries, including the United States, do not recognize this claim. The Bay of Fundy, with a 65-mile entrance, was claimed as Canadian waters by the British in 1852, but a subsequent international commission declared the claim to be invalid.	51-52
Bays and Gulfs	Explain that denial of, or restrictions on, access to semi-enclosed bays, gulfs, and seas could pose a severe hardship on the U.S. Navy in carrying out its mission. For example, there have been proposals by some emerging Third World states located on the Indian Ocean to declare that entire ocean a "zone of peace and security," from which all warships would be barred. Such curtailments would severely limit the Navy's capability to carry out strategic deterrence, projection of power, and naval presence missions.	53-54
Rivers, Lakes, and Canals	Explain that rivers that lie entirely within one country, such as the Potomac, Mississippi, Thames, or Rhone, are considered part of that country's internal waters. They are called national rivers. Rivers that form a boundary between two or more countries are called international rivers.	55
Rivers, Lakes, and Canals	Explain that if such a river is not navigable, as for example the Rio Grande between the United States and Mexico, the territorial boundary lies in the geographic center of the river. If it is navigable, as with the St. Lawrence, the center of the deepest channel is used to mark the boundary; technically this channel boundary line is known as a thalweg. Because the navigable channel often varies from the geographical center, the thalweg is used to determine the boundary so both nations' ships can navigate in the river.	56-57
Rivers, Lakes, and Canals	Explain that international rivers are open to navigation by all ships, just as on the high seas. The same rule applies to rivers that pass through the territory of one state and serve as lines of communication for an interior state. The littoral nation may not impede free flow of traffic to and from the interior state. The Paraná, leading to Paraguay through Argentina, is one example of this; the Rhine in Western Europe, the Danube in Eastern Europe, the Congo of Central Africa, and the Amazon system through Brazil also carry much international traffic. The use of these rivers is controlled by international treaties and agreements between the riparian (on the river banks) countries.	58-59
Rivers, Lakes, and Canals	Explain that lakes entirely within the boundaries of one country are the exclusive property of that country. Treaties usually set international boundaries in those that lie in more than one country. The Great Lakes are subject to agreements between the United States and Canada. Treaties between the two countries define the territorial limits of each country and address jurisdictional questions such as admiralty law, navigation, and limitations of warships.	60
Rivers, Lakes, and Canals	Explain that passage through manmade canals is controlled by agreement of the countries most concerned. In peacetime they are open to the use of all nations' ships, subject to a toll for the transit service. If nations not holding title or interest in the canal are at war, belligerent warships from either side may use it. The canal is closed to belligerents at war with the controlling state; for example, the Suez and Panama Canals were not open to Axis powers during World War II.	61-62
Review Question	The Review Question is "What issues arise involving innocent passage?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	63

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Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	64
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	65

III. Supplemental Activities -

A. In class Activity:

Supplies required: Internet-enabled computer with access to YouTube, attached to projector.

MobiView tablet optional; handout for take home activity

When: Either before starting the lesson to prepare the students for why this is important - or after as a reflective review.

- Have the class watch the two-minute video, “The True Value of Our Oceans” about the value of the oceans, sponsored by the United Nations Oceans Environmental Program. It focuses on the importance of the world’s oceans, and can be tied back to why it’s critical that we have an international means for access and use of these waters - and their preservation.
- <https://www.youtube.com/watch?v=TooZWAcFH3Q#t=86>
- Before the video, tell the students to write down as they watch, two things that struck them as important or that they didn’t know before.
- After the video is over, use random pick a student in CPS to facilitate a discussion of important points in the video.

B. Take Home Activity: The handout – “International Law of the Sea Introduction - Review Activity” should be printed and given to each cadet. They will need to access a world map either in a book or online to complete the activity. The activity also includes review questions from content in the textbook. See the answer map on the following page. It is a map of Africa with countries and bodies of water are included as key for the instructor, but not to be handed out to students.

ANSWER KEY for Take home Handout:



AFRICA

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IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 1: NS3-M1U4C2S1 – Customary International Laws of the Sea

Activity 1: Take Home Activity – International Law of the Sea Introduction - Review Activity

Name: _____ Date: _____ Class: _____

Reference the map of Africa on the next page.

1. On the map, write a number beside or inside each African **littoral nation**, then use the space below to list the name of the country that matches the number you entered on the map. The first one is done for you. You may not need to use all the numbers below.

1	Morocco	20	39
2		21	40
3		22	41
4		23	42
5		24	43
6		25	44
7		26	45
8		27	46
9		28	47
10		29	48
11		30	49
12		31	50
13		32	51
14		33	52
15		34	53
16		35	54
17		36	55
18		37	56
19		38	57

2. Label all the bodies of water around the continent of Africa.

3. True or False? The Nile is a national river.

4. As stated in your textbook, an example of a river that extends into Central Africa and is important to communication and commerce for those internal nations is _____.



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AFRICA

Chapter 2 / Section 2: NS3-M1U4C2S2 – Law of the High Seas

(Section 2 of 2)

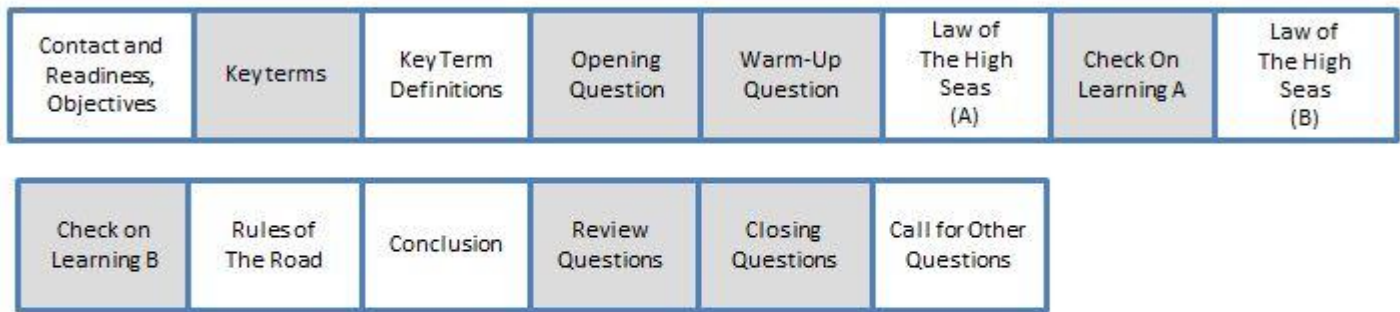
What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

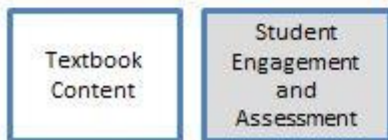
Skills and Knowledge to be Gained:

1. Explain the law of the high seas
2. Describe the economic zone problems
3. Describe policies on territorial self-defense and rights concerning fisheries
4. Explain the international law on the continental shelf and seabeds of the world

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 4, Chapter 2. Place a checkmark beside the NS3-M1U4C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M1U4C2S2 - Key Terms and NS3-M1U4C2S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 2: NS3-M1U4C2S2 – Law of the High Seas

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the law of the high seas. We will learn the importance of the fishing industry and its economic impact on the world's nations. We will discuss the rules of the road including their fundamentals and purpose.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – "RPS")	This Opening Question is "Who should have rights to waters just beyond territorial seas?" Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student's name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students' responses to the question on the slide, focusing on the law of the high seas.	7
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students' level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	8
Law of the High Seas	Explain as defined by the United Nations Convention on the High Seas, the term high seas means "all parts of the sea that are not included in the territorial sea or in the internal waters of a state." Over 70 percent of the world's surface is high seas, free for the entire world to use in its commerce.	9
Law of the High Seas	Explain that freedom of the high seas includes freedom to conduct maritime commerce, to navigate, to fish, to lay submarine cables and pipelines, to fly over, and to undertake scientific research. In exercising these freedoms, reasonable regard must be given to the rights of others to use the high seas. For instance, it has been ruled that in the interest of general safety countries conducting weapon tests at sea should stay clear of traveled sea lanes. If a ship does enter the area, however, the test, not the ship, is stopped. The fact that the sea is common to all does not prevent international agreements concerning it.	10-14
Law of the High Seas	Explain that in fact, the world community of states has seen fit to establish a body of maritime law to ensure that freedom of the seas will apply equally to all. Consequently, conventions and treaties have been concluded on safety of life and traffic at sea, salvage, international signals, fisheries, the laying of cables and pipelines, oil pollution, and the suppression of piracy and the slave trade	15-16

Chapter 2 / Section 2: NS3-M1U4C2S2 – Law of the High Seas

<p>Law of the High Seas</p>	<p>Explain that every state has the right to grant its nationality to ships and has the right to sail them under its flag on the high seas. Such ships, whether military or civil, are subject to the exclusive jurisdiction of the nationality of the flag flown. In return for these rights, among others, the state must take all measures necessary to ensure the safety of the ship, crew, and passengers.</p>	<p>17-18</p>
<p>Law of the High Seas</p>	<p>Explain that the following sections address in more detail the current problem areas concerning the law of the sea. These include problems related to economic zones, self-defense rules, exploitation of the continental shelf and seabeds, and fisheries.</p>	<p>19</p>
<p>Law of the High Seas</p>	<p>Explain that nations now claim exclusive jurisdiction over living and nonliving resources within 200 miles of their coasts. Jurisdiction, unlike sovereignty, is limited to fisheries. Many underdeveloped states view the economic zone as an answer to a struggling economy. Strategies include:</p> <ul style="list-style-type: none"> • Develop coastal fisheries • Combine foreign interest capital, equipment, and know-how with state’s natural resources for share of profit • License jurisdiction access for large fees 	<p>20-21</p>
<p>Law of the High Seas</p>	<p>Explain that when discussed in law of the sea negotiations, this issue has been called the question of the "residuum of authority" That is, with whom does the jurisdiction in the 12-to-200-mile economic zone rest — the coastal state or the international community as a whole? If the former, then the coastal state could arbitrarily impose restrictions on navigation within the zone. If the latter, only by consent of all the world's nations, either through treaty or by evolution of a new rule by custom, could restrictions on non-resource uses of the economic zone be imposed by the coastal state.</p>	<p>22-23</p>
<p>Law of the High Seas</p>	<p>Explain that aside from navigational constraints on naval and merchant shipping, strict control of the economic zone could hinder naval scientific and oceanographic research. Further, pollution jurisdiction could be used to harass merchant shipping or naval vessels transiting the area.</p>	<p>24</p>
<p>Law of the High Seas</p>	<p>Explain that in the legal sense, a territorial sea is not a part of the high seas, even though it is in a physical and geographic sense. The coastal state exercises exclusive jurisdiction—sovereignty—in its territorial seas. In contrast, it has only limited preventive or protective jurisdiction over any economic zone beyond. This may include exploration and exploitation rights on the continental shelf and seabed, fisheries, and self-defense measures.</p>	<p>25-26</p>
<p>Law of the High Seas</p>	<p>Explain that self-defense measures are easily understood from the standpoint of international law. It is a fundamental right of a sovereign state under the law to take all the defensive measures required to safeguard its existence, not only in its territorial sea, but also on the high seas. Before World War II President Franklin Roosevelt declared a Defensive Sea Area beyond the 3-mile limit and gave orders to sink any German submarines found in that area. This order was a "reasonable" measure in view of the war in Europe and the fact that neutral ships had already been sunk by German submarines in these waters.</p>	<p>27-28</p>
<p>Law of the High Seas</p>	<p>Explain that defending the right to natural resources for the state’s own profit, or exploitation rights, in the economic zone is less clear cut. Freedom to fish on the high seas has been a part of customary international law. There have been more disputes over the protection of rights concerning fisheries than over any other international maritime issue since World War II.</p>	<p>29-30</p>

Chapter 2 / Section 2: NS3-M1U4C2S2 – Law of the High Seas

Law of the High Seas	Explain that new fishing fleets with factory ships serving as mother ships for dozens of smaller trawlers comb the principal fishing areas of the world. In a number of cases these fleets have depleted fish stocks to the point where important fisheries have been lost to the world, perhaps forever. Conservation has become a fundamental concern.	31-32
Law of the High Seas	Explain that fishing is a valuable economic resource and countries, both developed and developing, are demanding a share of the world's fisheries. The fisheries problem, then, is real and vital to many countries. Fair and intelligent agreements, both bilateral and multilateral, are necessary to satisfy the coastal states and the distant-water fishing nations. Along with these, there will have to be a strict application of conservation measures, and it is likely that these will have to be enforced by coastal states under international law designed to benefit all mankind.	33-35
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	36
Law of the High Seas	Explain that with the discovery of oil and minerals in the seabed, nations have tended to assert their exclusive rights for exploration and exploitation of them. In general, this activity has concentrated on the continental shelf, but technology has advanced to the point where exploitation of deep ocean seabeds is well within the grasp of states with the means to pursue it.	37-38
Law of the High Seas	Explain that the Geneva Convention on the Continental Shelf, made effective in 1964, defines continental shelf as "the seabed and subsoil of the submarine areas adjacent to the coast, but beyond the territorial sea, to a depth of 200 meters [656 feet], or beyond to where the depth of the superjacent waters [allows] exploitation of the natural resources."	39
Law of the High Seas	Explain that in the past, the bed of the sea could not be occupied by any state, so the rule was that it was as free as the seas above it. In 1945, however, President Harry Truman proclaimed that the United States regarded the natural resources of the seabed and subsoil beneath the high seas contiguous to its shores to be subject to its jurisdiction and control. Since then, the law pertaining to the continental shelf and seabeds has evolved.	40
Law of the High Seas	Explain that science has determined that in excess of 100 billion barrels of oil lie under the U.S. continental shelf, compared with 21 billion in U.S. proven land reserves. To get the oil out, American companies have constructed drilling rigs or derricks in the high seas above the seabed. Geologists also claim that the continental shelf, which in some places extends 120 miles out, contains vast quantities of ores.	41
Law of the High Seas	Explain that today, all countries with continental shelves are in various stages of exploration and exploitation, and many have been successful. Foremost among these are Mexico and the United States in the Gulf of Mexico; Norway, Scotland, and Britain in the North Sea; and the United States off the California coast. The oil rig is considered an impediment to navigation on the high seas, so the Continental Shelf Convention specifies that a safety zone must be established around such installations up to a distance of 500 meters, for the mutual protection of shipping and the installation itself.	42-43
Law of the High Seas	Explain that developing international law of the sea now recognizes that a coastal state exercises sovereign rights over its continental shelf for the purpose of exploring and exploiting its natural resources. The exercise of such sovereign rights over the continental shelf does not alter the legal status of the waters above or that of the airspace over the water. This right of exploration and exploitation is limited, in that	44-45

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	there can be no unjustifiable interference with the freedom of navigation, fishing, or scientific research.	
Law of the High Seas	Explain that though exploitation of the continental shelf is still in its infancy, technology has now progressed to the point where the deep seabeds and the ocean floor may also become sources of raw materials. Scientific research has determined that extensive deposits of many strategic minerals lie on or close to the surface of the sea floor, in addition to inestimable amounts of oil in the subsoil. The mining of manganese nodules from the seabeds commenced in the early 1970s. The United States has proposed that the deep seabeds not be subject to any kind of claim by any state, but rather that all activities in the area be governed by international law in accordance with United Nations principles.	46-47
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	48
Rules of the Road	Explain that the nautical rules of the road were devised for the purpose of standardizing ship movements on the seas in various situations in such a manner as to avoid collisions at sea. The fundamental rules of meeting, crossing, and passing have evolved in response to the need for safety of waterborne vessels, their passengers, and cargoes. Without such rules, chaos would surely exist.	49-53
Rules of the Road	Explain that the international law currently in effect is called Regulations for the Prevention of Collisions at Sea, commonly known as the international rules of the road. The current law was revised in 1972 and came into effect in 1977. It was only the third revision since 1895, when British and French sailing rules gained international acceptance. These rules are worldwide in application and cover all aspects of safe conduct of a vessel at sea, including lights, whistle signals, day shapes, and ship maneuvers under different circumstances.	54-58
Rules of the Road	Explain that international rules of the road are now developed by a specialized agency of the United Nations called the International Maritime Organization (IMO). It comprises all the major shipping nations of the world.	59
Rules of the Road	Explain that the rules of the road are positive international law. They are specific and have proven to be completely enforceable. The rules are applicable to all vessels, large and small, warship and merchant. In the event of a collision, the case is heard in the admiralty court of the maritime nation having jurisdiction, and international law is uniformly applied to ships of all nationalities.	60-61
Rules of the Road	Explain that the international rules of the road (popularly called the COLREGS) generally apply in territorial seas and national waters, unless special internal rules have been adopted by a nation. In the case of the United States, inland rules, differing somewhat from international rules, prevail in specified inland waters. Sailors must acquaint themselves with all rules that apply to any nation they are about to visit.	62-63
Conclusion	Explain that the law of the sea is today in a state of flux and development. The United States must seek to ensure that future legal developments concerning the use of the seas do not adversely affect our ability to carry out naval missions. In this effort, the United States must take the lead in defending existing international legal rights and argue against any attempts to impose restrictions or bans in the following areas: <ul style="list-style-type: none"> • Navigation through or overflight of an economic zone • Innocent passage of warships through territorial waters, or advance notice for same • Submerged transit or overflight of straits • Entrance of naval vessels into semi-enclosed areas 	64-69

Chapter 2 / Section 2: NS3-M1U4C2S2 – Law of the High Seas

Conclusion	Explain that the growing pressures for more exploitation of the resources from the seas make it exceedingly important for the maritime nations to come to agreement in many areas. Our capacity to exploit the seabeds, engage in advanced scientific research, fish, conduct ocean commerce, regulate pollution, conserve natural resources, and conduct peaceful naval operations are all interrelated issues, each dependent in some respect on international accords on the law of the sea.	70
Video on the Law of the Sea	Show video on the Law of the Sea.	71
Review Question	The Review Question is “Describe safety measures that can be taken to avoid collisions at sea.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	72
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	73
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	74

III. Supplemental Activities -

A. In Class Activity:

Supplies required: handout for take home activity

When: This activity should be done at the end of the lesson.

- As a pair-share activity, instruct students to consider these two questions:
 - 1 - Do you think non-coastal countries should have equal access to fisheries in the world’s oceans both in the high seas and closer to shore?
 - 2 - How do you think disputes over this international law should be resolved...through firm rules or case-by-case basis?
- Monitor the discussions as you walk around the classroom, and if time, share any important points that were discussed among the students

B. Take Home Activity: Using the take home activity “Nautical Rules of the Road”, have the cadets research to find an example of a collision at sea that was caused by one or both vessels not following nautical “rules of the road.” Note the nationality of the ships, the date of the collision, the reason they collided, and the extent of the damage (in dollars and in casualties). Note how the collision could have been avoided.

IV. Evaluation - see CPS database for chapter test questions.

Module 1 Unit 4 Chapter 3: NS3-M1U4C3 – The Law of War at Sea

What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

Skills and Knowledge to be Gained:

1. Describe the international law as it relates to warships
2. Explain the general rules of war on land and at sea
3. Describe war at sea and the effects war has on international law
4. Describe the methods used to enforce laws of war

Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says...
- RI.11-12.3. Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.
- W.11-12.10. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes, and audiences.

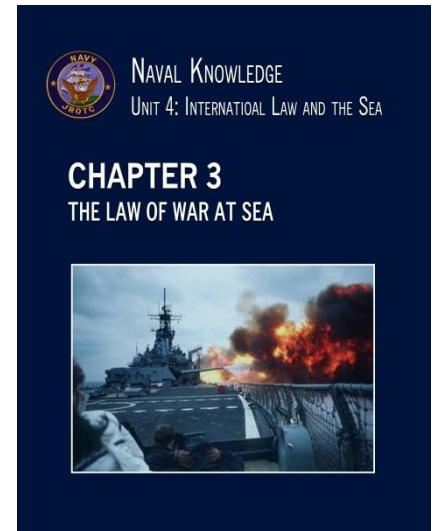
Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

College, Career, and Civic Life (C3) – Frameworks for Social Studies State Standards**



Module 1 Unit 4 Chapter 3: NS3-M1U4C3 – The Law of War at Sea

Dimension 2. Civics and Political Institutions

- D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.
- D2.Civ.12.9-12. Analyze how people use and challenge local, state, national, and international laws to address a variety of public issues.
- D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.

Dimension 2. History

- D2.His.14.9-12. Analyze multiple and complex causes and effects of events in the past.

Dimension 3. Gathering and Evaluating Sources

- D3.1.9-12. Gather relevant information from multiple sources representing a wide range of views while using the origin, authority, structure, context, and corroborative value of the sources to guide the selection.

Dimension 4. Communicating Conclusions and Taking Action

- D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

**A complete listing of all linked College, Career, and Civic Life (3) – Framework for Social Studies Standards associated with this Chapter are displayed on the Standards Chapter Matrix – C3 Framework for SS Standards located at the end of the Naval Science 3 Instructor’s Guide.

Chapter 3 / Section 1: NS3-M1U4C3S1 – Rules of War on Land and Sea

(Section 1 of 2)

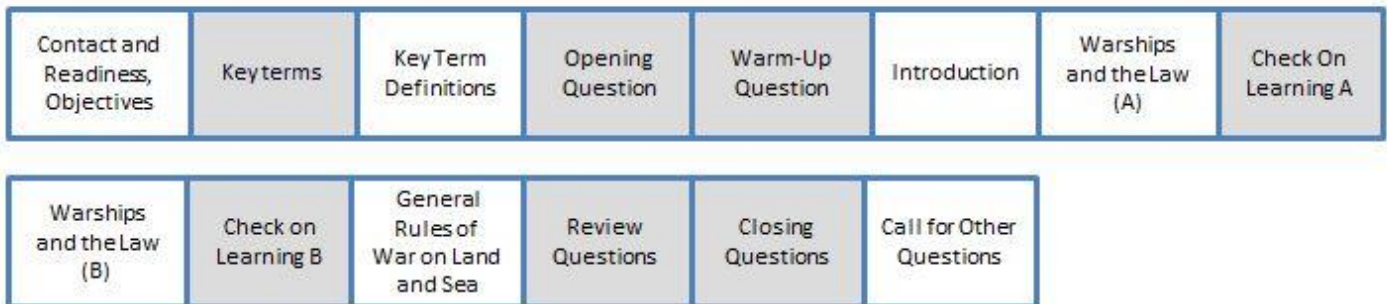
What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

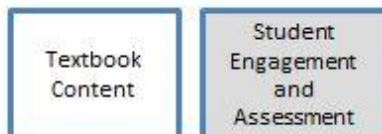
Skills and Knowledge to be Gained:

1. Describe the international law as it relates to warships
2. Explain the general rules of war on land and at sea

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 4, Chapter 3. Place a checkmark beside the NS2-M1U4C3S1 PowerPoint presentation, and these two CPS question deck files: NS2-M1U4C3S1 - Key Terms and NS2-M1U4C3S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 3 / Section 1: NS3-M1U4C3S1 – Rules of War on Land and Sea

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the law of the war at seas. We will learn that a large portion of the law at sea has to do with warships. We will discuss the law of the sea as they pertain to warships, including regulations when on foreign territory. We will learn about the general rules of war on land and on sea. Lastly, we will discuss the rules of civilized warfare.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Discuss what is meant by international law on the high seas.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the law of war at sea.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
Introduction	Explain that the high seas in time of peace are free for the lawful use of the ships and people of all countries. A large portion of international law is concerned with ships—their rights and privileges, their traffic rules, admiralty law, and laws of conduct in peace and war.	10-11
Warships and the Law	Explain that two specific requirements must be met in order for a ship to be termed a warship. First, the vessel must be commissioned as a part of the naval forces of a state and authorized to display an appropriate flag or pennant that identifies her as such. Second, the vessel must be commanded by a member of the military forces of that state and must have crew subject to military discipline.	12
Warships and the Law	Explain that warships represent the sovereignty and independence of the state to which they belong. The jurisdiction of this state over them is exclusive under all circumstances, and any act of interference with them by a foreign state is an act of war.	13
Warships and the Law	Explain that this does not mean that a warship on the high seas is free of all restrictions.	14

Chapter 3 / Section 1: NS3-M1U4C3S1 – Rules of War on Land and Sea

Video on Warships and the Law	Show video on warships and the law	15
Warships and the Law	Explain that just as interference with a warship on the high seas is an offense against the sovereign in whose service the warship is employed, the abuse of privilege by a warship is a direct reflection upon the honor of that same sovereign. For this reason, every nation with a navy of its own has, by tradition and regulation, attempted to ensure that its warships conduct themselves at all times in a manner that brings credit to the nation they represent. With privileges, of course, come duties.	16
Warships and the Law	Explain that commanding officers of U.S. Navy ships, in conformance with the Geneva Convention of the High Seas and U.S. Navy Regulations, must <ul style="list-style-type: none"> • Render assistance to any person found at sea in danger of being lost • Proceed with all possible speed to the rescue of persons in distress if informed of their need of assistance, insofar as such action may reasonably be expected of officers • After collision, render assistance to the other ship, her crew, and passengers 	17-18
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	19
Warships and the Law	Explain that warships of all nations have a duty to suppress piracy on the high seas. In order that they might accomplish their duty in this respect, international law has recognized that warships have the "right to approach," which can be exercised in either peace or war.	20
Warships and the Law	Explain that warships as a matter of practice, therefore, request the name and nationality of all merchant ships met at sea, usually by flashing light. When at peace, nations grant warships port calls. Ship visits, in the absence of formal agreements, are arranged through diplomatic channels.	21-22
Warships and the Law	Explain that when in a foreign port, a warship is considered an extension of the territory of its sovereign state and is not subject to any interference by local authorities. Police or port authorities are never entitled to board the ship without first obtaining the permission of the commanding officer, who is never required to submit to a search of the ship.	23
Warships and the Law	Explain that such immunities do not mean the ship can act in a lawless manner. Responsibility and leadership are again the key to such privileges. By accepting the hospitality of the port, the warship consents to comply with harbor regulations concerning speed and traffic control, sewage disposal, health and quarantine restrictions, and so forth. If the ship does not meet such standards, valid grounds exist for complaint through diplomatic channels.	24
Warships and the Law	Explain that the officers and crew of a warship are completely immune from local jurisdiction (authority) while on board the ship in a foreign port. Similarly, it is customary for local authorities to waive all jurisdictions over officers or crew members ashore on official business. However, the situation is different when officers and enlisted personnel go ashore unofficially for leave or liberty. In most countries, local law and jurisdiction will apply to the visitors. In the case of U.S. Navy visits to allied nations, there often exists an arrangement, the Status of Forces Agreement, which specifies in detail how any problems are to be handled. All personnel on leave or liberty in a foreign country should be well advised on the local law and what to do should they get in trouble there.	25-26

Chapter 3 / Section 1: NS3-M1U4C3S1 – Rules of War on Land and Sea

Warships and the Law	Explain that there is a difference in the case of merchant ships visiting a foreign port. International law states that a merchant ship is subject to the jurisdiction of the nation being visited. This illustrates the fact that a merchant ship is not considered an extension of the "territory" of the nation of registry, as is a warship. This difference is probably best exemplified in the doctrine of asylum (zone of absolute safety). Asylum is protection and sanctuary granted by a sovereign state to a foreign national who seeks such protection because of persecution based on race, religion, nationality, or political affiliation.	28
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	29
General Rules of War on Land and Sea	Explain that Navy Regulations states, "In the event of war between nations with which the United States is at peace, a commander shall observe, and require his command to observe, the principles of international law." This statement makes it clear that naval officers must be thoroughly knowledgeable of the rules of warfare.	30
General Rules of War on Land and Sea	Explain that many definitions of "war" exist, but for this particular discussion the simple definition of war as "a legal condition of armed hostility between states" is applicable. It generally implies armed, physical conflict between nations, but in the legal sense, a state of war may exist before or after the use of force.	31
General Rules of War on Land and Sea	Explain that the violence of war existed from 7 December 1941 until the Congress legally declared war on Japan the next day. The treaty of peace with Japan did not come into force until 1952, even though all fighting had ceased on 15 August 1945 and the surrender document was signed on 2 September.	32
General Rules of War on Land and Sea	Explain that It would seem that such legal details would be unimportant, but such is not the case. War clauses in insurance policies, certain provisions of the Uniform Code of Military Justice, and certain presidential powers, among others, are hinged on the legal state of war, not necessarily the violence of conflict.	33
General Rules of War on Land and Sea	Explain that the 1907 Hague Peace Conventions, in their attempts to broadly codify the laws of war, first recognized that the avoidance of war should be attempted as an ultimate goal in all cases. Second, they recognized that war is sometimes unavoidable and has to be accepted as a regrettable but legitimate means of settling disputes between nations. Because of this, it was agreed that the best that could be hoped for was a general acceptance of humanitarian rules of warfare.	34--35
General Rules of War on Land and Sea	Explain that in World War II, some of the belligerents had not ratified the conventions. After the war, when defendants in war crimes trials from these countries claimed immunity because their nations had not ratified the Laws of War, the judges rejected this defense. Today the rules of war are considered customary rules of international law and are binding on all nations, whether or not they have signed specific agreements.	36
General Rules of War on Land and Sea	Explain that the limitation on land and naval warfare are, in general, similar. The first group of restrictions concerns the conduct of the war itself—for example, prohibitions on the use of certain weapons such as poisons, poison gases, and "dumdum" bullets. The second group protects persons who are not involved in the actual conduct of the war: civilians, sick and wounded members of the armed forces, and prisoners of war.	37
General Rules of War on Land and Sea	Explain that the three basic principles underlying the rules of civilized warfare have historically been humanity, chivalry, and military necessity. Of these, humanity is unquestionably the most important. It is the basis for all prohibitions imposed by international law on belligerents for the purpose of limiting excessive violence.	38-40

Chapter 3 / Section 1: NS3-M1U4C3S1 – Rules of War on Land and Sea

	Chivalry involves the qualities of bravery, honor, courtesy, respect for women, protection of the weak, generosity, and fairness to enemies. The principle of military necessity permits a belligerent to apply only the degree and kind of regulated force not otherwise prohibited by the laws of war. The rules of international law come above military necessity, because the latter does not constitute an acceptable defense for lawlessness in the conduct of war.	
Review Question	The Review Question is “Discuss the general rules of war on land and at sea.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	41
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	42
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	43

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Mobi – optional (for recording student responses during discussion);
handout for take home activity

When: After the lesson

- Divide class up into three groups. Have one group take each of the three basic principles of civilized warfare (Humanity, Chivalry, and Military Necessity). Give them 5-7 minutes to come up with at least 4 examples of actions that would illustrate that principle in a wartime or peace-keeping situation. Spend the last 8-10 minutes of class having them review their examples with the rest of the class.

B. Take Home Activity: Explain that sailors on liberty in a foreign port are subject to local law and jurisdiction. Have the cadets imagine that they are a commanding officer on a ship, and need to give instructions of general conduct expectations to their subordinates. Have them use the handout “Ports of Call Guidelines” and create a list of at least five general guidelines which would apply to all ports of call.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 1: NS3-M1U4C3S1 – Rules of War on Land and Sea

Activity 1: Take Home Activity- Ports of Call Guidelines

Name: _____ Date: _____ Class: _____

Directions: Sailors on liberty in a foreign port are subject to local law and jurisdiction. Imagine that you are a commanding officer on a ship, and need to give instructions of general conduct expectations to your subordinates. Make a list of at least five general guidelines which would apply to all ports of call.

Chapter 3 / Section 2: NS3-M1U4C3S2 – War at Seas

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of international law as it applies to countries using the sea

Skills and Knowledge to be Gained:

1. Describe war at sea and the effects war has on international law
2. Describe the methods used to enforce laws of war

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	War At Sea (A)	Check On Learning A	War At Sea (B)
Check on Learning B	War At Sea (C)	Video War At Sea	War At Sea (D)	Enforcement Of the Law	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 1, Unit 4, Chapter 3. Place a checkmark beside the NS3-M1U4C3S2 PowerPoint presentation, and these two CPS question deck files: NS3-M1U4C3S2 - Key Terms and NS3-M1U4C3S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 3 / Section 2: NS3-M1U4C3S2 – War at Seas

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss war at sea and how conflict arises due to an open lawful use by all nations. We will learn of the different type of weaponry considered lawful by under the international law of the sea. We will discuss the different types of institutions considered lawfully protected under the law. Finally, we will discuss the enforcement of the law at sea.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Discuss examples in U.S. history of sea warfare and battles fought at sea.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on war at sea.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
War at Sea	Explain that the major distinction between land warfare and war at sea lies in the fact that land warfare takes place primarily on the territory of one or several of the belligerents, while sea warfare is mostly fought on the high seas. These high seas are not within the sovereignty of either belligerent but are open to lawful use by all nations of the world. In such circumstances, there are bound to be conflicts between the interests of the belligerents, whose purpose is to destroy the naval power and maritime commerce of the enemy, and the legitimate interests of neutrals who seek to carry on their ordinary commerce with all nations, including the belligerents.	10-11
War at Sea	Explain that the Hague Conventions forbid the laying of unanchored, automatic contact mines, unless they will become harmless within one hour after the person laying them ceases to control them. Automatic minefields are not supposed to be laid solely for the purpose of intercepting commercial shipping, and precautions are supposed to be taken for the security of peaceful neutral shipping.	12
War at Sea	Explain that communist forces consistently violated the rules concerning mines in both the Korean and Vietnam Wars. They indiscriminately dropped mines of all types in rivers, floated them down rivers into the open seas, and laid them throughout harbors	13-16

Chapter 3 / Section 2: NS3-M1U4C3S2 – War at Seas

	and bays without regard for commercial ships and peaceful fishermen. The rules were again violated during the Iran-Iraq War in the 1980s, when drifting mines were released into the Persian Gulf, causing damage to ships of several nations, including the United States.	
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	17
War at Sea	Explain that chemical, biological, and radiological (CBR) warfare may be used by United States forces only if and when authorized by the President. In general, the use of such weapons has been condemned by the United States, and President Nixon halted the production of chemical and biological agents in 1969. It is known, however, that Soviet forces remained at a high state of training in the use of these weapons, and several of their former client states in the Middle East and many suspected terrorist organizations still are.	18
War at Sea	Explain that CBR weapons, however, in the absence of international laws to the contrary, must still be regarded as lawful, subject to the general rules of humanity that govern the use of all weapons in wartime. The United States proposed that nuclear weapons be prohibited from use in the deep seabed and ocean floor, and a treaty to this effect was negotiated and approved by the United Nations in 1970. Aerial or naval bombardment intended to inflict wanton destruction of populated places or other devastation not justified by military necessity is absolutely forbidden by the rules.	19-20
War at Sea	Explain that the bombardment of undefended cities open for immediate occupation and bombardment for the sole purpose of terrorizing a civilian population are also forbidden. In World War II, it can be said without pride that both sides committed horrifying violations of this rule, the Allies in retaliation for Axis raids on cities in England.	21
War at Sea	Explain that medical establishments, hospital zones, museums, churches, and buildings housing religious organizations are entitled to special protection. Hospital ships and aircraft, when marked and operating as required by the Geneva Convention, may not legally be made the object of attack in naval warfare.	22-23
War at Sea	Explain that in general, a submarine must follow the rules of warfare applicable to surface ships. Under international law, before a merchant vessel can be sunk, the belligerent warship must give warning and enable the victim's crew and ship's papers to be debarked to a place of relative safety. During World War I and World War II, this rule was abrogated by both sides, each of which claimed that they adopted unrestricted submarine warfare in retaliation for illegal acts by the other.	24
War at Sea	Explain that unrestricted submarine warfare is no longer a clear issue under international law. One permissible method that a belligerent may use to shut off an enemy's trade is the blockade. A blockade is isolating, closing off, or surrounding of a place, as a port, harbor, or city, by hostile ships or troops to prevent entrance or exit.	25
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	26
War at Sea	To make a blockade legal, it must be effective; that is, if a ship attempts to enter or leave a blockaded port, its capture must be attempted.	27

Chapter 3 / Section 2: NS3-M1U4C3S2 – War at Seas

Video on War at Sea	Show video on War at Sea	28
War at Sea	Explain that belligerent warships may also cause a merchant ship to pause on the high seas and submit to visit and search for possible contraband. If a vessel resists or attempts to flee, a warship may use force to stop her and, if necessary, sink her.	29-30
Enforcement of the Law	Explain that the most effective way of enforcing the laws of war is the official publication of the facts by the wronged nation, with intent to influence world opinion against the offending belligerent. This has proven effective in the world forum of nations. If the laws of war are breached, protests and demands for the punishment of offending individuals, as well as compensation, are probable. Reprisal for illegal acts may also be attempted, but may not be done for revenge alone. Neither can this measure be taken against civilian detainees or military prisoners of war. Acts of reprisal must cease as soon as they have achieved their specific objective. The final method of enforcement of the laws of war is by the punishment of war crimes. War crimes trials and the publicity that accompanies them can be an effective deterrent against future violations of the laws of war.	31-32
Review Question	The Review Question is “Discuss tactics and methods used to enforce the laws of war in the high seas.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	33
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	34
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	35

Chapter 3 / Section 2: NS3-M1U4C3S2 – War at Seas

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Mobi View – optional (for recording student responses during discussion); handout for take home activity

When: At the end of the lesson plan.

- As a group activity, using your Mobi View or just your chalkboard or whiteboard....Ask the students these questions and note their responses in writing when appropriate.

1. *Consider the concept of contraband.*
2. *What is the definition?*
3. *What happens during “visit and search?”*
4. *Who is allowed to “visit and search” a vessel?*
5. *What happens if contraband is NOT found?*
6. *What happens if contraband IS found?*
7. *What would be the last option put in to action if a ship with contraband aboard attempted to flee?*

B. Take Home Activity: Using the handout, “Blockade vs Quarantine”, have the cadets compare and contrast the concepts of blockade vs quarantine (how they are alike; how they are different). Give an example of a real or hypothetical military/economic/political situation where each would be effective.

During the next class period, collect the assignments and share the most relevant and thought-provoking with the class, and discuss.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 2: NS3-M1U4C3S2 – War at Seas

Activity 1: Take Home Activity – Blockade vs Quarantine

Name: _____ Date: _____ Class: _____

Directions: Compare and contrast the concepts of blockade vs quarantine (how they are alike; how they are different). Give an example of a real or hypothetical military/economic/political situation where each would be effective.

MODULE 2: Naval Leadership

Module Overview

Module Objective:

By this time in a cadet’s experience, he or she has been active in a unit for one to two years. Over that time period you should have gained some insight into what leadership and followership is and how it affects the performance and morale of the individual in a unit. But you are now getting to the time where you can no longer simply exist as a cadet in ranks. It is time for each cadet to start mentoring those who are junior to you and be a leader in the organization. As your responsibilities grow, you will be expected to increase your skills as a leader. This section speaks to the concepts of leading others and how to evaluate and teach your followers for the improvement of the organization.

Module Organization:

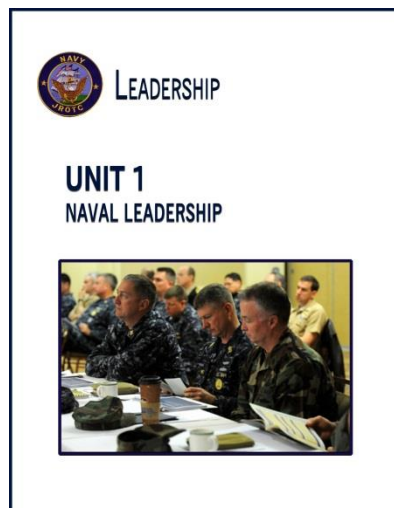
Unit Number	Unit Name	Chapter Name
1	Naval Leadership	Leadership
		Qualities of a Leader
		Evolution of Performance
		How to Give Instruction

MODULE 2; UNIT 1: Naval Leadership

Unit Overview

Unit Objective:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Leadership	NS3-M2U1C1S1 – The Challenge of Leadership
2	Qualities of a Leader	NS3-M2U1C2S1 – Qualities of a Leader
		NS3-M2U1C2S2 – Conduct in Uniform
3	Evolution of Performance	NS3-M2U1C3S1 – Evaluation of Performance
4	How to Give Instruction	NS3-M2U1C4S1 – How to be an Effective Leader
		NS3-M2U1C4S2 – Lecture Procedure

Module 2 Unit 1 Chapter 1: NS3-M2U1C1 – The Challenge of Leadership

What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction

Skills and Knowledge to be Gained:

1. Describe the basis for effective leadership
2. Explain the differences in philosophies of leadership
3. Explain the importance of obedience
4. Describe obedience in the military services
5. Describe the legal and moral obligations of military leaders
6. Summarize the challenge of leadership

Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

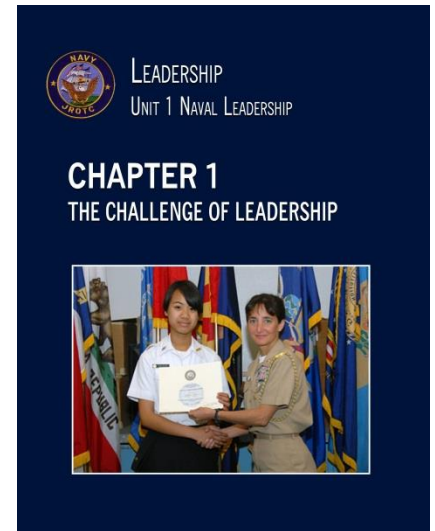
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.7. Conduct short as well as more sustained research projects to answer a question or solve a problem...
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...



Module 2 Unit 1 Chapter 1: NS3-M2U1C1 – The Challenge of Leadership

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 1 / Section 1: NS3-M2U1C1S1 – The Challenge of Leadership

(Section 1 of 1)

What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction

Skills and Knowledge to be Gained:

1. Describe the basis for effective leadership
2. Explain the differences in philosophies of leadership
3. Explain the importance of obedience
4. Describe obedience in the military services
5. Describe the legal and moral obligations of military leaders
6. Summarize the challenge of leadership

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	Basis for Effective Leadership
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Philosophies of Leadership	Check On Learning A	Obedience	Check on Learning B	Military Leader: A Legal and Moral Obligation	The Challenge of Leadership	Review Questions	Closing Questions
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Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 1 / Section 1: NS3-M2U1C1S1 – The Challenge of Leadership

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 2, Unit 1, Chapter 1. Place a checkmark beside the NS3-M2U1C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M2U1C1S1 - Key Terms and NS3-M2U1C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that leadership can be defined as an art, gift or science by which a person can direct the thoughts, plans and actions of others in order to obtain their obedience, respect, confidence, and loyal cooperation. The effective leader understands the challenge of leadership as well as embodies the desired qualities of a leader. They also satisfactorily evaluate performances of subordinates as well as their self and know how to deliver instruction.	1-3
Unit Overview	Explain that although the circumstances of each leadership position may be unique, the challenge of leadership remains the same, to get people to do the job effectively.	4
Unit Overview	Explain that the same qualities that make a good leader in the military services are equally helpful to the civilian leader. They include: <ul style="list-style-type: none"> • Moral responsibility • Professional knowledge • Initiative and ingenuity • Ability to organize • Ability to make decisions • Loyalty and devotion to duty • Self-confidence • Courage and moral courage • Discipline and self-discipline 	5
Unit Overview	Explain that NJROTC Cadet Officers immediately become concerned with the selection of personnel for leadership positions for advancement, for filling billets in the organization and for carrying out specific assignments. The overall performance rating of a Naval leader is affected by his or her ability to select appropriate people for various roles, and to appraise objectively their future capabilities in more responsible assignments.	6
Unit Overview	Explain that as you become an upperclassman in your school and achieve higher ranks within your NJROTC unit, you will often be called upon to give either formal or informal instruction to schoolmates or to junior NJROTC cadets. To effectively give instruction, you need to know some learning theory, how to prepare for instruction and techniques for delivery. In this unit we will cover the challenges of leadership, qualities of a leader, evaluation of performance, and how to give instruction.	7-8

Chapter 1 / Section 1: NS3-M2U1C1S1 – The Challenge of Leadership

<p>Establish contact and readiness; provide lesson overview and objectives review</p>	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the basis and philosophies of leadership. We will talk about why obedience is one of the most important qualities a good leader should strive for. We will discuss why being a military leader is a legal and moral obligation. Finally, we will discuss the challenges of leadership.</p>	<p>9-11</p>
<p>Key terms - CPS</p>	<p>Ask students to respond to the CPS questions covering each key term.</p>	<p>12</p>
<p>Key terms - Definitions</p>	<p>Reinforce the correct definition for each key term.</p>	<p>13-14</p>
<p>Opening Question(Random Pick a Student – “RPS”)</p>	<p>This Opening Question is, “Why is it important to know the difference between an order and a command?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on leadership.</p>	<p>15</p>
<p>Warm-Up Questions(Lesson questions 1-2)</p>	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	<p>16</p>
<p>Introduction</p>	<p>Explain leadership and discipline are vital in any military organization. The same qualities that make a good leader in the military services are equally helpful to the civilian leader. Leaders are responsible for evaluating the performances of subordinates. An effective leader uses effective instruction techniques.</p>	<p>17</p>
<p>Basis for Effective Leadership</p>	<p>Explain that good leadership stresses the qualities that enable a person to inspire and manage a group of people successfully. Effective leadership, therefore, is based on personal example, good organization and administration, and personal moral responsibility. The second of these, organization and administration, deals with a leader's personal attention to and supervision of subordinates. Because the Navy is made up of people, naval leaders must learn to understand and value the many individuals with whom they must work.</p>	<p>18</p>
<p>Basis for Effective Leadership</p>	<p>Explain that the Naval leader must have a philosophy of leadership based on firmly held moral values and integrity of character. Leaders must understand how to act toward seniors, peers, and juniors. A Naval leader will be ineffective if he or she does not understand good leadership and administration and is not able to get the teamwork necessary for the unit to carry out its mission.</p>	<p>19</p>
<p>Basis for Effective Leadership</p>	<p>Explain that leadership involves human relations—specifically those between a leader and a group. A leader must be able to impose, either through command or persuasion, his or her will upon that group. Also required is a willingness on the part of the leader to sacrifice personal time and material gain to achieve this personal “power.” Still, a person who is to become a truly successful leader must first of all have learned the principles of good “followership.”</p>	<p>20</p>

Chapter 1 / Section 1: NS3-M2U1C1S1 – The Challenge of Leadership

Philosophies of Leadership	<p>Explain that there are widely differing philosophies regarding leadership. They are centered these questions....</p> <ol style="list-style-type: none"> 1. Are leaders born or made? 2. Can anyone who can master the principles of leadership effectively lead? 3. Is it a managerial process or a matter of character and moral development? 4. Can one learn to lead simply by studying the lives of the great ones? 	21
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	22
Obedience	<p>Explain that obedience is one of the most important of the qualities that good leaders should strive to instill in their personnel. Obedience is necessarily the first lesson that must be learned by any military person.</p>	23
Obedience	<p>Explain that while disobeying the law will result in punishment of one sort or another in either environment, the loss of their job is probably the most significant result when civilians disobey their boss. The military "product," however, is defense of our country and our way of life. Military service people, therefore, must be more idealistic than the average civilian, since they are serving, protecting, and defending the United States and her allies—even to the extent of giving up their lives in peace or war. Thus there is a greater need for obedience from persons in uniform.</p>	24
Obedience	<p>Explain that in the military, an order is a directive to action of some kind, generally given by a senior to a junior. In the Oath of Service taken by all enlisted personnel upon enlistment, they promise to faithfully obey and carry out the lawful orders of those appointed over them. Obedience to orders has two forms in the military, each with its own time and place. Blind obedience is automatic response to orders such as commands issued during close order drill, or steering commands to a helmsman. There is no time for questioning or determining the reason for this type of order. Reasoned obedience, on the other hand, allows for some personal initiative in carrying out an order.</p>	25
Obedience	<p>Explain that reasoned obedience is the type most often desired in the Navy and NJROTC. Navy work involves constant learning, and it is known that people work and learn best when allowed to use their own ideas. Most day-to-day routine orders give the receiver some freedom in deciding exactly how to carry them out in a responsible manner. Orders that call for reasoned obedience may be given in polite ways, such as "Please" or "Would you....?" These are still orders to obey, but reasonable questions and suggestions are welcome.</p>	26
Obedience	<p>A command calls for immediate blind obedience. Courteous terms normally are not used in commands. There is usually no time for hesitation or questions regarding such orders. Examples might be commands to commence fire on an enemy, or to abort a dangerous landing approach to an aircraft carrier.</p>	27
Obedience	<p>Explain that people obey the orders of lawful authorities because of either the hope of reward or the fear of punishment. Reasoned obedience to an order usually involves hope of some kind of reward. This may take the form of a simple verbal compliment (such as "Well done!"), public recognition and praise, the privilege of greater responsibility, or improvement of status in the organization. Blind obedience to a command seldom lends itself to particular reward at the moment, and is more often</p>	28

Chapter 1 / Section 1: NS3-M2U1C1S1 – The Challenge of Leadership

	associated with the threat of punishment should it be disobeyed.	
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	29
A Military Leader: A Legal and Moral Obligation	Explain that civilian executives hold their positions by virtue of superior knowledge and experience and strong character or personality. The executive probably is not legally responsible for the persons employed, and any concern for the well being of subordinates is primarily a moral one. Military leaders, on the other hand, have both a legal and a moral obligation to do all in their power to lead their subordinates effectively and to be concerned about their welfare. The President, as representative of the people of the United States, has granted each military leader extensive authority to do so based on a legal contract.	30-31
The Challenge of Leadership	Explain that the leader has an especially difficult task in trying to motivate disinterested persons or troublemakers who always seem to be present in most groups of people. Ideally, the leader will be able to guide and assist most such individuals to gain a sense of moral responsibility so they too can become assets to the organization. After all, everyone must live by rules and regulations, whether in the Navy or in civilian life. These rules, if followed, make life more pleasant and easier for all.	32
The Challenge of Leadership	Explain that personnel must be taught that the more they discipline themselves, the less they will have to be disciplined by others. They must be fully aware of their importance to the team. Their shipmates must be able to depend on them in day-to-day routine matters, as well as in battle. All should be led to understand that learning, advancing in rate, and assuming more responsibilities are duties of every sailor and citizen, not just the choice of a select few.	33
Review Question	The Review Question is, "Based on your own personality, how might you go about getting the cooperation of a disinterested or uncommitted subordinate?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	34
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	35
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	36

Chapter 1 / Section 1: NS3-M2U1C1S1 – The Challenge of Leadership

III. Supplemental Activities -

A. In class Activity:

Supplies required: handouts for in class and take home activities

When: The in-class activity will be done prior to the lesson. It can be reflected upon throughout the lesson.

- Cadets will fill out the “Leadership Questions” handout to begin thinking about leadership, what makes a good leader and qualities of leadership that they possess.

B. Take Home Activity: Cadets will be placed in small groups. Each group will be given one the name of a famous military leader and asked to research that person. Using the handout “Military Leadership”, they will answer the questions at home and then report back to their group to compare answers. As a group, they will report to the class on their person, the qualities, experiences, values, etc. that made him a great leader.

Military Leaders: Dwight Eisenhower, Napoleon, Alexander the Great, Genghis Khan, Akbar, Constantine the Great, Erwin Rommel, Julius Caesar, Winston Churchill, General Patton

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 1: NS3-M2U1C1S1 – The Challenge of Leadership

5. Do you think that great leaders are born or are they made? Explain.

6. There have been many great military leaders throughout the world and throughout history. Whom do you regard as the greatest? What makes him/her so, in your opinion?

7. Could you see yourself becoming a great leader? What personal strengths do you have that would help you lead others? What areas of weakness would you need to improve upon to become a great leader?

Chapter 1 / Section 1: NS3-M2U1C1S1 – The Challenge of Leadership

4. What challenges did this leader face? How did she overcome them?

5. How do you think this leader would have responded to those who were disinterested or who caused disruptions?

6. Why do you think others obeyed this leader?

7. What can others learn about leadership by studying this person?

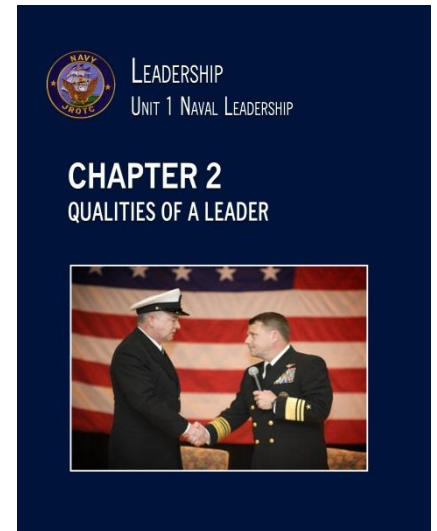
Module 2 Unit 1 Chapter 2: NS3-M2U1C2 – Qualities of a Leader

What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction

Skills and Knowledge to be Gained:

1. Differentiate between moral responsibility and legally enforceable laws
2. Define loyalty
3. Describe devotion to duty
4. Describe professional knowledge and experience
5. Explain the importance of self-confidence
6. Describe the value of initiative and ingenuity in the military service
7. Compare courage to moral courage
8. Explain the importance of a leader's ability to organize and to make decisions
9. Describe the importance of leading by personal example
10. Explain why mutual trust and confidence are important aspects of effective leadership



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.10. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes, and audiences.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Module 2 Unit 1 Chapter 2: NS3-M2U1C2 – Qualities of a Leader

- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 2 / Section 1: NS3-M2U1C2S1 – Qualities of a Leader

(Section 1 of 2)

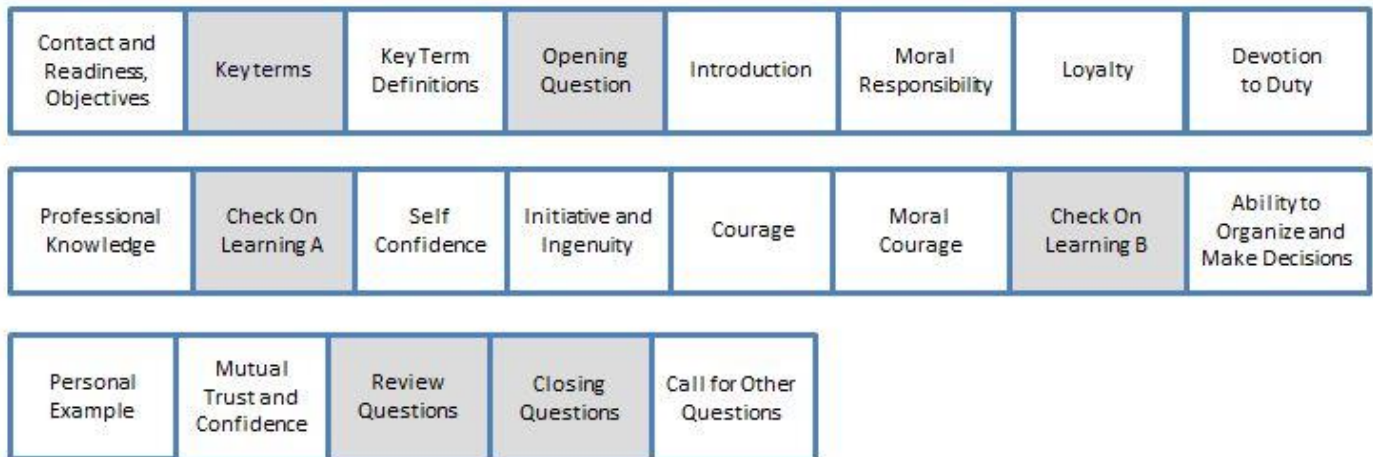
What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction

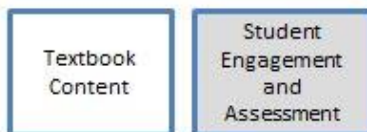
Skills and Knowledge to be Gained:

1. Differentiate between moral responsibility and legally enforceable laws
2. Define loyalty
3. Describe devotion to duty
4. Describe professional knowledge and experience
5. Explain the importance of self-confidence

LESSON FLOW OUTLINE



Key:



Chapter 2 / Section 1: NS3-M2U1C2S1 – Qualities of a Leader

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 2, Unit 1, Chapter 2. Place a checkmark beside the NS3-M2U1C2S1 PowerPoint presentation, and these two CPS question deck files: NS3-M2U1C2S1 - Key Terms and NS3-M2U1C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss moral responsibility as it pertains to the qualities of a leader. We will also discuss loyalty and devotion to duty. We will talk about courage and the ability to organize and make decisions. Lastly, we will also discuss why mutual trust and confidence is important in a leader.	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Name and discuss qualities that are necessary to be a leader.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the qualities of a leader.	7
Introduction	Explain that no two leaders are exactly alike. They do not possess the same traits neither do they accomplish their goals in the same ways. All great leaders, however, have certain characteristics and abilities. Not every leader will possess every quality discussed here, but all will have many of them. It stands to reason that it is important for a leader with less natural ability to work on those qualities needed to become more effective.	8
Moral Responsibility	Explain that a high sense of moral responsibility is one of the most important leadership characteristics. All truly great leaders have had personal codes of conduct that would not permit them to use their abilities and positions to take unfair advantage of their fellow citizens or subordinates.	9-10
Moral Responsibility	Explain that most of us understand the written and unwritten laws that guide our actions and know that appropriate punishments will likely result if we break them. It is more difficult, however, to define moral laws, since most of these cannot be legally	11

Chapter 2 / Section 1: NS3-M2U1C2S1 – Qualities of a Leader

	enforced. Each person must establish these laws for himself or herself. Depending upon the person’s character, the sense of moral responsibility may be extensive or almost nonexistent. The only enforcer is the individual’s own conscience.	
Loyalty	Explain that loyalty means faithful and enthusiastic devotion to one’s country, organization, and associates. In the military this must be broadened to include one’s superiors and subordinates. Everyone must earn the right to loyalty.	12
Loyalty	Explain that loyalty must be earned. It is a two-way street. Subordinates are particularly sensitive about loyalty extending downward to them and are quick to notice when it is absent. The loyalty of a senior toward his or her personnel has a great effect on the morale within the organization, and this may translate into that extra effort that is so often necessary to accomplish a mission.	13
Devotion to Duty	Explain that devotion to duty may be defined as loyalty to the position or job one holds. In general, devotion to duty is shown by someone who not only exerts maximum effort on the present job, but also takes initiative learn about tasks and billets demanding increased levels of responsibility. Positive recommendations, advancements, and promotions are likely to result from such performance of duty.	14-15
Devotion to Duty	Explain that mere ambition is not enough in the military service, however. All in the military are expected to place duty above self. All must do their duty to the best of their ability at all times—not because of the personal gain that might occur, but because that is the best way to accomplish the mission. The unit might fail in its mission if some individuals fail to do their part.	16
Professional Knowledge	Explain that the person who knows the job thoroughly is far better qualified to lead than one who does not. Mere schoolbook knowledge is not sufficient; experience is also essential. The new leader, therefore, must not hesitate to call upon more experienced individuals to assist when appropriate.	17
Professional Knowledge	The person being relieved by a new leader normally provides information concerning the duties and difficulties of the job and the abilities and personalities of the assigned personnel. Subordinates will be eager to help, if their new leader shows interest in gaining from their experiences. It pays to be willing to listen to advice and suggestions, for most people will lose the desire to help if their leader shows lack of interest or caring.	18
Check on Learning Questions A (Lesson questions 3-4)	Check in on student’s understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	19
Self-Confidence	Explain that self-confidence is one of the most important qualities of leadership. As a leader’s knowledge grows, self-confidence should also grow. In fact, knowledge is meaningless without confidence and ability. Past accomplishments and educational degrees by themselves will not suffice; proven ability on the job is the most basic requirement. Arrogance on the part of an untried, inexperienced junior officer or new leading petty officer will result in the loss of subordinates’ respect, which will make the leader’s job much more difficult.	20-21
Initiative and Ingenuity	Explain that the military services have so many regulations, instructions, and policies that a new leader might believe there is little room for personal initiative and ingenuity in the service today, but this simply is not so. Actually, with new ships, new equipment, new weapons systems, and new concepts of warfare, the demand for officers and petty officers with these qualities is greater now than ever before. All of these new developments require leaders with the imagination, skills, and daring to find the best ways to use new systems and new ideas.	22

Chapter 2 / Section 1: NS3-M2U1C2S1 – Qualities of a Leader

Initiative and Ingenuity	Explain that in the NJROTC as in the Navy, few days will pass without some opportunity to exercise initiative and ingenuity. Before tackling any problem, though, it is necessary to have solid background knowledge of that problem. Prepare yourself by taking advantage of everyday opportunities. It's also important remember any background knowledge to problem-solving. Consequently, when problems need to be solved, it is wise to be aware of what has been tried before. To try again with a flawed method that has failed before is often a waste of time and effort.	23
Courage	Explain that it would be difficult to imagine a true leader who did not possess courage. Courage is the quality that enables us to accept our responsibilities and to carry them out regardless of the consequences. A courageous person can meet dangers and difficulties with firmness. A courageous person is not necessarily fearless, but has learned to conquer inner fears in order to concentrate on the tasks at hand. Courage is a quality of the mind and may be developed and strengthened with use. Each time a person overcomes an obstacle—whether it is a tough examination, or a sports opponent, or peer pressure—the courage of that individual will be strengthened.	24-26
Moral Courage	Explain that moral courage means a show of firm resolve in difficult situations where the danger of death or injury is not an immediate concern. It is a form of courage less glamorous than physical courage—risking one's life to save another, being fearless in the face of enemy fire, or braving the unknown dangers of the deep seas or outer space. Situations requiring moral courage, however, occur far more often than the more glamorous ones.	27
Moral Courage	Explain that the pressures of our daily lives can be great at times, and this is where moral courage comes in. It may be easier to allow the wrong thing to be done and to say nothing, or to observe incorrect procedures or damaged equipment and let it go unreported. Sometimes it is hard to disagree with a senior—or worse, to agree with a senior when you are certain that he or she is wrong. Fear of anger from seniors, fear of ridicule by peers, and lack of confidence due to immaturity or ignorance are some of the pressures that make the exercise of moral courage difficult.	28
Moral Courage	Explain that moral courage is necessary to ensure that seniors get the information they need to make good decisions—even if such information upsets them. A person needs moral courage to bring forth new ideas for improvement, especially if those ideas go against precedent or well-laid plans. The person who says nothing, or agrees with seniors and then criticizes them behind their backs, loses both the respect of juniors and the trust of the seniors. On the other hand, the leader who shows respect for the opinions of others, especially subordinates, is admired and respected for having moral courage.	29
Moral Courage	Explain that It takes moral courage to admit one's mistakes. It takes moral courage to be honest, just, and truthful at all times. It takes moral courage to insist on abiding by regulations and laws when they are being disregarded by many others. It takes a very special moral courage to stick to one's high principles in the face of ridicule by peers and friends, because everyone wants to feel like "one of the gang."	30
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	31
Ability to Organize and Make Decisions	Explain that a military leader's primary job is to coordinate the efforts of their personnel to achieve a common purpose. Leaders must be able to organize their subordinates so that their labors and training can be used to achieve the best results. A first requirement for effective organization therefore is a full awareness of the skills and capabilities of assigned personnel.	32

Chapter 2 / Section 1: NS3-M2U1C2S1 – Qualities of a Leader

Ability to Organize and Make Decisions	Explain that while it is entirely proper to call upon the expertise and experience of seniors to assist in the accomplishment of a mission, young leaders must eventually make most of the final decisions themselves. Without the ability to make good decisions, a leader is useless. Subordinates expect clear-cut decisions from their leaders when they bring personal problems to them for discussion or when professional problems require solutions. If complicated problems arise, especially those clearly beyond a junior's authority, he or she will want to discuss them with a superior. Honest mistakes will occasionally occur, but from mistakes comes experience, and from experience comes wisdom.	33-34
Personal Example	Explain that when leaders' conduct is outstanding, those around them are often inspired to pattern their own actions after them, to the good of the whole organization. No leader, then, can live by the rule of "Do as I say, not as I do." It will not work. As many recent events have shown, many bad things can happen to elected, appointed, and commissioned and noncommissioned military leaders if what they do in their private lives is not as exemplary as their public life.	35-37
Personal Example	Explain that no good citizen or military service member would do anything to dishonor the uniform, for such conduct can bring dishonor upon the United States and its armed forces	38
Mutual Trust and Confidence	Explain that officers and petty officers must set a proper example by letting subordinates know that they are trusted. If leaders fail to show trust in their subordinates, they will soon find themselves constantly checking up on their people, distrusting the records and reports prepared by them, and consequently performing their own duties less efficiently. It would be naïve, however, to suggest that all leaders in the Navy, the government, business, or anywhere else are continuously efficient, invariably honest, and always perform their duties responsibly and with honor. We know that our leaders should do things that way, of course, and we have a right to expect that they do. When leaders fail to fulfill their responsibilities, society has the right to demand corrective action, and in serious cases, punishment under the law.	39-40
Mutual Trust and Confidence	Explain that in any event, when a military leader fails to back subordinates, shows favoritism, condones dishonesty, allows sloppy work, or evades legitimate regulations, the reputation of not just the leader involved but of all leaders in the organization is jeopardized. Mutual respect, trust, and understanding can prompt all hands to exercise a greater degree of personal responsibility. Then morale will be higher, efficiency will be improved, and burdens will be lighter.	41--42
Mutual Trust and Confidence	The word of a leader should be dependable. Consequently, if leaders cannot make good on their word or their promises, they should not make commitments. Never promise what cannot be delivered. Keeping your word is important evidence of personal honor. If you do not make a special effort to uphold your word, you will lose the respect of subordinates and associates, and the attitudes of all around you will be adversely affected. A sense of honesty and mutual trust must be present if a military unit is to operate efficiently.	43
Review Question	The Review Question is, "Discuss why making decisions is important for a leader." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	44
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	45

Chapter 2 / Section 1: NS3-M2U1C2S1 – Qualities of a Leader

Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	46
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III. Supplemental Activities -

A. In class Activity:

Supplies required: Blank paper for each student; handout for take home activity

When: The In-class activity can be done any time before, during or after the lesson.

- Cadets will respond to a statement from the lesson, “From mistakes comes experience and from experience comes wisdom”.
- Instructor will have the cadets write this statement at the top of a sheet of paper. Cadets are to reflect on the meaning of that statement and describe a time where this statement is relevant. They will then share this with a partner or small group. The whole class will then discuss.

B. Take Home Activity: Using the handout “Self Confidence Interview” Cadets will interview someone about a time in their life where they gained self-confidence.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 2: NS3-M2U1C2S2 – Conduct In Uniform

(Section 2 of 2)

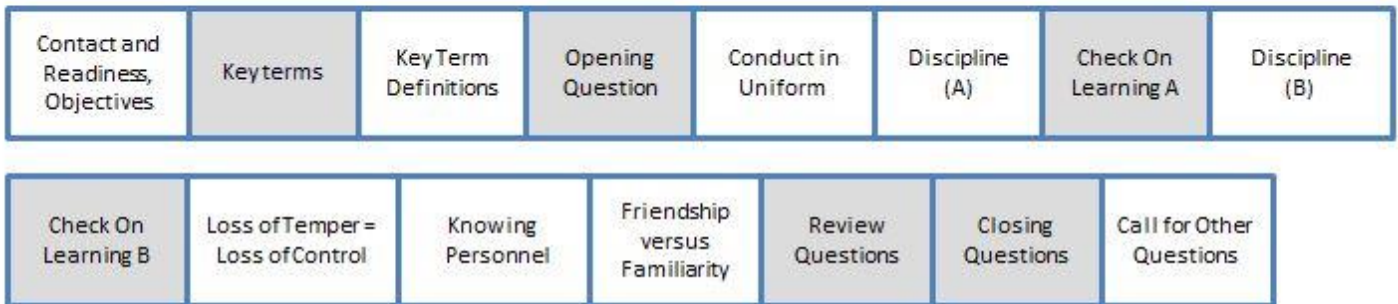
What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction

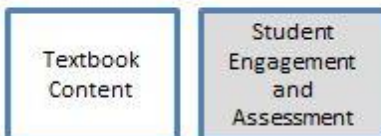
Skills and Knowledge to be Gained:

1. Describe the value of initiative and ingenuity in the military service
2. Compare courage to moral courage
3. Explain the importance of a leader's ability to organize and to make decisions
4. Describe the importance of leading by personal example
5. Explain why mutual trust and confidence are important aspects of effective leadership

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 2, Unit 1, Chapter 2. Place a checkmark beside the NS3-M2U1C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M2U1C2S2 - Key Terms and NS3-M2U1C2S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 2: NS3-M2U1C2S2 – Conduct In Uniform

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss about the conduct in uniform. We will also discuss the importance of discipline. We will talk about knowing personnel and learning the differences between friendship versus familiarity.	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Explain what discipline is and the benefits to a military unit.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on conduct in uniform.	8
Conduct in Uniform	Explain that the naval leader must do all in his or her power to prevent improper actions by naval personnel. Often the cause for such actions is dissatisfaction with conditions in their unit, ship, or station. If a person does not like the work assignment or living conditions, feels that command policies are unfair, or has troubles at home, weaker subordinates may resort to unauthorized absence, to alcohol or substance abuse, or to other forms of escape. Such individuals may make it impossible for the unit to accomplish its mission.	9-10
Conduct in Uniform	Explain that a military leader has the responsibility to know the needs of subordinates and to know their anxieties. It is his or her duty to remind them of their responsibility to conduct themselves properly at all times, to reflect credit on their families, their service, and their nation, and to be ready to perform their duties whenever required to do so.	11
Conduct in Uniform	Explain that in the military, corrective actions are a primary responsibility of the leadership. The leaders must know their personnel and take care of their needs, and must insist on the acceptance and exercise of personal moral responsibility. The naval leader must accept this responsibility by regulation, but must also do so for the practical reason that it is necessary if the crew is to be a working team that can respond properly to emergency situations and carry out the unit’s mission.	12
Discipline	Explain that discipline is the basis of true democracy. It requires rules of conduct that humans, through experience, have found desirable for governing relations among members of civilized society. Such rules of conduct do not deprive an individual of fundamental rights; in fact, they protect everyone’s equal rights.	13
Discipline	Explain that formal rules that are put into effect by duly constituted authority, such as a city council or state legislature, are called laws. Other informal rules that have become a part of our culture by custom and usage are called conventions.	14

Chapter 2 / Section 2: NS3-M2U1C2S2 – Conduct In Uniform

Discipline	Explain that discipline is the training that develops self-control, character, or efficiency. It is important both in civilian and military life. Discipline does not imply severity, unreasonable restraint of freedom, or unnecessary restrictions. Discipline means control of conduct so there can be a coordination of effort for the good of all.	15
Discipline	Explain that a dictionary defines discipline as “control gained by enforcing obedience,” or “that state of orderliness gained through self-control and orderly conduct.” A description of discipline in military terms would be “that degree of control which moves an organized group to appropriate action upon receipt of an order, or in anticipation of that order when circumstances prevent its being given.”	16
Discipline	Explain that a military organization could not function properly without orderliness and orderly conduct. Admiral Arleigh Burke, USN, former Chief of Naval Operations, stated, “A well-disciplined organization is one whose members work with enthusiasm, willingness, and zest, as individuals and as a group, to fulfill the mission of the organization with expectation of success.” The signs of discipline in a military organization can be seen in smart salutes, proper wearing of the uniform, and prompt and correct action in any emergency.	17-18
Check on Learning Questions A (Lesson questions 3-4)	Check in on student’s understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	19
Discipline	Explain that the purpose of discipline in the military services is to develop an efficient organization of personnel trained to achieve a common goal. Each person should know where he or she fits into the organization; each should understand that all in the group have a common purpose and that all are to follow and obey their leader. Such a group is so well organized and trained that it can handle any emergency, as well as normal routine tasks. A well-disciplined military unit responds automatically to an emergency and will not panic.	20-22
Discipline	Explain that true discipline demands loyal but reasoned obedience to authority. Such obedience allows for initiative and is present even in the absence of the leader. Self-discipline, therefore, is essential before true discipline can be developed. The self-disciplined person will always be dependable and will carry out responsibilities under all circumstances without need of direct supervision.	23
Discipline	Explain that self-discipline begins with the realization that there is a need for self-control. Development of self-discipline comes only through repeated practice of self-control. The person who has developed self-control in day-to-day life is also the one who can hold up in the face of hardship and danger.	24
Discipline	Explain that in the military, disobedience of regulations must be handled immediately, justly, and consistently. Wrongdoing that is dealt with severely one day cannot be treated as insignificant the next. Such an approach can only result in confusion, poor morale, distrust of the leader, and defiant and indifferent attitude toward other regulations	25-26
Discipline	Explain that two fundamental rules apply pertaining to disciplinary action: (1) never make a regulation that you cannot or will not enforce, and (2) take immediate, fair action that leaves no doubt in the mind of the offender about the reason for the reprimand or punishment.	27

Chapter 2 / Section 2: NS3-M2U1C2S2 – Conduct In Uniform

Discipline	Explain that delay in taking appropriate disciplinary action brings resentment toward the entire system—especially if the offender suffers no consequences because of a time lapse that dulls memories or makes it seem as though the offense has been overlooked. Wrong acts and poor performance require immediate guidance and correction in order to bring about the necessary changes.	28
Discipline	Explain that new leaders may have a tendency to be too lenient with minor infractions, thereby penalizing good people while favoring bad ones. When this error is pointed out to some junior leaders, they may become uncertain of themselves, and in trying to compensate for the fault, they overreact, becoming too arbitrary. In either case the leader will lose the confidence of subordinates because of such inconsistency. It is best to chart a steady course when dealing with disciplinary matters.	29
Check on Learning Questions B (Lesson questions 5-6)	Check in on student’s understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	30
Loss of Temper = Loss of Control	Explain that a leader cannot afford to lose his or her temper. Losing one’s temper is usually considered to be a personal weakness and usually does not improve the effectiveness of the leader and his or her status within the organization. To be sure, it is not always easy to refrain from anger, but a conscious effort to do so must be made.	32
Loss of Temper = Loss of Control	Explain that a person who loses control of him or herself usually loses control of the situation. Rare is the case when proper action or desired results come from an expression of anger. In admonishing error or administering punishment, the leader must remain calm, impersonal, and dignified. A leader who is extremely incensed might want to pace the deck for a few minutes rather than take unwise, precipitous action. The more calm the leader is in the usual performance of duty, the more action he or she can get when the occasion demands. The leader who is inconsistent, quick-tempered, or constantly shouting only creates confusion and soon stops being effective, since those actions eventually will get little or no response from subordinates.	33-34
Knowing Personnel	Explain that it is vital that leaders get to know the people working for them. As part of this, it is important for the young leader to develop a style of communication with personnel that will create mutual respect. The key to this is learning the personality and character of every one of those juniors—understanding what makes them tick.	35
Knowing Personnel	Explain that it is the duty of the leader to study their people, watch them, learn their approach to problems, work with them, and guide them. To maintain discipline, the leader must always be genuinely concerned about his or her people, and should not wait until they get into difficulties to help them. This means ensuring that they are comfortable and as well cared for as circumstances permit; seeing that they receive their fair share of earned privileges; and showing that their personal and family lives are of real interest. The good leader will always make sure people are fully aware of what is being done on their behalf.	36-37
Knowing Personnel	Explain that a leader should bear in mind that everyone wants, needs, and responds to recognition. If the best in people is to be brought out, they must be made to feel important. They must feel respect from their associates, and they must feel that their superiors think they are competent.	38
Knowing Personnel	Explain that a good leader continually strives to apply all that he or she can learn about human nature through experience and study. This knowledge can be obtained only by working at the job of human relations. The better his or her insight into human nature, and the better he or she understands the intelligence, education, and backgrounds of personnel, the more effective the leader will be in handling people.	39

Chapter 2 / Section 2: NS3-M2U1C2S2 – Conduct In Uniform

Friendship versus Familiarity	Explain that there is a great difference between familiarity and friendship. The leader who talks to subordinates in a friendly manner, taking a personal interest in them and being concerned with their problems, quickly gains their confidence and respect. Young men and women want to be able to look to their seniors for guidance; they want to be proud of their leaders. Such leaders, because they are friendly and approachable, will be the first ones turned to for advice.	40
Friendship versus Familiarity	Explain that on the other hand, leaders who become too familiar with their subordinates will often have difficulty in leading them. The old adage “familiarity breeds contempt” is applicable to these situations, because subordinates who perceive themselves as “favored” may feel the leader will not require them to obey and perform well. Those who do not feel so favored may perceive unfair or unequal treatment, whether or not it actually exists.	41
Friendship versus Familiarity	Explain that the Navy and the other services all have strict regulations against seniors becoming overly familiar (developing close personal relationships) with personnel of lower rank, especially those in their immediate chain of command. Such relationships are called fraternization. Unsolicited or otherwise undesirable or inappropriate advances of one service member towards another based on sexual attraction, especially involving promises of reward or threats of punishment or other forms of intimidation, is called sexual harassment.	42-43
Friendship versus Familiarity	Explain that fraternization and sexual harassment can be extremely destructive to the morale of both those directly affected and their fellow crewmembers or co-workers on the job. Such actions cannot be tolerated in the Navy or other military services, and those found guilty of this type of behavior are subject to severe discipline or separation from the service. Most civilian institutions are very concerned about these issues as well, both because of potential legal issues and also because of their impact on the productivity and morale of the organization.	44
Review Question	The Review Question is, “Discuss the differences between friendship, friendliness, familiarity, and fraternization.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	45
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	46
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	47

III. Supplemental Activities -

A. In class Activity:

Supplies required: handouts for in class and take home activities.

When: The in-class activity will take place after the discussion in the lesson on Friendship vs. Familiarity.

- Have the cadets complete the handout “Negative / Positive Activity”

B. At Home Activity: Cadets will fill out the “Losing Your Temper” activity.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 2: NS3-M2U1C2S2 – Conduct In Uniform

Activity 1: In Class Activity- Negative / Positive Activity

Name: _____ Date: _____ Class: _____

Directions: Place the terms in the table on the continuum in the appropriate place. Then, using your own words, define the five terms. Lastly, explain why each term on the negative side is negative and why each term on the positive side is positive.

Friendship	Sexual Harassment	Fraternization	Familiarity	Friendliness
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Negative Behaviors

Positive Behaviors

Define each:

Friendship:

Sexual Harassment:

Fraternization:

Chapter 2 / Section 2: NS3-M2U1C2S2 – Conduct In Uniform

Familiarity:

Friendliness:

Explain:

These behaviors are negative: _____

Because:

These behaviors are positive: _____

Because:

Chapter 2 / Section 2: NS3-M2U1C2S2 – Conduct In Uniform

Activity 1: At Home Activity- Losing Your Temper

Name: _____ Date: _____ Class: _____

Directions: Answer the questions as honestly as you can about losing your temper.

The things that make me the most angry are:

When I get angry, it feels like:

I remember losing my temper when:

After I lost my temper, I felt:

When I need to get rid of angry feelings, I usually:

This (does/doesn't) work because:

Chapter 2 / Section 2: NS3-M2U1C2S2 – Conduct In Uniform

The consequences of losing my temper are:

Some positive ways to deal with anger are:

Some negative ways to deal with anger are:

If I deal with anger in a negative way, people around me might:

When I see others lose their temper, I think:

My personal goals regarding controlling my temper are:

Chapter 3 / Section 1: NS3-M2U1C3S1 – Intro: Evolution of Performance

What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction

Skills and Knowledge to be Gained:

1. Define performance, ability, aptitude and achievement
2. Describe evaluation in the NJROTC
3. Explain goal-setting as it relates to self-evaluation
4. Explain progress assessment as it relates to self-evaluation
5. Describe the process of self-evaluation

Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.10. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes, and audiences.

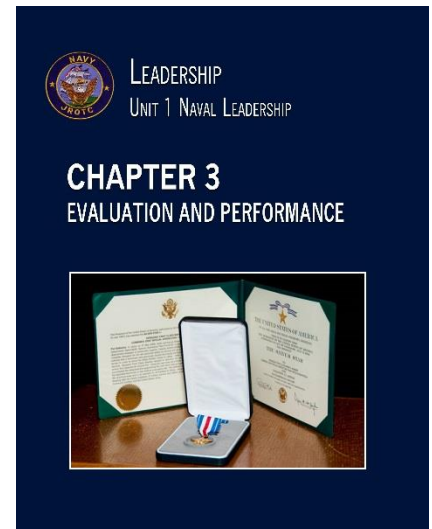
Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor's Guide.



Chapter 3 / Section 1: NS3-M2U1C3S1 – Evaluation of Performance

(Section 1 of 1)

What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction

Skills and Knowledge to be Gained:

1. Define performance, ability, aptitude and achievement
2. Describe evaluation in the NJROTC
3. Explain goal-setting as it relates to self-evaluation
4. Explain progress assessment as it relates to self-evaluation
5. Describe the process of self-evaluation

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Introduction	Performance, Ability, Aptitude, Achievement	Check On Learning A	Evaluation in the NJROTC
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Check On Learning B	Self-Evaluation	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 2, Unit 1, Chapter 3. Place a checkmark beside the NS3-M2U1C3S1 PowerPoint presentation, and these two CPS question deck files: NS3-M2U1C3S1 - Key Terms and NS3-M2U1C3S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 3 / Section 1: NS3-M2U1C3S1 – Evaluation of Performance

II. Instructional Flow:

Flow Item	Textbook Content / Student Engagement and Assessment	Slides
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will talk about evaluating performances. We will discuss the importance of ability, aptitude, and achievement. Lastly we will learn about evaluation in the NJROTC and self-evaluation.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “What is self-evaluation and why is it important?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on evaluation of performance.	7
Introduction	Explain that in the Navy and in N.J.R.O.T.C., officers are concerned with the selection of personnel for instructors, for school nominations, for advancement in rate, for filling billets in the unit, and for carrying out specific assignments. The overall performance rating of a Naval leader is greatly affected by ability to select appropriate people for various roles, and to judge their capability to take on future assignments of greater responsibility.	8-9
Performance, Ability, Aptitude, Achievement	Explain that performance refers to what a person does—actual behavior or actual output. Ability is often confused with performance. Ability often applies to performance over a considerable period of time; it also applies to what a person could do at a given moment, if the situation were right. Further out in time, it might sometimes refer to potential performance. In the final analysis, true ability cannot be judged except by observing performance.	10-11
Performance, Ability, Aptitude, Achievement	Explain that both performance and ability refer to the present—what the person is doing, or can do, now. Aptitude on the other hand, refers to potential skills and abilities in the future. Aptitude tests of many varieties, such as the SAT (Scholastic Aptitude Test) and ASVAB (an Armed Services Aptitude Test), as well as evaluation of background experiences, can be used with good reliability to select individuals for training in certain areas.	12-13
Performance, Ability, Aptitude, Achievement	Explain that achievement generally refers to performance in the past, often that which has already been evaluated. Achievement applies to work that has been done. When properly evaluated, past achievements of individuals in the same field can be quickly compared for selection for promotion or future job assignments. Properly evaluating the achievements of their subordinates is one of the most important responsibilities of a leader.	14-16

Chapter 3 / Section 1: NS3-M2U1C3S1 – Evaluation of Performance

Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	17
Evaluation in the NJROTC	Explain that developing leadership ability is one of the main objectives of NJROTC. Students enrolled in this course should strive to become leaders in their school, unit, and community, and prepare for higher leadership roles later in life.	18-19
Evaluation in the NJROTC	Explain that current officers and instructors must evaluate and nominate their successors at some time during the school year. Evaluations of prospective NJROTC cadet officers are based on character, honesty, motivation, academic effort and success, cooperation in unit ventures, record of loyalty to school and unit, appearance in uniform, and many other attributes. These evaluations will be reflected in their leaders' recommendations and result in awards, advancements, and pro-motions. Such is the way of the Navy as well, and it really is no different in civilian life. The system works; sound evaluation grounded in sound personal leadership is the key.	20-22
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	23
Self-Evaluation	Explain that it is not necessary for a person to wait until a formal evaluation time or period to evaluate his or her own performance. Everyone in the NJROTC, or anyone who aspires to get ahead either in the military or in civilian life, should go through a periodic self-evaluation process. Think about where you have been, where you are, where you are going and how you will get there. You must know if you are on the correct course to your destination.	24-25
Self-Evaluation	Explain that most people who have been successful in life did not achieve their success by luck or by proceeding in a random manner. Rather, a common thread in almost every success story is the setting of realistic and attainable goals. Such goals may be as simple as saving to buy a new piece of athletic gear, or as complex as getting an A in a tough high school course, or getting a job in a desired profession. Depending on how difficult the goal is to attain, one or more sub-goals may also have to be identified—like waypoints along the route to the final destination.	26
Self-Evaluation	Explain that once realistic goals have been decided upon, the next step is to assess progress toward them. In the school setting, such progress assessment is facilitated by the assignment of periodic progress grades by the teacher. Broader progress can be assessed by such standardized tests as the preliminary and regular Scholastic Aptitude Tests (PSAT and SAT) and various achievement tests. In the military, progress is measured by periodic formal and informal performance ratings, advancement exams, and aptitude tests such as the A.S.V.A.B. Similar methods are used to assess progress in civilian occupations.	27
Self-Evaluation	Explain that in all roles of life, truly successful people do not sit back and wait until they are formally evaluated to judge their progress toward the goals they have set for themselves. Rather, they go through an almost continuous process of self-evaluation to determine for themselves how they are progressing and whether corrective action is necessary to get back on track. After all, it is much easier to stay on course toward a goal by making periodic small corrections than it is to make large corrections only once or twice along the way.	28-29
Self-Evaluation	Explain that the main tasks in any self-evaluation process are to set realistic criteria by which one may measure progress, and to make realistic assessments of performance against those criteria. The important thing is to be truly honest with yourself so that a	30

Chapter 3 / Section 1: NS3-M2U1C3S1 – Evaluation of Performance

	realistic evaluation can be made.	
Self-Evaluation	Explain that to advance in the NJROTC, the Navy, or another armed service—and indeed in almost any organization—an individual needs to grow steadily both personally and professionally. One of the best ways to do so is to set both short-term and long-range goals for yourself in each area of concern, and then to take appropriate corrective action whenever trends develop that, if left uncorrected, would hinder your progress. The process may not always be fun, but it is exciting, and it provides you with a real feeling of accomplishment as you meet each short-term goal. Ultimately, you can get the most out of life as you achieve your major long-term personal and professional objectives.	31-32
Review Question	The Review Question is, “Describe the basis by which an NJROTC cadet is evaluated.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	33
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	34
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	35

III. Supplemental Activities -

A. In Class Activity:

Supplies required: handouts for in class and take home activities

When: This activity can be done any time during the lesson.

- Have the cadets fill out the Self-evaluation activity.

B. At Home Activity: Have the cadets complete the “Goal Setting” activity.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 1: NS3-M2U1C3S1 – Evaluation of Performance

Activity 1: In Class Activity- Self Evaluation

Name: _____ Date: _____ Class: _____

Directions: Think about your short-term and long-term goals. Do a quick check-in with yourself to evaluate your progress. Keep in mind the following:

- Set Realistic Criteria
- Conduct Realistic Assessments
- Be Truly Honest
- Change your behavior as needed

On which goal would you like to focus?

Where have you been?

Where are you now?

Where are you going?

How will you get there?

Chapter 3 / Section 1: NS3-M2U1C3S1 – Evaluation of Performance

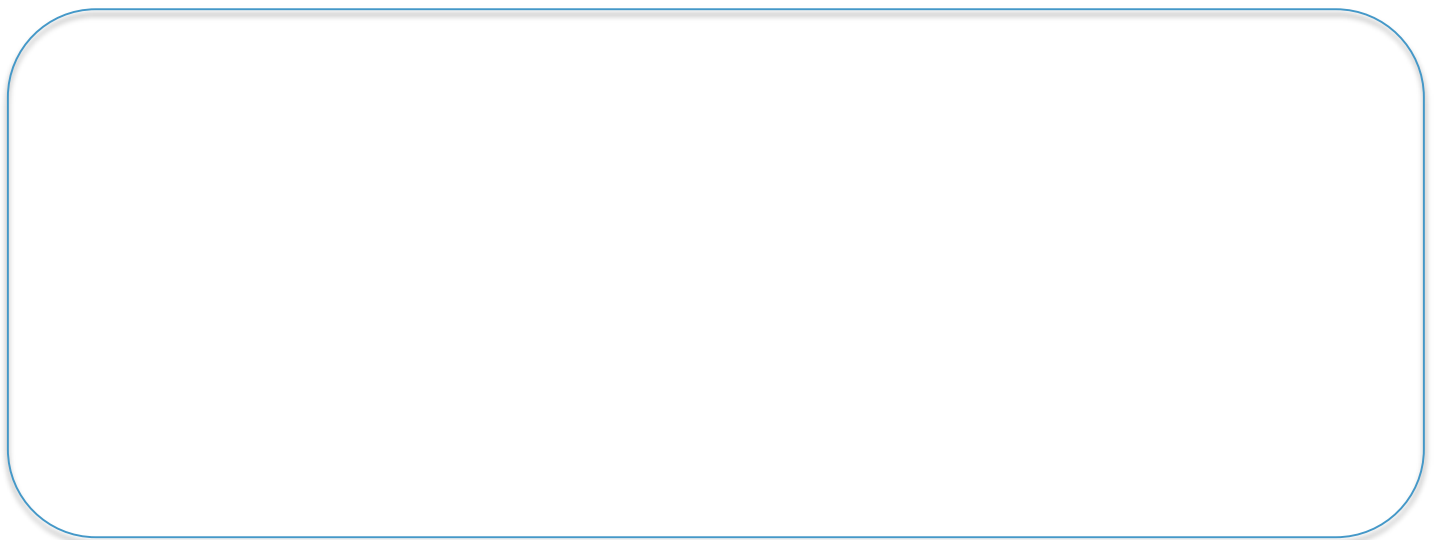
Activity 1: Take Home Activity – Goal Setting Activity

Name: _____ Date: _____ Class: _____

My Goal is: (Draw it and write it)

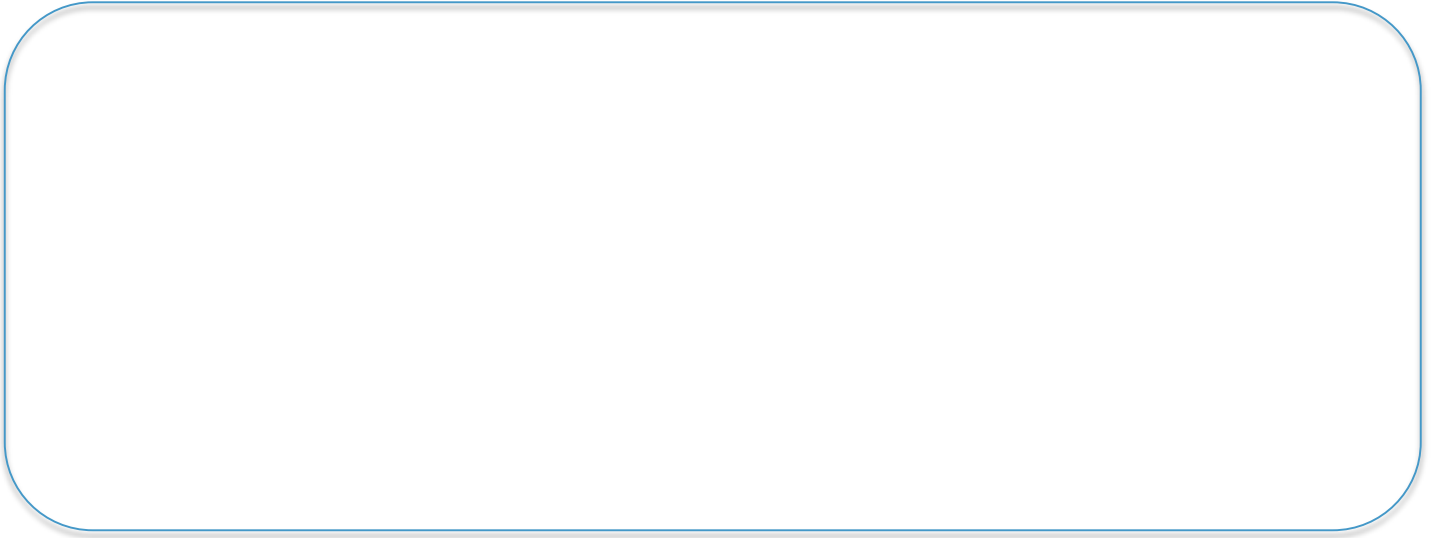


I will do these things to reach my goal:

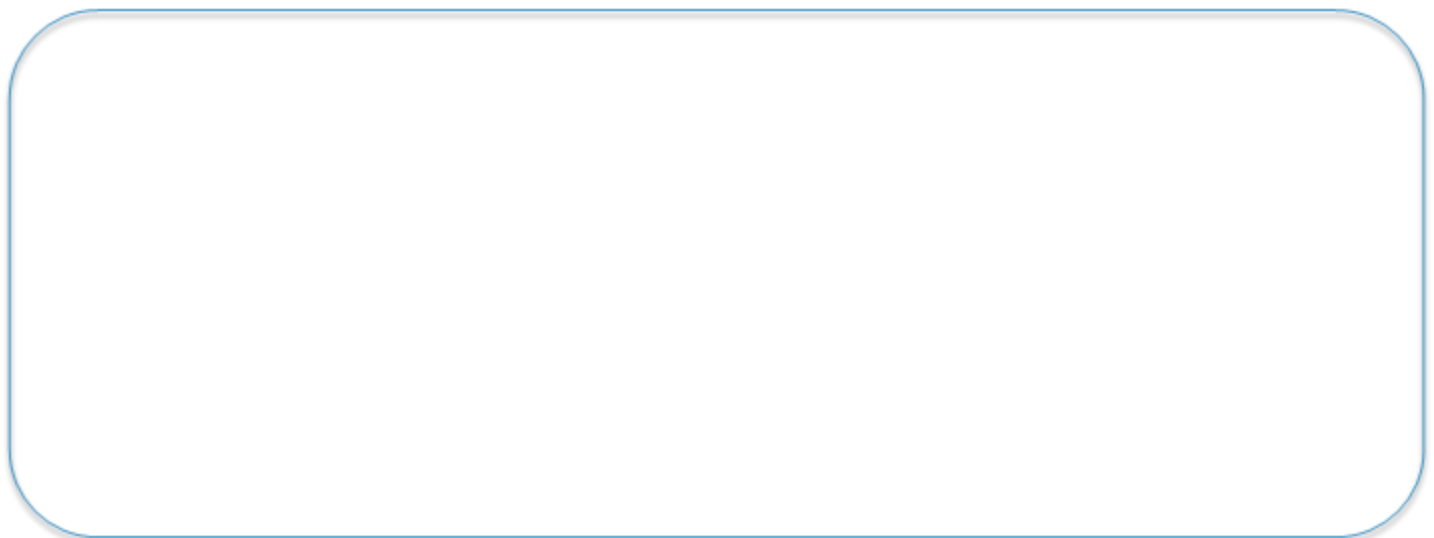


Chapter 3 / Section 1: NS3-M2U1C3S1 – Evaluation of Performance

These people/things will help me reach my goal:



This is what it will look like when I reach my goal: (Draw it and write it)



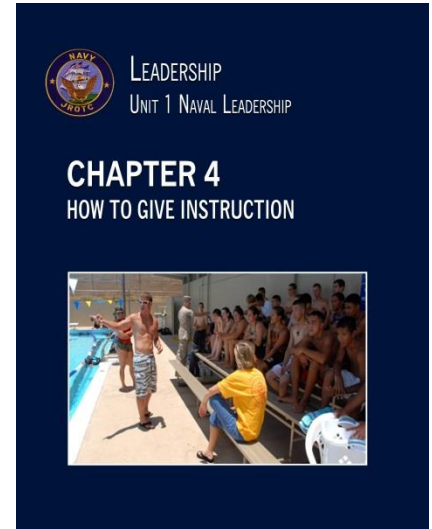
Module 2 Unit 1 Chapter 4: NS3-M2U1C4 – How to Give Instruction

What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction

Skills and Knowledge to be Gained:

1. Describe what learning theory is
2. List the major factors that influence learning
3. Describe the conditions that tend to hinder learning
4. Explain how to prepare a lesson plan, the site where instruction will occur, and yourself as the instructor
5. List the commonly used techniques for delivery of instruction
6. Describe the advantages and disadvantages of the lecture technique for presenting information
7. Describe the main steps of the lecture procedures for delivering instruction
8. Describe the advantages and disadvantages of the lecture with audiovisuals technique for presenting information
9. Describe the main steps of the lecture with audiovisuals procedure for delivering instruction
10. Describe the advantages and disadvantages of the demonstration technique for presenting information
11. Describe the main steps of the demonstration procedure for delivering instruction
12. Describe the advantages and disadvantages of the role playing instructional technique
13. Describe the advantages and disadvantages of the case study instructional technique
14. Describe the advantages and disadvantages of the discussion instructional technique
15. Describe the advantages and disadvantages of the cooperative learning instructional technique



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.10. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes, and audiences.

Speaking & Listening

Module 2 Unit 1 Chapter 4: NS3-M2U1C4 – How to Give Instruction

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 4 / Section 1: NS3-M2U1C4S1 – How to be an Effective Instructor

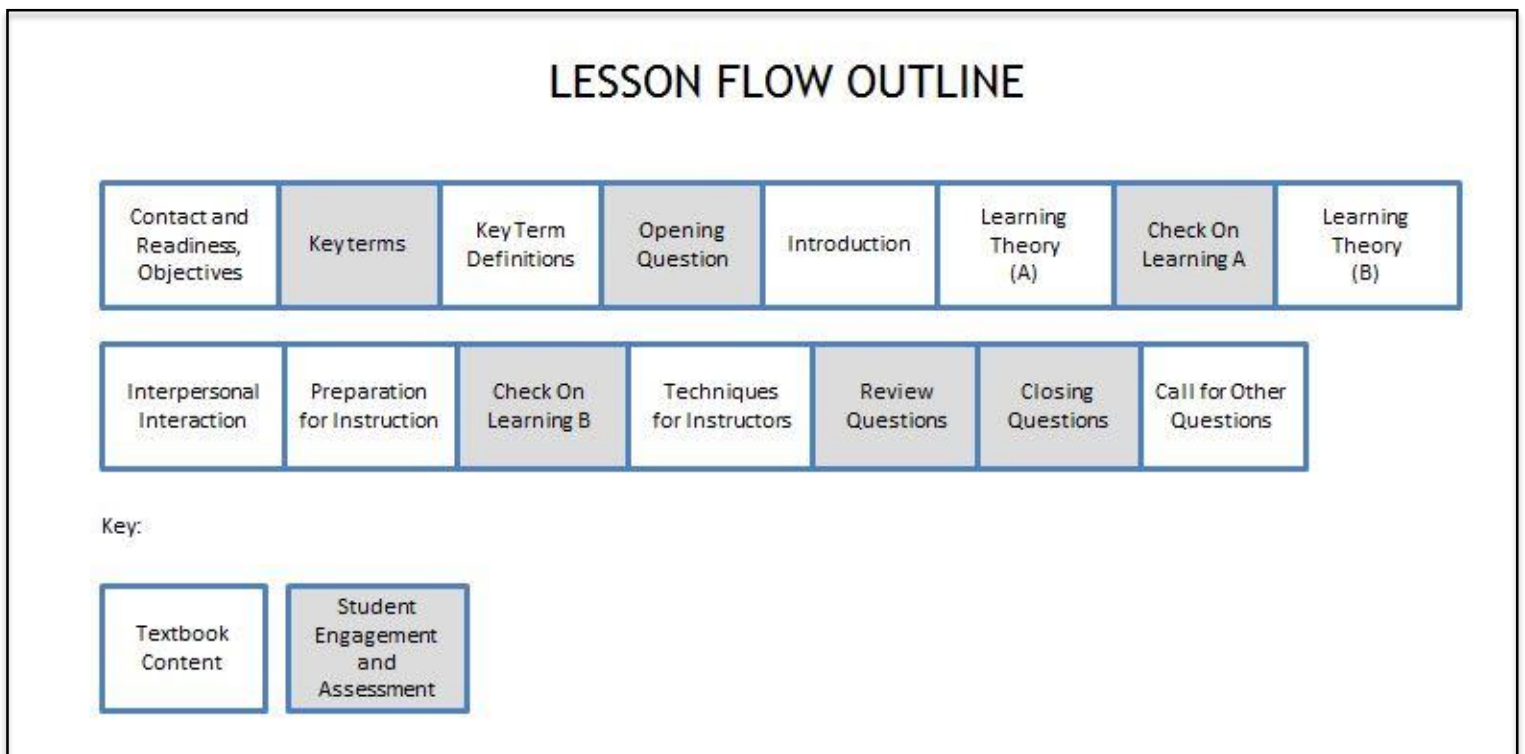
(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction.

Skills and Knowledge to be Gained:

1. Describe what learning theory is
2. List the major factors that influence learning
3. Describe the conditions that tend to hinder learning
4. Explain how to prepare a lesson plan, the site where instruction will occur, and yourself as the instructor
5. List the commonly used techniques for delivery of instruction
6. Describe the advantages and disadvantages of the lecture technique for presenting information



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 2, Unit 1, Chapter 4. Place a checkmark beside the NS3-M2U1C4S1 PowerPoint presentation, and these two CPS question deck files: NS3-M2U1C4S1 - Key Terms and NS3-M2U1C4S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 4 / Section 1: NS3-M2U1C4S1 – How to be an Effective Instructor

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the different methods used in giving instruction. We will learn about the learning theory and interpersonal interactions. We will discuss the importance of preparation for instruction as well as different techniques for instructors, including the advantages and disadvantages of the lecture format.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-10
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Name and describe different types of learning. What method of learning do you use?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on how to give instruction.	11
Introduction	Explain that as you become an upperclassman in your school and achieve higher ranks within your NJROTC. units, you will often be called upon to give either formal or informal instruction to schoolmates or to junior NJROTC. cadets.	12
Learning Theory	Explain that the good instructor is master of many skills. Successful instruction demands competence in the subject matter and knowledge of teaching skills. But the methods of instruction depend largely on an understanding of how people learn and the ability to apply that understanding.	13-14
Learning Theory	Explain that one outstanding characteristic of the human being is the ability to learn. People learn continuously from the time they are born until they die. As a result of a learning experience, people may change ways of perceiving, thinking, feeling, and doing.	15
Learning Theory	Explain that each student sees the classroom situation differently because he or she is a unique individual whose past experiences affect readiness to learn and understanding of the requirements involved. The responses differ because each person acts in accordance with how he or she sees the situation.	16
Learning Theory	Explain that most people have fairly definite ideas about what they want to do and achieve. The student brings these purposes and goals into the classroom. Some of these purposes may be personal, and others may be shared with classmates. Individual needs may determine what the student learns as much as what the instructor is trying to get him or her to learn. So the effective instructor seeks ways to relate new learning to the student’s personal goals.	17-18

Chapter 4 / Section 1: NS3-M2U1C4S1 – How to be an Effective Instructor

Learning Theory	Explain that learning is an individual process. The instructor cannot do it for the student; he or she cannot pour knowledge into the latter's head. The student can learn only from that which is experienced. Psychologists sometimes classify learning by types: verbal, conceptual, perceptual, motor, problem solving, and emotional. The learning process may include many types of learning, all taking place at once.	19-20
Learning Theory	Explain that research has shown that some of these types of learning appear to take place mainly on one side of the brain, while others occur mainly on the other side. Activities involving numbers, logic, word puzzles, and analysis appear to stimulate the left side of the brain, while activities involving music, imagination, colors, motion, and creative expression stimulate the right side. For many people, how they think, behave, and learn appears to be dominated by one side or the other, although much interaction takes place between the two sides. Traditionally, academic instruction has focused more on left-side activities, while somewhat neglecting the right side.	21-22
Learning Theory	Explain that not surprisingly, much recent educational research has shown that the rate of learning can be greatly increased when instructors involve both sides of the brain in their teaching strategies.	23
Learning Theory	Explain that the process of learning a skill appears to be much the same, regardless of whether the learning is a right or left-brain activity. Graphs of the progress of skill-learning usually follow the same pattern. There is rapid improvement in the early trials. But the curve may tend to level off thereafter for significant periods of time. Such a development is a learning plateau and may signify any of a number of conditions.	24
Learning Theory	Explain that the student may have reached the limits of his or her capability; the student may be consolidating the level of skill; interest may have waned; or the student may need a different method for increasing progress. One should keep in mind that the apparent lack of progress does not necessarily mean that further learning is impossible. The point is that a leveling process is normal, especially when learning motor skills, and should be expected after an initial period of rapid improvement. The instructor should prepare the student for this situation to ward off discouragement. If the student knows this may occur, frustration may be lessened.	25-27
Learning Theory	Explain that getting a student ready to learn is important. A student with a strong purpose, a clear objective, and a well-defined reason for learning something makes more progress than one who lacks motivation. A student who is ready to learn meets the instructor at least halfway, and this simplifies the instructor's job.	28
Learning Theory	Explain that several factors in the learning situation are known to speed, strengthen, or otherwise enhance learning. Learning occurs best when it progresses from known to unknown and concrete to abstract. The new learning can be attached to areas of existing knowledge. Learning is strengthened when accompanied by a pleasant or satisfying feeling, and learning is weakened when it is associated with an unpleasant feeling. An experience that produces feelings of defeat, frustration, anger, confusion, or futility in the student is unpleasant.	29
Learning Theory	Explain that an instructor should be cautious about using negative motivation in the classroom. Impressing students with the seeming impossibility of a problem can make the teaching task difficult. Usually it is better to show that a problem is not impossible at all, but is within the student's capability to understand and solve. Regardless of the learning situation, it should contain at least some things that affect the student positively and give him or her a feeling of satisfaction. Every learning experience does not have to be entirely successful, nor does the student have to master each lesson completely. However, a student's odds of success are increased if the learning experience is pleasant.	30-31

Chapter 4 / Section 1: NS3-M2U1C4S1 – How to be an Effective Instructor

Learning Theory	Explain that certain states of mind of the learner are known to affect learning. The instructor’s responsibility is first to recognize and identify these needs in students, and then to seek ways of satisfying them through teaching. What is their motivation for learning? Is it a need for security, self-esteem, or belonging?	32
Check on Learning Questions A (Lesson questions 3-4)	Check in on students’ understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	33
Learning Theory	<p>Explain that much research has been done in recent years about the critical factors that influence how learning takes place. Some of these have already been discussed above. The results of this research are summarized below, in the form of nine major factors that influence learning:</p> <ol style="list-style-type: none"> 1. New learning takes place in the context of past personal experience. Students need to understand how new information relates to that which they already know. 2. Learning is dependent upon motivation. A student must want to learn the new material. 3. Learning is reinforced through personal experience. If a student has hands-on experience with a subject, he or she will put it into context better. 4. Learning is facilitated by linking with prior knowledge. It is much easier to learn new material that is linked to something already known. One of the main goals of teaching is to help students make these links. 5. Learning is more efficient when new information is logically related. By grouping new information in logical ways, the brain forms a schema, or concept, and gives it meaning. 6. Learning is enhanced by providing time for reflection. Reflection, or extended thinking, helps put new information in long-term memory. Activities such as group discussion and writing in journals assist in this process. 7. Learning is enhanced by sensual and emotional involvement. The more senses and emotional stimuli that are involved in learning new material, the better it will be retained in long-term memory. 8. Learning occurs best in an environment that enables more than one kind of learning. Students have many different kinds or styles of intelligence (motion, visual/spatial, verbal/linguistic, musical, etc.) that need to come into play during learning. 9. Learning requires repetition. It has been found that without repetition, new learning begins to fade in about 30 seconds. Instructors need to cover important new information several times in several different ways. 	34-36
Interpersonal Interaction	Explain that the learning process requires much of students. Students must pay attention. They have to involve themselves actively, responding and manipulating. They are supposed to participate responsibly. To do all these things, students must feel secure, accepted, and capable of success. However, even the most perfect lesson plan cannot develop such positive attitudes and feelings. The creation of such an environment is the instructor’s responsibility and the type and manner of instructor-student interactions can either improve or hinder learning. Therefore, the instructor must be aware of and work to avoid any of the conditions that inhibit learning.	37-38
Interpersonal Interaction	<p>Explain that the conditions that tend to hinder learning include the following:</p> <ul style="list-style-type: none"> • Destructive sarcasm • Intimidation • Boredom 	39

Chapter 4 / Section 1: NS3-M2U1C4S1 – How to be an Effective Instructor

	<ul style="list-style-type: none"> • Frustration • Fatigue • Lack of purpose • Sense of failure 	
Interpersonal Interaction	Explain that instructors must understand and appreciate the fact that every classroom interaction is a potential teachable moment.	40
Preparation for Instruction	Explain that every instructor, no matter how competent and experienced, needs to prepare before trying to present instruction. How well a lesson was prepared has a direct bearing on the amount of learning that can take place. Adequate preparation is a must for efficient and effective instruction	41
Preparation for Instruction	Explain that the first step in preparing to instruct is to prepare a lesson plan. Sometimes a lesson plan will already be prepared for you as in the case of lessons presented in conjunction with a formal course of instruction. Most Navy educational programs fall into this category. The instructor need only become familiar with the lesson plan and perhaps personalize it with a few notes. In other cases, however, no plan exists, and so you must make one up.	42
Preparation for Instruction	<p>Explain that a lesson plan, as a minimum, should contain the following items:</p> <ul style="list-style-type: none"> • The objective or outcome of the lesson, including some specific criteria that should be achieved by the trainees. • The intended audience for the lesson. • Identification of any training aids/equipment needed for the lesson. • The technique(s) of instruction you will use. • An outline of the material to be presented, with enough detail to meet the needs of the instructor. • The means you will use to assess the effectiveness of the instruction. • A closing or summary of the lesson 	43-44
Preparation for Instruction	<p>Explain that before instruction begins, you should ensure that the site of the instruction is adequately prepared. If the instruction is to take place in a classroom, for example, you might check the following:</p> <ul style="list-style-type: none"> • Are there adequate numbers of seats/desks/tables for the expected number of students? • If lighting, ventilation, heating, cooling, electric power, or other services will be required, are they sufficient and in good working order? • Is adequate demonstration/board space and markers/chalk/erasers available? • If audiovisual equipment will be required, is it available, hooked up, tested, and ready to run? • Are sufficient numbers of any instructional materials such as books, handouts, paper, pencils, and the like present? • Is any necessary equipment/hardware/computers on hand in adequate numbers and properly set up? 	45-47
Preparation for Instruction	Explain that along with readying the lesson plan, you should have decided on the best method of instruction to use for the occasion. This is based on the students and their level of knowledge or prior exposure to the subject matter. Depending on the method used, you may want to rehearse your delivery, techniques for chalkboard work, equipment handling, and the like. You may want to review the names of the students,	48-49

Chapter 4 / Section 1: NS3-M2U1C4S1 – How to be an Effective Instructor

	in order to be able to ask questions and respond to students by name. Just before entering the area where the students are, you may want to check the personal appearance of hair, clothing or uniform, and shoes.	
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	50
Techniques for Instructors	Explain that no one technique of instruction is ideal for all occasions on which instruction will be given. The technique you choose should fit the type of material to be presented, the objective of the instruction, the nature of the students who will receive the instruction, and your experience and personality.	51
Techniques for Instructors	Explain that there are several main methods of instruction that have been widely used by those involved in education both in the military and in civilian life, over the years. These are the lecture method, the lecture with audiovisual support, the demonstration, role-playing, case study, the discussion method, and cooperative learning. Each of these will be described in the following sections, along with the particular advantages, disadvantages, and procedures for the more commonly used methods.	52
Techniques for Instructors	Explain that a lecture is a presentation of information, concepts, or principles by a single individual to a group of listeners. It is one-way communication. The lecture assumes the instructor knows all and the student is ignorant of the subject matter. In this form of instruction, the students have little opportunity to ask questions or offer comments during the lecture.	53-54
Techniques for Instructors	Explain that the lecture is the most efficient instructional method for presenting many facts or ideas in a relatively short time. Material that has been logically organized can be presented rapidly and concisely. The lecture is particularly suitable for introducing a subject. To ensure that all students have the necessary background to learn a subject, the instructor can present basic information in a lecture. A brief introductory lecture can give direction and purpose to a demonstration or prepare students for a discussion. The lecture is a convenient method for instructing large groups. If necessary, a public address system can be used to ensure that everyone can hear. The lecture is sometimes the only efficient technique to use if the student-to-instructor ratio is high.	55-56
Techniques for Instructors	Explain that the lecture is often useful to supplement, summarize, or emphasize material from other sources, or for information difficult to obtain in other ways. If students do not have time for research, or if they do not have access to reference material, the lecture will suffice.	57
Techniques for Instructors	Explain that there are disadvantages to the use of lecture. Lengthy or overly frequent lectures without questioning of students can easily lead to boredom. The lecture method tends to promote student passivity. There is always the danger that the instructor may only be restating or repeating what a student could easily understand by quickly reading a few paragraphs in a textbook.	58
Techniques for Instructors	Explain that the lecture does not lead to maximum achievement in certain types of learning. Speech skills, cooperative group thinking, and motor skills, for example, are difficult to instruct through the lecture. Because it allows for little or no student participation, the lecture may also be inefficient for lessons in which complicated concepts and principles are developed.	59

Chapter 4 / Section 1: NS3-M2U1C4S1 – How to be an Effective Instructor

Techniques for Instructors	Explain that it is difficult for the instructor to judge how well the audience is reacting and whether student needs and interests are being met. The lecture assumes active listening and adequate note-taking skills on the part of the student. All students may not possess these skills.	60
Review Question	The Review Question is, “Discuss what makes a positive and productive learning environment or situation.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	61
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	62
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	63

III. Supplemental Activities –

A. In Class Activity:

Supplies required: Handouts for in class and take home activities

When: This Activity should take place after the slides on right/left brain.

- In Class, have the cadets complete the Left Brain/Right Brain Activity.

B. Take Home Activity: Use the handout “Learning Experience” and have the cadets answer the questions with detail about their experience.

Tech Tip: There are many online right/left brain quizzes that cadets could take to see if they are more left/right brain dominant.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 4 / Section 1: NS3-M2U1C4S1 – How to be an Effective Instructor

Activity 1: In Class Activity- Left Brain/Right Brain Activity

Name: _____ Date: _____ Class: _____

Listed below are various characteristics of the right brain and left brain. See if you can put them in the right place. Circle ones that describe you.

Logic	Daydreaming	Analysis	Tunes of Songs
Sequencing	Visualization	Feelings	Linear
Mathematics	Language	Facts	Non-Verbal
Rhythm	Think in Words	Arts	Intuition
Holistic Thinking	Words of Songs	Computation	Creativity
Imagination			

Based on what you circled, do you think you are more right brain or left brain dominant?

Right Brain Characteristics	Left Brain Characteristics

Chapter 4 / Section 1: NS3-M2U1C4S1 – How to be an Effective Instructor

Activity 1: Take Home Activity- Learning Experience

Name: _____ Date: _____ Class: _____

Directions: Think of a time when you were really excited about learning. You couldn't wait to get to the classroom, your motivation was high and you excelled. Describe that experience. (This could be any example. It doesn't have to be a "typical" classroom experience.)

What was the teacher like?

Describe the classroom?

What activities took place for learning?

What motivated you?

What happened when you made an error or felt like you failed?

Describe your successes and how it made you feel.

Describe how you felt in this environment.

What conclusion can you make about learning based on this experience?

Chapter 4 / Section 1: NS3-M2U1C4S2 – Lecture Procedure

(Section 2 of 2)

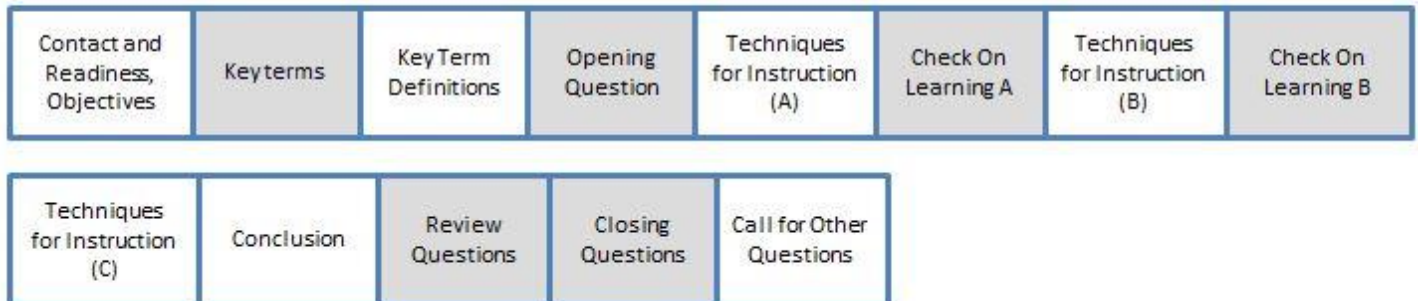
What Students Will Learn to Do:

Demonstrate knowledge of the challenge of leadership, the qualities of an effective leader, how to evaluate the performance of subordinates and how to give instruction

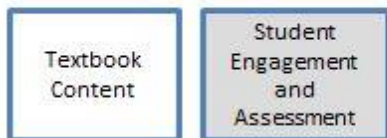
Skills and Knowledge to be Gained:

1. Describe the main steps of the lecture procedures for delivering instruction
2. Describe the advantages and disadvantages of the lecture with audiovisuals technique for presenting information
3. Describe the main steps of the lecture with audiovisuals procedure for delivering instruction
4. Describe the advantages and disadvantages of the demonstration technique for presenting information
5. Describe the main steps of the demonstration procedure for delivering instruction
6. Describe the advantages and disadvantages of the role playing instructional technique
7. Describe the advantages and disadvantages of the case study instructional technique
8. Describe the advantages and disadvantages of the discussion instructional technique
9. Describe the advantages and disadvantages of the cooperative learning instructional technique

LESSON FLOW OUTLINE



Key:



Chapter 4 / Section 1: NS3-M2U1C4S2 – Lecture Procedure

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 2, Unit 1, Chapter 4. Place a checkmark beside the NS3-M2U1C4S2 PowerPoint presentation, and these two CPS question deck files: NS3-M2U1C4S2 - Key Terms and NS3-M2U1C4S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the different techniques used for instruction. We will talk about the advantages and disadvantages to such techniques as audio/visual aids, discussions, demonstrations and many other different techniques.	1-5
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	6
Key terms - Definitions	Reinforce the correct definition for each key term.	7-9
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Name and discuss different methods or techniques for instruction.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on lecture procedures.	10
Techniques for Instruction	Explain that the first task for the instructor is the gathering of the required information for presenting the topic. He or she must determine the point of view from which the subject is to be presented and tailor the lecture to the student. After this preliminary preparation, the delivery technique for a lecture includes three main steps which: introduction, presentation, and summary.	11-12
Techniques for Instruction	Explain that with the introduction, the instructor establishes contact with the class by introducing himself and stating the objectives of the topic. He or she gets the student ready to learn the material by developing interest through explanations of how the student will use the lesson material, why the student needs to know the material, and how the material will apply to future topics or the student’s work. He or she then gives an overview of the lesson as a whole.	13
Techniques for Instruction	Explain that in the presentation the instructional material breaks down the general concepts into their simplest component parts, which are presented one by one. The instructor provides examples, illustrations, explanations, and similar materials.	14

Chapter 4 / Section 1: NS3-M2U1C4S2 – Lecture Procedure

Techniques for Instruction	Explain that during the summary the instructor provides recapitulation (a summary), which emphasizes and ties together the principal points of the lesson, including the objectives. This helps the students select and take note of the most important parts of the information presented.	15
Techniques for Instruction	Explain that the following are guidelines for effective use of lecture: <ul style="list-style-type: none"> • Know the specific objectives of the topic. • Ensure the lecture is well organized. • Avoid monotonous instructing by varying voice stress and intensity. • Watch the class actions (attentiveness) to determine the effectiveness of the instruction. 	16
Techniques for Instruction	Explain that the addition of audiovisual aids such as the chalkboard, the movie and slide projector, and the overhead projector or presenter, is the most common variation of the lecture instructional technique. This strategy encourages comments and questions from students. Although audiovisual aids are both appropriate and useful with all instructional techniques, they are especially important with the lecture. A multiple approach through several senses makes for more complete understanding and greater retention.	17-18
Techniques for Instruction	Explain that the student's imagination, while necessary to learning, cannot be expected to form completely accurate mental pictures of the concept about which he or she has been hearing. Thus, it is important that the instructor use some kind of audiovisual material to relate concepts being discussed to reality. As soon as the object or picture is presented, the word descriptions come into focus with new meaning and lasting effect. The drill instructor, for example, would find it very difficult to communicate drill procedures without the use of charts, drawings, and diagrams. This, in turn, permits the student to translate the content into logical and meaningful knowledge. Many students are visual learners, and cannot absorb material well if it is just presented orally with no visual links.	19
Techniques for Instruction	Explain that the lecture with audiovisuals is an efficient instructional method for presenting many facts or ideas in a relatively short time. Material that has been logically organized can be presented concisely in rapid sequence. The lecture with audiovisuals is particularly suitable for introducing a subject, to ensure that all students have the necessary background.	20
Techniques for Instruction	Explain that the lecture with audiovisuals is often useful to supplement, summarize, or emphasize material from other sources or to provide information difficult to obtain in other ways. This is especially true when complex material is being presented. The audiovisuals will help to focus the student's attention on the specific concept being presented.	21
Techniques for Instruction	Explain that the lecture with audiovisuals is not good for development of motor skills. Although the use of audiovisuals will help to hold the attention of the student, it still requires considerable skill in speaking on the instructor's part. This strategy also assumes active listening and adequate note-taking skills on the part of the student.	22
Techniques for Instruction	Explain that the first task for the instructor is the gathering of the required audiovisual aids for presenting the desired topic. The instructor should determine the point of view from which the subject is to be presented. After this preliminary preparation, the delivery technique for a lecture using audiovisuals is similar to the basic lecture method discussed earlier.	23

Chapter 4 / Section 1: NS3-M2U1C4S2 – Lecture Procedure

Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	24
Techniques for Instruction	Explain that demonstration is the process wherein one person does something in the presence of others to show them how to do it or to illustrate a principle. The demonstration is the most commonly used small-group teaching technique done in a classroom or laboratory to develop students' ability to operate equipment or acquire physical skills.	25
Techniques for Instruction	Explain that demonstrations are especially beneficial in skill areas. They add to learning by giving students the opportunity to see and hear what is actually happening. They can be used to illustrate ideas, principles, and concepts for which words are inadequate, thus holding the student's attention. Demonstrations can save money because only the instructor needs materials. Demonstrations can reduce hazards before students begin experimentation or handling of materials involved (especially true in labs or workshops). Demonstrations lead to a reduction in the length of trial-and-error time.	26-27
Techniques for Instruction	Explain that the demonstration cannot be properly used in large classrooms or with extremely small objects because all students cannot see. Demonstrations can be ineffective if the instructor only "shows and tells" without obtaining feedback from students.	28
Techniques for Instruction	Explain that demonstrations may lead to imitation without understanding. Unless given proper direction and guidance, students may concentrate on the aids used and ignore the lesson itself.	29
Techniques for Instruction	Explain that there are three main steps to demonstration: <ol style="list-style-type: none"> 1. Show and Tell 2. Repetition 3. Performance 	30
Techniques for Instruction	Explain that step one is "show and tell". Position the students and training aids properly. If the instructor directs the students to gather around a worktable or a training aid, he should recheck their positioning to make sure that everyone has an unobstructed view. Perform the operations in step-by-step order. Wherever possible, simultaneously tell and do. Do not hurry; speed in performing operations, or in moving from one operation to another, should normally not be emphasized in the demonstration step. Give proper attention to terminology. The instructor should make certain that the students understand the first step before he or she proceeds to the second, and so on. Repeat difficult operations. Pause briefly after each operation to observe reactions and to check for understanding. Always observe safety precautions.	31-34
Techniques for Instruction	Explain that something more than just mentioning the names of parts is necessary if the students are to retain the correct nomenclature. The following suggestions will prove helpful: <ul style="list-style-type: none"> • List the names of parts on a chalkboard or chart. • Refer students to a previously made chart that shows the parts and their terminology. • Conduct a terminology drill on the parts of the training aid while the aid is in its assembled or disassembled condition, as appropriate. • Check student comprehension carefully. 	35

Chapter 4 / Section 1: NS3-M2U1C4S2 – Lecture Procedure

Techniques for Instruction	Explain to ask questions during the demonstration that require the students to recall nomenclature, procedural steps, underlying principles, safety precautions, and the like. Watch the class for any reactions indicating lack of attention, confusion, or doubt, but do not depend solely upon visual observations	36-37
Techniques for Instruction	Explain that step two is repetition. Keeping in mind the definition of the demonstration strategy, the lesson plan will always call for a demonstration step and usually a performance step. Generally, there is a need for the inclusion of one or more repetition steps between the demonstration step and the performance step.	38
Techniques for Instruction	Explain that the performance step is the step in which the students practice under supervision until they have attained the required proficiency. During this step, they apply what they have previously learned as a result of the demonstrations.	39
Techniques for Instruction	Explain that one needs to practice or rehearse the demonstration in its entirety with an eye on time limitations. When it is time to put on the demonstration, make sure that all materials are at hand. Make sure seating arrangements are such that the students can see and hear the speaker. Use questions during the demonstration to obtain feedback. At the end of the demonstration, conduct a brief review of the steps involved or a short summary of what has happened.	40-41
Techniques for Instruction	Explain that role-playing is an instructional technique involving a spontaneous portrayal (acting out) of a situation, condition, or circumstance by selected members of the class. It is a form of improvisation in which the participants assume the identity of other persons and then react as they believe those persons would in a particular situation.	42
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	43
Techniques for Instruction	Explain that role-playing is especially useful in helping students understand perspectives and different ethnic and cultural backgrounds, and in problem-solving situations where different roles are in opposition to each other. Role-playing is often effective in counseling or tutoring.	44
Techniques for Instruction	Explain that role-playing can be fun, interesting, motivating, and meaningful. Role-playing also helps break the routine of other classroom experiences. Role-playing provides insight into common individual and group problems, reveals different attitudes, and tests various ideas in a practical situation. Students learn to organize thoughts and responses instantly while reacting to a situation or question.	45-46
Techniques for Instruction	Explain that students sometimes emphasize performance (showing off) over the intended objectives of the topic. Role-playing is time-consuming. Some students are unable to identify with the roles or situation. "Hot topics" and controversial issues sometimes get out of hand in role-playing. Role-playing may benefit only the actual participants unless the objectives for the class have been clearly communicated.	47-48
Techniques for Instruction	Explain that the case study is an instructional approach that requires the student to analyze problem situations that may be hypothetical or real. The student receives a "case"—a report containing all pertinent data. The student then must analyze the data, evaluate the nature of the problem, decide upon applicable principles, and finally recommend a solution or course of action. The case may be handled by the class as a whole, by subgroups of the class, or by an individual. Also, the case may be designed to be handled in varied time periods, ranging from a single class period to the entire course.	49-50

Chapter 4 / Section 1: NS3-M2U1C4S2 – Lecture Procedure

Techniques for Instruction	Explain that analysis of the data involves such things as the use of reference materials prepared for the study, or knowledge and theory already possessed by others and listed in manuals and books. Evaluating and determining applicable principles calls upon the students to make some kind of “reasons-why-this-has-happened” statement. Recommended solutions should be a natural outgrowth of the analysis and evaluation.	51-53
Techniques for Instruction	Explain that the discussion technique of instruction is basically a supervised conversation during which the students take an active role by stating their views on a certain topic, at the same time that the instructor guides the group to discover certain principles. The types of discussion include whole-class discussions, debates, panels, buzz-sessions, and forums. The instructor asks questions, clarifies comments, and makes tentative summaries to help students achieve understanding of the topic and stay on task. The emphasis is on student-centered rather than instructor-centered learning.	54-55
Techniques for Instruction	Explain that discussion techniques may probe attitude development. By taking part in meaningful discussion with fellow students, the participant finds his or her own values and beliefs both reinforced and challenged. Discussion provides students with the opportunity to develop questioning skills and responses. It gives them the chance to develop organization and formulate answers. Discussion is motivational. Since the role of the student is not as passive as with some other strategies, the student maintains a high degree of mental alertness.	56
Techniques for Instruction	Explain that in cooperative learning, a class of students is subdivided into groups or teams within which the members work with and depend upon each other to accomplish a learning goal. Each team member is responsible for accomplishing some portion of the assigned objective as an individual goal. They then instruct other team members about what they have learned or accomplished, and receive similar information from the other members. Team members are encouraged to assist others to achieve their individual goals when needed, and to work together to achieve the overall group objective. The instructor monitors the individual group activities and may be used as a resource for the group, but does not actively take part in the group work effort.	57-59
Techniques for Instruction	Explain that a cooperative learning strategy is best used when sufficient time is available for the group to gather, discuss, digest, and disseminate information. It is an excellent strategy to use when the material to be learned is complex or important, and requires both mastery and retention in long-term memory.	60
Conclusion	Explain that no one can teach something to someone without doing it in some particular way, and that way of instruction has significant effects on the learning outcomes. In deciding which technique is best for a particular lesson or series of lessons, the instructor must consider the following aspects: the number, ability, maturity level, and previous experience of the students; the nature of the subject matter; and what needs to be emphasized—skills, knowledge, or values/attitudes. The instructor must also consider the time requirements and the demands the technique will make on the instructor and students.	61
Conclusion	Explain that some things can be learned more thoroughly by observation or group involvement than through lectures or drill. Some materials need experimental and demonstration treatment. Controversial topics lend themselves best to discussion or role-playing. The instructor must learn how to use the different techniques.	62

Chapter 4 / Section 1: NS3-M2U1C4S2 – Lecture Procedure

Review Question	The Review Question is, “Discuss some of the specific reasons that an instructor should thoroughly rehearse a lesson before presenting it.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	63
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	64
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	65

III. Supplemental Activities -

A. In Class Activity:

Supplies required: handout for take home activity

When: In class activity can be done any time during the lesson.

- In Class: Give cadets the task of coming up with a short demonstration lesson titled, “How to Tie Your Shoes”. Cadets are to outline the three steps for a demonstration (show and tell, repetition and performance) and tell what they will do for each step. Have a few students give their lesson to the entire class and discuss what was done well and what could be improved upon.

B. Take Home Activity: Have the cadets complete the “Planning a Best Practice Lesson” activity.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 4 / Section 1: NS3-M2U1C4S2 – Lecture Procedure

Activity 1: Take Home Activity- Planning a Best Practice Lesson

Name: _____ Date: _____ Class: _____

Directions: Listed below are a few different learning situations. Pretend that you are the instructor and you need to come up with a lesson for each. Analyze the situation and answer the questions for each.

1. There are thirty students in your 9th grade class. You want to present information about the causes of WWII so that they can be re-introduced to the reasons the war occurred. You have 30 minutes in a traditional classroom with a chalkboard, projector and computer. How will you best present this information?

Why did you choose the method of instruction that you chose? What are the advantages and disadvantages of this method?

2. You are doing a unit on drug abuse and you want students to understand a parent's perspective when they find out their child is abusing drugs. What instructional method will you choose? Describe what the lesson will look like?

Why did you choose this method of instruction? What the advantages and disadvantages of this method?

3. You are about to give a group of 15 senior students a lesson on CPR. You are in the gym and you have a CPR dummy that you borrowed from the Red Cross. What instructional method will you use? Why?

What are the advantages and disadvantages of this method?

Chapter 4 / Section 1: NS3-M2U1C4S2 – Lecture Procedure

4. Your 11th grade class science class comprised of 50 students meets every day for 40 minutes. You want to cover all of the oceans in a short period of time. Is there an instructional method that might work well for this situation? Describe what it might look like.

What are the advantages and disadvantages of this instructional method?

5. You want your 30 political science students to understand the options government leaders have when a terrorist threat exists. You want students to look at past events, such as 9-11 in order to give information and insights. What instructional method might you use? Why?

What are the advantages and disadvantages of this instructional method?

6. Your social studies students are interested in gun control issues but you want them to understand all sides of the controversy. What instructional method might you use? Why did you choose this?

What are the advantages and disadvantages to this instructional method?

MODULE 3: Naval Skills

Module Overview

Module Objective:

There are certain skills and knowledge required of every sailor, whether officer or enlisted. In order to be a proficient member of the Naval Service, one must know how ships are put together and how they safely operate. We will discuss how such a complex system as a ship, submarine or aircraft carrier operates, navigates throughout the world, enters and leaves port and performs in an environment which is not only filled with other vessels, but has no guidelines to follow such as roads and highways. We will also discuss weapons systems and their purposes, limitations and defenses

Module Organization:

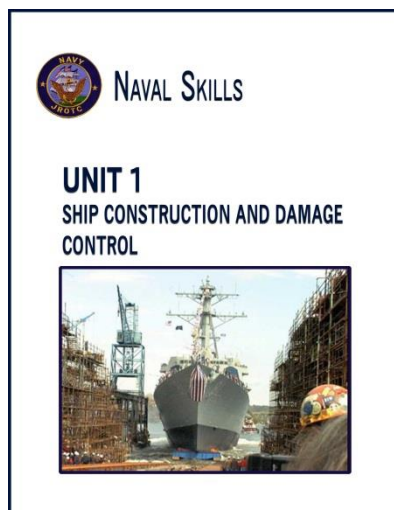
Unit Number	Unit Name	Chapter Name
1	Ship Construction and Damage Control	Ship Construction
		Damage Control and Firefighting
2	Shipboard Organization and Watchstanding	Shipboard Organization
		Watches
3	Basic Seamanship	Deck Seamanship
		Ground Tackle & Deck Equipment
		Small Boat Seamanship
4	Marine Navigation	Navigation
		Aids to Navigation
		Time and Navigation
5	Rules of the Road and Maneuvering Board	Nautical Rules of the Road
		Maneuvering Board
6	Naval Weapons and Aircraft	Naval Weapons
		Naval Guns
		Naval Aircraft and Missiles
		Mine Warfare
		Chemical, Biological and Nuclear Warfare

MODULE 3; UNIT 1: Ship Construction and Damage Control

Unit Overview

Unit Objective:

In this unit you will learn an understanding of Navy ships, their construction, characteristics and damage control



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Ship Construction	NS3-M3U1C1S1 – Nautical Terms
		NS3-M3U1C1S2 – Ship Structure
		NS3-M3U1C1S3 – Propulsion Plants
2	Damage Control and Firefighting	NS3-M3U1C2S1 – Damage Control Organization
		NS3-M3U1C2S2 – Damage Repairs
		NS3-M3U1C2S3 – Fire Prevention

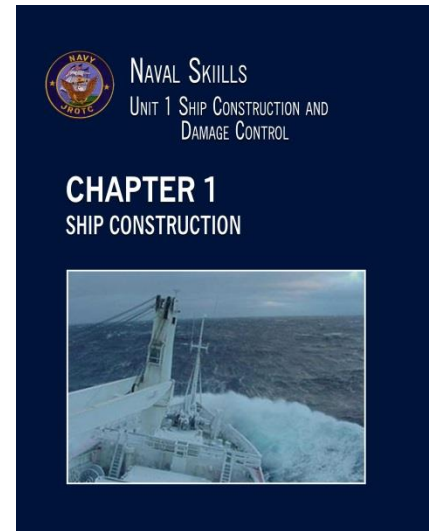
Module 3 Unit 1 Chapter 1: NS3-M3U1C1 – Ship Construction

What Students Will Learn to Do:

Demonstrate knowledge of Navy ships, their construction, characteristics and damage control

Skills and Knowledge to be Gained:

1. Describe the eight major factors used in the construction of any U.S. Navy ship
2. Identify nautical terms used in the U.S. Navy
3. Define terms that describe a ship's structure
4. Describe the decks and spaces of a U.S. Navy vessel
5. Describe the superstructure of a U.S. Navy vessel
6. Describe the watertight integrity of a Navy ship
7. Cite the three types of propulsion plants used in Navy vessels
8. Explain the design and planning stages in ship construction for U.S. Navy ships
9. Describe the launching of a U.S. vessel
10. Describe the commissioning of a U.S. vessel
11. List the classifications and designations of U.S. Navy ships



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and ...
- W.11-12.7. Conduct short as well as more sustained research projects to answer a question or solve a problem...
- W.11-12.8. Gather relevant information from multiple authoritative print and digital sources...

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.5. Make strategic use of digital media ...

Module 3 Unit 1 Chapter 1: NS3-M3U1C1 – Ship Construction

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 1 / Section 1: NS3-M3U1C1S1 – Nautical Terms

(Section 1 of 3)

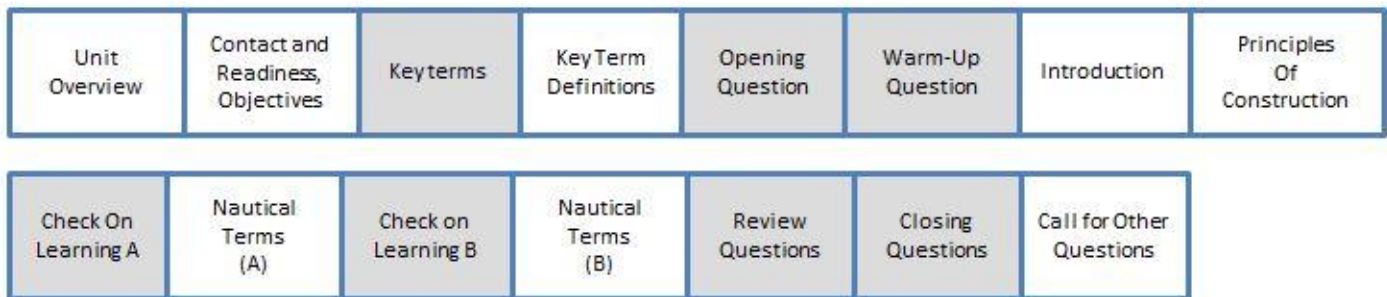
What Students Will Learn to Do:

Demonstrate knowledge of Navy ships, their construction, characteristics and damage control

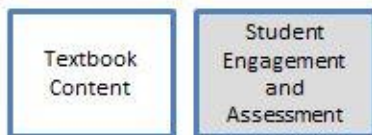
Skills and Knowledge to be Gained:

1. Describe the eight major factors used in the construction of any U.S. Navy ship
2. Identify nautical terms used in the U.S. Navy

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 1, Chapter 1. Place a checkmark beside the NS3-M3U1C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U1C1S1 - Key Terms and NS3-M3U1C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 1: NS3-M3U1C1S1 – Nautical Terms

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that Navy ships are complicated. They have propulsion plants, weapons, storerooms, repair shops, offices, and operating spaces. They provide for their crew's living, sleeping, and eating needs. They are almost like cities with their lighting, sanitary, communications, mail delivery, water, and power systems. Large ships have libraries, dental and medical offices, legal services, newspapers, TV stations, chapels, and recreation spaces. All must be able to operate on their own for long periods of time.	1-5
Unit Overview	Explain that unlike commercial ships, naval ships must be capable of continuing their missions even if they are damaged either in battle or as a result of operations. Because of this, Navy ships have a damage control organization to deal with whatever damage may occur while keeping the ship in optimum operating condition. The following chapters will discuss the principles and nomenclature of Naval ship construction and the damage control capabilities of Naval ships.	6-8
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will learn what the major factors used in the construction of any U.S. Navy are and explain each one. We will also discuss different nautical terms used by the Navy.	9-11
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	12
Key terms - Definitions	Reinforce the correct definition for each key term.	13-19
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “What qualities should be taken into consideration when designing and building a ship? (i.e., speed, stability).” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on ship construction.	20
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	21
Introduction	Explain that ship designers try to build as many good features as possible into their ships while keeping in mind their intended missions. All ships are the result of compromise; not every desired feature can be built into every ship. Nevertheless, all ships have certain essential qualities. This chapter will highlight these characteristics	22

Chapter 1 / Section 1: NS3-M3U1C1S1 – Nautical Terms

	and will discuss the fundamentals of ship construction and the nautical terms used to describe ships.	
Principles of Ship Construction	Explain that the major factors considered in the construction of any Naval ship are mission, armament, protection, seaworthiness, maneuverability, speed, endurance, and habitability.	23
Principles of Ship Construction	Explain that the mission, or main purpose, of a ship is the biggest consideration in its design. The weapons systems, speed, crew size, and almost everything else are dependent on the ship's intended mission.	24
Principles of Ship Construction	Explain that the armament consists of all the offensive weapons used to fight an enemy on or under the sea and in the air. Generally, we think of armament as being guns, torpedoes, missiles, and so forth. However the term also includes aircraft used for offensive purposes (an extension of the ship's attacking capability) and landing craft used for amphibious operations.	25
Principles of Ship Construction	Explain that protection means defensive features that help a ship survive enemy attack. In addition to its weapons, a ship's sturdy construction, armor, and compartmentation to limit the spread of flooding make up its protective features.	26
Principles of Ship Construction	Explain that seaworthiness describes the ship's ability to operate in all kinds of weather, high winds, and heavy seas. Stability, size, and freeboard (the hull space between the waterline and the main deck) determine a ship's seaworthiness. Stability refers to the way a ship returns to an upright position after a roll in heavy seas. Stability also affects the value of a ship as a weapons or aircraft platform.	27-28
Principles of Ship Construction	Explain that maneuverability means the way a ship handles-in turns, in backing down, in going alongside another ship, or in evading enemy weapons. Combatants such as carriers and destroyers must be able to change course and speed rapidly.	29
Principles of Ship Construction	Explain that speed is affected by the weight (displacement) of the ship, its underwater shape, and the power of its propulsion plant. Speed gets a ship to the scene of action quickly and enables her to outmaneuver an enemy.	30
Principles of Ship Construction	Explain that endurance is the maximum time a ship can steam at a given speed. It depends on fuel capacity, freshwater capacity, fuel consumption, and storage space and refrigeration for food provisions. Most oil-powered ships can steam for one to two weeks without refueling, while nuclear-powered ships can steam for years. Fresh provisions need to be replenished about every thirty days, but dry stores (including canned foods) may be kept much longer. Another term sometimes used for endurance is cruising range.	31-32
Principles of Ship Construction	Explain that habitability refers to the features designed to provide comfortable living conditions for the crew. Adequate heads (lavatories) and washrooms, laundries, air conditioning, and comfortable, safe, and clean berthing and messing spaces are important habitability features.	33
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	34
Nautical Terms	Explain that in civilian life you become accustomed to using terms like upstairs, downstairs, windows, floors, ceilings, walls, hallways, and so forth. In the Navy, you must learn to describe objects and places aboard a ship using nautical language. To use civilian terms aboard a ship marks you as a landlubber, one who knows nothing of the sea.	35-36

Chapter 1 / Section 1: NS3-M3U1C1S1 – Nautical Terms

Nautical Terms	Explain that in some ways, a ship is like a building. Its outer walls form the hull, the supporting body of a ship. Floors are called decks, inner walls are called bulkheads or partitions, ceilings are termed overheads, and hallways are passageways. Stairs are called ladders; an accommodation ladder is the stairs from the ship to a pier, and a Jacob's ladder is a portable ladder made of rope or metal used to climb up the side of a ship. The quarterdeck might be compared to an entrance hall or foyer in a building.	37-45
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	45
Nautical Terms	Explain that the lengthwise direction on a ship is fore and aft; crosswise is athwartships. The front of a ship is the bow; to go in that direction is to go forward. The back of the ship is the stern; to go in that direction is to go aft. The maximum width of the ship is the beam; locations off to the side are abeam. Locations behind the beam are abaft. Behind the ship, in the water, is astern. The forward part of the main deck is the forecastle (pro-nounced foc'sle), and the back part is the fantail.	46-50
Nautical Terms	Explain that a ship is divided lengthwise in half by the centerline. Everything to the right of the centerline is to starboard, and everything to the left is to port. The direction from the centerline toward either side is outboard, and from either side toward the centerline is inboard. The section of the ship around the midpoint area is called amidships. The extreme width of a ship, at the widest part, is the beam; locations off to the side are abeam. Sightings by lookouts are noted and reported as being off the port or starboard bow or beam, and off the port or starboard quarter (area abaft of the beam toward the stern).	51-53
Nautical Terms	Explain that you never go downstairs in a ship; you always go below. To go up to the main deck or above is to go topside. However, if you climb the mast, stacks, rigging, or any other areas above the solid structure of the ship, you go aloft.	54-55
Review Question	The Review Question is, "Name and describe nautical terms used in the U.S. Navy." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	56
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	57
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	58

Chapter 1 / Section 1: NS3-M3U1C1S1 – Nautical Terms

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Whiteboard

When: This is a good activity to do at the beginning of the lesson

- With the class: First have the class come up with a list of factors that they think would be important in the design and construction of a U.S. Navy ship.
- Which is the most important and why?
- Which ones would affect the mission capability of the ship if the ship's mission was to: ASW, AAW, SUW, STRIKE, or Amphibious (select only one or two to address depending on what the class thinks is important to the design).
- Did the class neglect any important design criteria?
- How do these design factors affect cost of construction or operation?

B. Take Home Activity: Ship Construction Challenge

Supplies: Balsa wood (may not weigh more than 4 ounces) bucket and weights (quarters work well). To give the students more options to create more elaborate designs increase the maximum weight of the balsa wood used. Remember, you may need a lot more weight for the competition.

Each student or group will construct a “boat” from balsa wood and compete to see whose design will hold the most weight. The boat must be made entirely of balsa wood.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 2: NS3-M3U1C1S2 – Ship Structure

(Section 2 of 3)

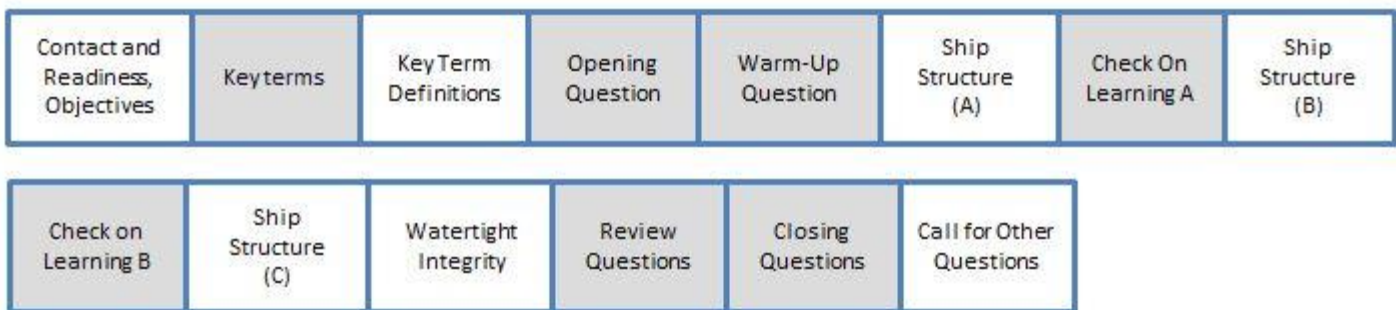
What Students Will Learn to Do:

Demonstrate knowledge of Navy ships, their construction, characteristics and damage control

Skills and Knowledge to be Gained:

1. Define terms that describe a ship's structure
2. Describe the decks and spaces of a U.S. Navy vessel
3. Describe the superstructure of a U.S. Navy vessel
4. Describe the watertight integrity of a Navy ship

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 1, Chapter 1. Place a checkmark beside the NS3-M3U1C1S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U1C1S2 - Key Terms and NS3-M3U1C1S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 2: NS3-M3U1C1S2 – Ship Structure

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will learn the terms that are used to describe a ship’s structure. We will discuss the decks and space of the U.S. Navy vessel as well as its superstructure. Finally, we will learn about the watertight integrity of the U.S. Navy ship.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-11
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Based on your current knowledge, can you name and describe decks and compartments of a Navy ship?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on ship structure.	12
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	13
Ship Structure	Explain that the hull is the main body of the ship. It is like a box. Its inner construction might be compared to the girders of a steel bridge. The keel is the backbone of the hull. It is on the centerline like an I-beam running the full length of the bottom of the ship, with heavy castings fore and aft called the stem and stern posts.	14
Ship Structure	Explain that ‘girders’ attached to the keel called transverse frames run athwartships and support the watertight skin or shell plating, which forms the sides and bottoms of the ship. Most Navy ships also have longitudinal frames running fore and aft.	15
Ship Structure	Explain that when covered by plating, the longitudinal and athwartship frames form a honeycomb structure in the bottom of the ship called a double bottom. This type of construction greatly strengthens the bottom and makes the ship more resistant to damage from collision or grounding. The spaces between the inner and outer bottoms may form tanks or bilges, which may be used for fuel and water stowage or ballast, usually concrete or pig iron. If they are empty, they are called voids or air spaces.	16-17
Ship Structure	Explain that the top of the main hull is called the main deck. The intersection of the main deck with the shell or side plating is called the gunwale (pronounced gun'el). Projections at the joint between the side plating and the bottom plating are called	18-19

Chapter 1 / Section 2: NS3-M3U1C1S2 – Ship Structure

	bilge keels. Their purpose is to reduce rolling of the ship. (A ship rolls from side to side. She pitches when she goes up and down fore and aft and she yaws when the bow swings to port and starboard because of wave action.)	
Ship Structure	Explain that most warships built today have unarmored hulls. Ships of the last century with armored hulls, that is, the old battleships and heavy cruisers, had vertical armored belts of very thick steel running fore and aft along the sides of the hull to protect engine rooms and magazines from torpedoes, shell fire, and missiles. They also had horizontal armor-steel plates built into exposed decks to protect against plunging bombs, shells, and missiles. The waterline is the water level along the hull of the ship. The vertical distance from the keel to the waterline is the ship's draft. Freeboard is the distance from the waterline to the main deck.	20-22
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	23
Ship Structure	Explain that the 'floors' of a ship are called decks. They divide the ship into layers in the same way that floors of a building divide it into stories. Decks help strengthen the hull and form the inner spaces (rooms) or compartments. The undersurface of each deck forms the overhead of the spaces below. Sometimes spaces are called rooms, such as the wardroom (officers' dining room), staterooms (officers' bedrooms), and engine rooms, but usually they are referred to simply as compartments. The wardroom is the dining area for commissioned officers.	24-26
Ship Structure	Explain that the stateroom is an officer's bedroom and office. It is a private room or compartment on a ship. The dining area for enlisted crewmembers is called the mess deck, and their living quarters are called berthing compartments. Officers' living spaces are collectively called officers' country. Bathrooms on a ship are called heads. All spaces aboard a ship are identified by standardized compartment numbers that locate them and indicate their use.	27-29
Ship Structure	Explain that the compartments of cargo ships and main storage spaces of all ships are called holds. Holds are normally larger in size than those found in merchant ships, naval combatants or civilian passenger ships. Decks are named by their position in the ship and their functions. Decks that extend throughout the ship from side to side and stem to stern are called complete decks. In most ships the uppermost complete deck is called the main deck. The next complete deck down is the second deck, and the third the third deck, and so on.	30-32
Ship Structure	Explain that in aircraft carriers, the uppermost complete deck is the flight deck. This is the deck from which aircraft take off and land, and their main deck is the hangar deck below, where aircraft are stowed and serviced.	33
Ship Structure	Explain that a partial deck at the bow above the main deck is called the forecastle deck. Amidships it becomes an upper deck, and at the stern it is a poop deck. Main deck areas between the forecastle and poop decks are called well decks. Very few Navy ships have forecastle and poop decks today, but these are often built into merchant ships. A half deck is any partial deck between complete decks. Platform decks are partial decks below the lowest complete deck.	34-35
Ship Structure	Explain that the term weather deck includes all parts of decks that are exposed to the weather. Bulwarks are a sort of low, solid-steel fence along the gunwale of the main deck, fitted with scuppers, rubber or metal drains that allow water to run off the deck during rain or heavy seas.	36

Chapter 1 / Section 2: NS3-M3U1C1S2 – Ship Structure

Ship Structure	Explain that any deck above the main deck, forecastle deck, or poop deck is called a superstructure deck. These decks are generally called levels. The first level above the main deck is the 01 (pronounced oh-one) level, the second the 02 level, and so on. These decks may have other names related to their use, such as boat deck, signal bridge, and navigating bridge.	37-38
Ship Structure	Explain that the superstructure of a ship includes all structures above the main deck. It will vary according to the type of ship, but most warships have a wheelhouse, bridge, signal bridge, chart room, combat information center, "radio shack," and probably a sea cabin for the captain.	39-40
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	41
Ship Structure	Explain that the superstructure is topped by the mast. It will be at least one vertical pole fitted with a horizontal yardarm that extends above the ship and carries flag halyards and navigational and signal lights. The mast may also be in the form of a structural tripod. On most ships there also will be electronic devices, radar antennas, radio aerials, and meteorological instruments on the mast or the yardarm. Most Navy ships have only one mast, but many merchant ships and some Naval vessels have two. The one forward is called the foremast, and the one aft of this is called the mainmast; the mainmast is usually taller than the fore-mast, making it normally the highest structure above the main deck.	42-45
Ship Structure	Explain that the top of a mast is called the truck. The pig-stick is a slender vertical extension above the mast from which the ship's commission pennant is flown. The gaff extends abaft of the mainmast. It is from the gaff that the national ensign is flown when the ship is under way. The small vertical pole at the bow on the forecastle and the slightly raked (diagonal) pole at the stern are called the jackstaff and the flagstaff respectively. When a Navy ship is at anchor or moored, it flies the Jack on the jackstaff, and the National Ensign on the flagstaff from 0800 hours to sunset. The Navy Jack is now raised in lieu of the Union Jack until the war on terrorism is over.	46-49
Ship Structure	Explain that the stack of a ship supplies air to the main propulsion engines and exhausts smoke and hot gases from them. Nuclear-powered ships do not need stacks, since their reactors require no air for combustion, and they produce no smoke or gas.	50-51
Watertight Integrity	Explain that in order to prevent the spread of flooding, watertight bulkheads are built in naval ships to divide the hull into a series of watertight compartments. This is called watertight integrity, meaning soundness or without leaks. Holds are the compartments of cargo ships, and the main storage spaces of all ships. The more watertight compartments a ship has, the more secure it will be from flooding. Watertight integrity is intended to limit flooding, which can cause a ship to list (lean) to port or starboard, lose trim (be "down" by the bow or stern), capsize (tip over), or sink.	52-54
Watertight Integrity	Explain that watertight doors and hatches allow access through bulkheads and decks, respectively. Any ship could be made almost unsinkable if it were divided into enough watertight compartments, but too much compartmentation would interfere with the arrangement of mechanical equipment, and ease of movement within the ship. Forepeak and after peak tanks are tanks located at the extreme bow and stern of the ship and are used for trimming the ship. A strong watertight bulkhead at the after end of the forepeak tank is called the collision bulkhead. If one ship rams another head on, the bow structure would collapse, hopefully, somewhere forward of the collision bulkhead, thus preventing flooding of compartments aft of it.	55-57

Chapter 1 / Section 2: NS3-M3U1C1S2 – Ship Structure

Watertight Integrity	Explain that maintenance of watertight integrity is a function of damage control. The purpose of damage control is to keep any damage from spreading elsewhere in the ship. All doors and hatches through watertight bulkheads or decks must be watertight. Wherever steam, oil, air piping, electric cables, or ventilation ducts penetrate a watertight bulkhead or deck, they go through a watertight stuffing tube (a cylinder plugged with watertight filler material) or other device to prevent leakage. All watertight doors and hatches carry markings that indicate when they may or may not be opened.	58-59
Review Question	The Review Question is, “How is watertight integrity maintained on a Navy ship?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	60
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	61
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	62

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Whiteboard

When: This is a good activity to conduct at the beginning of the lesson.

- This should be a guided discussion to get the students to think of many of the different spaces on a ship. They will need to think of operational to storage spaces. The stability and war fighting mission requirements will require their own types of spaces. Stability and maneuverability, and command and control yet additional spaces. Finally, what spaces will the crew need to function and live on the ship for prolonged periods?
- This is a simple exercise but it will help the students understand the complexity of ships. If ship construction and design is easy, why is the United States the only country with large aircraft carriers (super carriers)?

B. Take Home Activity: Have the cadets build either a longitudinal (bow to stern), or transverse (port to starboard) cross section of a modern war ship. They may use any building supplies to construct the model. Have them be prepared to describe key features depicted in their model to the class, and be able explain the purpose of those construction items.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 3: NS3-M3U1C1S3 – Propulsion Plants

(Section 3 of 3)

What Students Will Learn to Do:

Demonstrate knowledge of Navy ships, their construction, characteristics and damage control

Skills and Knowledge to be Gained:

1. Cite the three types of propulsion plants used in Navy vessels
2. Explain the design and planning stages in ship construction for U.S. Navy ships
3. Describe the launching of a U.S. vessel
4. Describe the commissioning of a U.S. vessel
5. List the classifications and designations of U.S. Navy ships

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Propulsion Plants (A)	Video Propulsion Plants	Propulsion Plants (B)
Check On Learning A	Shipbuilding	Video Shipbuilding	Launching	Check on Learning B	Commissioning (A)	Video Commissioning	Commissioning (B)
Ship Designations	Review Questions	Closing Questions	Call for Other Questions				

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 1 / Section 3: NS3-M3U1C1S3 – Propulsion Plants

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 1, Chapter 1. Place a checkmark beside the NS3-M3U1C1S3 PowerPoint presentation, and these two CPS question deck files: NS3-M3U1C1S3 - Key Terms and NS3-M3U1C1S3 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the different types of propulsion plants used in Navy vessels. We will explain the design and planning stages in ship construction. We will learn about the ways of launching a U.S. vessel. We will also discuss how a U.S. vessel is commissioned. Lastly, we will learn about the classifications and designations of U.S. Navy ships.	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-10
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What do you think propels ships and provides the energy source for U.S. Navy ships?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on propulsion plants and U.S. Navy ships.	11
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	12
Propulsion Plants	Explain that today's naval ships are propelled mainly by conventional steam plants, gas-turbine engines, or nuclear power plants, although the use of diesel engines is steadily increasing.	13

Chapter 1 / Section 3: NS3-M3U1C1S3 – Propulsion Plants

Propulsion Plants	Explain that a conventional steam propulsion plant consists of boilers, main engines (steam turbines), reduction gears, propeller shafts, and propellers. Nuclear-powered ships have steam propulsion also, but the steam is produced by heat from a nuclear reactor instead of oil--fired boilers.	14-15
Propulsion Plants	Explain that a boiler consists of a boxlike casing containing hundreds of water-filled steel tubes near the top, which are arranged so that heat from furnace-like fireboxes beneath passes over them turning the water into steam. Fuel oil, sprayed into the fireboxes under high pressure, ignites and burns intensely, producing the heat. After being raised to high pressure and temperature in a superheater in another part of the boiler, the steam flows through pipes to turbines, called the "main engines." Fresh water used to produce the steam in the boilers is distilled from salt water by evaporators.	16-17
Propulsion Plants	Explain that a steam turbine consists of a central rotating shaft, to which are attached several rows of movable blades similar to those of a fan, with stationary blades between. The shaft and blading are enclosed within a thick, airtight casing. As the steam passes through the turbine, it is directed through the stationary blades onto the rotating ones, causing the shaft to spin rapidly.	18
Propulsion Plants	Explain that because turbines operate most efficiently at speeds of several thousand revolutions per minute (rpm) but propellers are not very effective above a few hundred rpm, reduction gears like a transmission in an automobile must be used to make the transition from the high speed of the turbine to the necessarily slower speed of the propeller shafts.	19-20
Propulsion Plants	Explain that in recent years the gas turbine engine has been adapted for ship propulsion. Developed from aircraft engines, this engine powers several classes of destroyers and frigates, Aegis cruisers, minesweepers, Coast Guard cutters, and landing craft. The Navy's new littoral combat ships (LCSs) are powered by a combination of two gas turbine engines and two diesels.	21-22
Propulsion Plants	Explain that Gas turbines are made up of three basic parts: a compressor, a combustion chamber, and a turbine. The compressor draws in air, compresses it, and sends it under pressure to the combustion chamber, where it is combined with atomized (small droplets) fuel and burned. The combustion gases expand and flow through the turbine blades, causing the turbine to rotate and drive the shaft and propeller.	23
Propulsion Plants	Explain that the gas turbine has several advantages over a conventional steam plant. It is more compact, lighter, and easier to maintain and repair. Because it has a spark ignition system, much like a car, it can go from "cold iron" shutdown to fully ready to turn the shaft in only one minute, in contrast to the several hours of warm-up time required to bring a steam engine on line.	24-25
Propulsion Plants	Explain that with a nuclear power plant, the primary system is a circulating water cycle. This consists of the reactor, loops or piping, primary coolant pumps, and steam generators. Heat produced in the reactor by nuclear fission is transferred to the circulating primary coolant water, which is pressurized to prevent it from boiling. This water is then pumped by the primary coolant pumps through the steam generator, where steam to run the turbines is produced, and then back into the reactor, where it can then be reheated for the next cycle. The steam produced in the generator and used to run the turbines circulates in a separate loop outside the reactor, to avoid problems with radioactivity.	26-30
Propulsion Plants	Explain that because the generation of nuclear power does not require oxygen, submarines can operate underwater for extended periods of time. Since there are high	31

Chapter 1 / Section 3: NS3-M3U1C1S3 – Propulsion Plants

	levels of radioactivity in the reactor during operation, no one is permitted to enter the reactor compartment. Heavy shielding around the reactor protects the crew so well that they receive less radiation than they would from natural sources ashore.	
Video on Propulsion Plants	Show video on Propulsion Plants	32
Propulsion Plants	Explain that however it is produced, propeller shafts carry the power to the propellers. They run from the reduction gears through long watertight spaces called shaft alleys in the very bottom of the ship. Propellers drive the ship. Aircraft carriers and many cruisers have four propellers. Most destroyers have two propellers, but many newer ones have only one. They are variable-pitch propellers, the blades of which can be rotated on the hub to provide more or less "bite" into the water for additional control of the ship's speed or to provide reverse thrust.	33-35
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	36
Shipbuilding	Explain that almost all large ships constructed in shipyards throughout the world today are built in dry docks. The dry docks have a number of large blocks on the bottom upon which the hull is assembled. The blocks under the ship are high enough so workers can work under the hull while the ship is being built. As the hull is built, scaffolding is raised along the sides to make construction easier.	37
Shipbuilding	Explain that today in many shipyards, large portions of the ship are built in subassembly bays away from the main assembly site. As whole sections of the ship are completed, they are carried to the main building site with large cranes, where they are welded together. Some of these sections weigh more than 50 tons. This method of building enables the projects to move along much faster.	38
Shipbuilding	Explain that the first operation in constructing a ship is erecting the keel sections on the building blocks. After the keel is laid, it is extended in both directions, from the center outboard, and at the same time, forward and aft. Everything is scheduled step-by-step.	39
Video on Shipbuilding	Show video on shipbuilding	40
Launching	Explain that a ship can be launched in one of three ways: dry-dock launched, side launched, or float-off launched. In dry-dock launching, the dock is simply flooded to the outside water level and the ship is floated out. Side launching is often done for small ships like tugs and other harbor craft. In the float-off launching method, the ship is constructed on powered pallet cars, which are rolled onto a pontoon with tracks. The pontoon is towed into deep water and ballasted down. When submerged far enough, the ship is towed off to the outfitting docks.	41-43
Launching	Explain that the name of a ship is chosen by the Secretary of the Navy upon recommendation of the Chief of Naval Operations (CNO). A female sponsor is selected by the Secretary of the Navy according to naval tradition. At the time of launching, the sponsor, naval officers, officials of the shipbuilding company, and the Commandant of the naval district in which the ship is being built meet on a flag-decorated platform at the bow of the ship. The band plays the national anthem, flags and pennants wave, and as the ship begins to move, the sponsor breaks on its bow a gaily wrapped bottle of champagne, wine, or water, saying, "I name you in the name of the United States." He or she often adds, "May success always attend you."	44-45

Chapter 1 / Section 3: NS3-M3U1C1S3 – Propulsion Plants

Launching	Explain that after the christening and launching, the ship is fitted out alongside a pier, where giant cranes hoist the heavy equipment into the ship. Masts, guns, machinery, and electronic components are installed, and spaces are painted and fitted with furniture and equipment. The fitting-out period may take over a year for large ships.	46
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	47
Commissioning	Explain that when the ship is ready for commissioning, the shipyard commander or another senior officer representing the CNO is ordered to place her in commission. On that day, her officers and crew assemble in dress uniforms. Many dignitaries and guests are usually present, along with the CNO's representative and staff.	48
Video on commissioning	Show video on commissioning	49
Commissioning	Explain that as the band plays and all stand at attention, the representative orders the national ensign hoisted to designate her as a ship in the official service of the government, and the commission pennant is unfurled at the mainmast.	50
Commissioning	Explain that after commissioning, the ship starts her sea trials. The weapons are fired and calibrated. All gear is checked out and tested. The ship goes on a "shakedown" cruise to verify seaworthiness, speed, endurance, and ability to maneuver as designed. After the ship returns to the outfitting yard, any problems are corrected. More checks and tests are made at sea of fuel consumption, speeds, propeller revolutions, and many other functions. Finally the ship and her crew undergo a training cruise lasting from six to eight weeks, usually out of San Diego or Guantanamo Bay, Cuba. Upon successful completion of this cruise, the ship is ready to join the fleet.	51-52
Ship Designations	Explain that the Navy has some 300 oceangoing ships operating under their own commanding officers. In addition to these, there are over 1,000 service craft, many without crews and some with no self-propulsion.	53
Ship Designations	Explain that Navy ships have both a name and a number, called a designation, which is a group of letters and numbers that identify the ship. The letters tell the ship type and general use; the hull numbers indicate the number of ships of that type built, in sequence. These designations are used in correspondence, records, and plans, and appear on ships' boats and ships' bows.	54
Ship Designations	Explain that the first letter in a designator is a general classification. The designator letters are as follows: <ul style="list-style-type: none"> • A Auxiliary • B Battleship • C Cruiser • CV Carrier • D Destroyer • F Frigate • L Amphibious, littoral • M Mine warfare • P Patrol • S Submarine • T Military Sealift Command • Y Yard and Service Craft 	55

Chapter 1 / Section 3: NS3-M3U1C1S3 – Propulsion Plants

Ship Designations	Explain that in combatant designations, the letter N means nuclear propulsion and the letter G means that the ship carries guided missiles. Other letters serve to further identify the vessel and her purpose. When a number of ships are built to the same design they make up a class, which is named for the first ship in it.	56
Ship Designations	Explain that two examples of ship designations are as follows: the USS Arleigh Burke and USS Ohio. The Arleigh Burke is a guided-missile destroyer, DD meaning destroyer and G meaning guided missile. The Ohio is a nuclear-powered guided missile submarine, SS meaning submarine, B, ballistic missile, and N, nuclear-powered. The Ohio also happens to be the first of the latest class of trident missile submarines, so that group of ships is known as the Ohio-class guided missile submarines. All Navy ships can be easily identified as to their type, mission, armament, and propulsion by their designator.	57-60
Ship Designations	Explain that in recent years many auxiliary-type Navy ships have been assigned to the Military Sealift Command and crewed by contract civilians. These ships are identified by a T preceding their designator, as for example, the replenishment oiler USS Neosho (TAO-143).	61
Review Question	The Review Question is “Explain how ships are designated and provide examples of ship designations.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	62
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	63
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	64

Chapter 1 / Section 3: NS3-M3U1C1S3 – Propulsion Plants

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Whiteboard

When: This is a good activity to do at the beginning of the lesson

- With the class: Have the students design their own warship. Have them list all the characteristics they want the ship to have on the board.
- Now that they have given the specifications for their new war ship, look at each of the items that the students want to incorporate into the design. If the ship has many weapons systems, is the hull going to be big enough to carry the systems, if the hull is bigger will the engines be powerful enough to move the ship at the desired speed? Look at each item and show how they are all inter related, and how changing just one requirement can significantly alter the ship's design. Did they remember to give the crew enough berthing space? Will the main propulsion plant they chose work?

B. Take Home Activity: Using the handout “Engineering Propulsion Plants”, have the cadets pick any two engineering propulsion plants and compare and contrast the two. The comparison should include benefits as well as limitations for each of the propulsion plants. The student should at a minimum consider construction cost, operator training requirements, operating cost, as well as environmental concerns.

IV. Evaluation - see CPS database for chapter test questions.

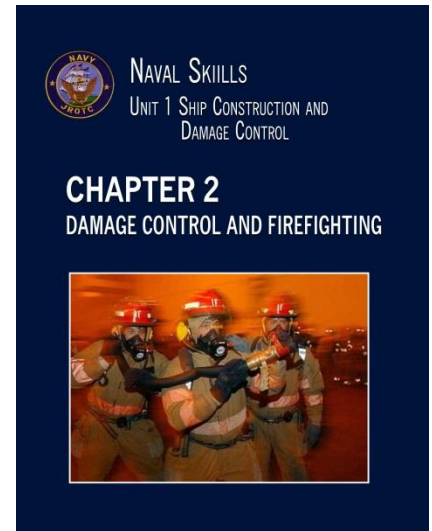
Module 3 Unit 1 Chapter 2: NS3-M3U1C2 – Damage Control and Firefighting

What Students Will Learn to Do:

Demonstrate knowledge of Navy ships, their construction, characteristics and damage control

Skills and Knowledge to be Gained:

1. Describe the eight major factors used in the construction of any U.S. Navy ship
2. Identify nautical terms used in the U.S. Navy
3. Define terms that describe a ship's structure
4. Describe the decks and spaces of a U.S. Navy vessel
5. Describe the superstructure of a U.S. Navy vessel
6. Describe the watertight integrity of a Navy ship
7. Cite the three types of propulsion plants used in Navy vessels
8. Explain the design and planning stages in ship construction for U.S. Navy ships
9. Describe the launching of a U.S. vessel
10. Describe the commissioning of a U.S. vessel
11. List the classifications and designations of U.S. Navy ships



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

Speaking & Listening

- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- L.11-12.5. Make strategic use of digital media...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Module 3 Unit 1 Chapter 2: NS3-M3U1C2 – Damage Control and Firefighting

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 2 / Section 1: NS3-M3U1C2S1 – Damage Control Organization

(Section 1 of 3)

What Students Will Learn to Do:

Demonstrate knowledge of Navy ships, their construction, characteristics and damage control

Skills and Knowledge to be Gained:

1. Describe the services provided by damage control
2. Describe the functions and responsibilities of key personnel assigned to the damage control organization
3. Describe the responsibilities of repair parties
4. Explain the material conditions of readiness

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	The Damage Control Organization	Check On Learning A
Repair Parties (A)	Videos 1 & 2 Repair Parties	Repair Parties (B)	Check on Learning B	Material Readiness Conditions	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 1, Chapter 2. Place a checkmark beside the NS3-M3U1C2S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U1C2S1 - Key Terms and NS3-M3U1C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 1: NS3-M3U1C2S1 – Damage Control Organization

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the services provided by damage control. We will learn about the functions and responsibilities of key personnel assigned to the damage control organization. We will discuss the responsibilities of repair parties. Finally, we will explain that material conditions of readiness.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What are the key reasons for damage control drills for fires?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on damage control and firefighting.	7
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	8
Introduction	Explain that a ship's ability to do her job may one day depend on her crew's damage control abilities. Damage control covers firefighting, collision and grounding damage, explosion damage, battle damage, and care of the injured. The duties and responsibilities of the ship's damage control organization are outlined in the ship's battle bill and covered in detail in the Damage Control Manual. They include routine and emergency maintenance of damage control equipment and closures; control of damage and flooding caused by accident or hostile action; and defense against chemical, biological, and radiological attack.	9-11
The Damage Control Organization	Explain that the shipboard damage control organization consists of Damage Control Central (DCC), repair lockers, and repair parties stationed in and responsible for various areas of the ship. The engineering officer is the damage control officer. He or she is assisted by the damage control assistant (DCA), who is responsible for preventing and repairing damage, training the crew in damage control, and caring for machinery, drainage, and piping assigned to the damage control organization (such as firemain, foam systems, and water washdown systems). In addition to these key leaders, each department has a damage control petty officer, who coordinates the training of departmental personnel in both damage control procedures and	12-15

Chapter 2 / Section 1: NS3-M3U1C2S1 – Damage Control Organization

	maintenance of damage control fittings and equipment in their departmental spaces.	
The Damage Control Organization	Explain that Damage Control Central is the headquarters for all damage control activities in the ship's battle organization. It is located in a protected space well within the ship. DCC coordinates all the repair parties for hull, propulsion, electronics, weapons, air operations, and the battle dressing (first aid and emergency operating) stations. It receives reports from damage control parties, assesses the damage, and decides which damage is most in need of repairs. It also advises the CO on what must be done to keep the ship in fighting shape.	16-18
The Damage Control Organization	Explain that the DCA has a battle station in the DCC, where he or she uses various visual aids to help coordinate plans to contain damage. These include charts and diagrams of the entire ship, her systems, and access routes to different areas. A casualty display board enables the DCA to keep track of the damage sustained and the progress of corrective action, based on repair party reports. The DCA also coordinates the decontamination stations, monitors teams to detect chemical, biological, or radiological (CBR) attacks, and routes casualties to battle dressing stations.	19-22
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	23
Repair Parties	Explain that repair parties consist of personnel who attempt to make emergency repairs to any vital damaged equipment or ship's structure. They are the main components in the DCA's damage control organization. The number and ratings of crew members assigned to a repair party are determined by the location of its station, the size of the area to be covered by that station, and the total number of people available.	24
Repair Parties	Explain that each repair party will have an officer or chief petty officer in charge, a scene leader to supervise all on-scene activities, a phone talker, messengers, and personnel equipped with special oxygen breathing apparatus (OBA). (For further discussion of OBA, see the section on firefighting equipment.) Repair party personnel are assigned to various teams within each repair party, including investigation teams, hose teams, dewatering, plugging, and patching teams, shoring, piping repair, structural repair, casualty power, interior communications repair, and electrical repair teams.	25-27
Repair Parties	Explain that there are also CBR (chemical, biological, and nuclear warfare) monitoring teams and decontamination teams. Besides the general repair parties, on some ships there are special departmental teams to handle aviation fuel repair, aviation crash and salvage, and ordnance disposal.	28-29
Repair Parties	Explain that repair parties are assigned to each major part of the ship, and to propulsion, ordnance equipment and electronics repair. Repair parties must be capable of: <ul style="list-style-type: none"> • Evaluating and reporting correctly on the extent of damage in their areas • Controlling and extinguishing all kinds of fires • Giving first aid and transporting the injured to battle dressing stations • Detecting, identifying, and measuring nuclear radiation and biological and chemical agents, and carrying out decontamination procedures • Performing the special duties assigned to their parties, such as propulsion and electronics repairs, and maintaining watertight integrity, structural integrity, and ship's maneuverability 	30-32

Chapter 2 / Section 1: NS3-M3U1C2S1 – Damage Control Organization

Repair Parties	Explain that in addition to her repair parties, each ship also has an auxiliary at-sea and in-port fire party organization, consisting of enough on-duty repair party personnel to handle a moderate-sized fire. A large fire requires the crew to go to general quarters (GQ) and all repair parties to be fully manned to fight it.	33
Videos 1 & 2 on Repair Parties	Show videos on repair parties.	34-35
Repair Parties	Explain that the USS <i>Forrestal</i> was damaged on 29 July 1967. 134 sailors were killed or missing and seventy-two million dollars in damage, not including aircraft. Battle dressing stations are first aid stations equipped to handle casualties and are manned by medical department personnel. Stretcher cases may be brought directly to a battle dressing station by the repair party stretcher-bearers. Emergency supplies of medical equipment are placed in first aid boxes at various stations throughout the ship in addition to those stored at the battle dressing stations.	36-37
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	38
Material Readiness Conditions	Explain that the success of damage control depends partly on the maintenance of watertight integrity. As discussed in the last chapter, each ship is divided into compartments to control flooding, withstand CBR attacks, protect and strengthen the structure of the ship, and maintain buoyancy and stability. The watertight integrity of a ship may be reduced or destroyed by enemy action, storms, collisions, or negligence.	39-40
Material Readiness Conditions	Explain that navy ships have three basic material conditions of readiness, each representing a different degree of "tightness" and protection. These are: X-RAY, YOKE, and ZEBRA.	41
Material Readiness Conditions	Explain that condition X-RAY offers the least protection. It is set when the ship is in no danger of attack, such as when at anchor in a well-protected harbor or secured at home port during regular working hours. During this condition, any closure (door, hatch, valve, and so on) with a black X on it will be secured. X-RAY fittings are also closed for conditions YOKE and ZEBRA.	42-43
Material Readiness Conditions	Explain that condition YOKE provides for a bit more protection than X-RAY. YOKE is set and maintained at sea. In port, it is maintained at all times during war, and outside of regular working hours during peacetime. YOKE closures are marked with a black Y. When condition ZEBRA is set, all closures marked with a red Z as well as all marked with a black X or Y, are secured.	44-45
Material Readiness Conditions	Explain that condition ZEBRA provides the highest level of protection possible without securing ventilation. It is set before going to sea or when entering port during war. It is set immediately, without further orders, when general quarters stations are manned. Condition ZEBRA is also set to localize and control fire and flooding when not at GQ. When condition ZEBRA is set, all closures marked with a red Z are secured.	46-50
Material Readiness Conditions	Explain that once a material condition is set, no fitting marked only with that or lower condition symbols may be opened without permission from the commanding officer, given through the DCA or OOD. However, to allow for access to critical spaces, certain fittings having a circle around the basic marking, as for example a circle X-RAY, may be temporarily opened for access without prior permission.	51-52
Material Readiness Conditions	Explain that ventilation fittings marked with a W (WILLIAM) are never closed. Those marked with a circle WILLIAM may be closed to limit air circulation in a space during a CBR attack. ZEBRA (marked with a Z) fittings within a capital D are called DOG-ZEBRA	53-55

Chapter 2 / Section 1: NS3-M3U1C2S1 – Damage Control Organization

	fittings; they are closed for darken ship. It is the responsibility of all hands to maintain whatever material condition has been set for the ship.	
Review Question	The Review Question is “What are the material conditions of readiness codes?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	56
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	57
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	58

III. Supplemental Activities -

A. In Class Activity:

Supplies Required: Garden Hose and Nozzle. Blindfold for Students

When: This is a good activity to do at the beginning of the lesson

- With the class: Explain that there was a Class C fire in a store room, the Charlie fire went out when the power to the space was secured, but an Alpha fire was started by the electrical fire, and it has spread throughout the storeroom. The room is filled with heavy smoke and there is no lighting due to electrically isolating the space to combat the original Class C fire, this mean that there is zero visibility in the space.
- Have the cadets man the hose and enter the space to combat the fire. The attack team leader will have a Naval Firefighting Thermal Imager (NFTI) which will allow him to see in the space, all others will be blind folded (optional). As the team enters the room have them pass information up and down the hose using complete repeat backs and have the team relieve the nozzle man throughout the process.

B. Take Home Activity: We saw a short clip on the USS FORRESTAL fire of 29 July 1967. The following link shows more of the incident: <https://www.youtube.com/watch?v=chuiyXQKw3I>

The United States Navy implemented many changes and procedures as a direct result of this casualty. After watching the video and going over the lesson on damage control, what changes do you think the Navy implemented are directly related to this event? Would these changes have significantly changed the outcome of the FORRESTAL fire?

Great documentary on USS FORRESTAL to watch if the class has an extra day (46 min).

https://www.youtube.com/watch?v=6g6l_gjxXM4

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 2: NS3-M3U1C2S2 – Damage Repairs

(Section 2 of 3)

What Students Will Learn to Do:

Demonstrate knowledge of Navy ships, their construction, characteristics and damage control

Skills and Knowledge to be Gained:

1. Describe the methods and materials used by repair parties to make emergency repairs
2. Describe the system used to communicate throughout the damage control organization
3. Describe the three physical requirements for a fire to occur and the four classes of fires

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Damage Repairs	Communications (A)
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Video Communications	Communications (B)	Check On Learning A	Fire and Firefighting	Check on Learning B	Classes of Fire	Review Questions
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Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 1, Chapter 2. Place a checkmark beside the NS3-M3U1C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U1C2S2 - Key Terms and NS3-M3U1C2S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 2: NS3-M3U1C2S2 – Damage Repairs

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will learn the methods and materials used by repair parties to make emergency repairs. We will discuss the system used to communicate throughout the damage control organization. Finally, we will learn about the three physical requirements for a fire to occur and the four classes of fire.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “You’re in charge of fire damage control and you smell smoke. What would your first three steps be?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on damage repairs.	7
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	8
Damage Repairs	Explain that battle-damage repair is emergency action taken to keep the ship afloat and fighting. Drills and personal qualification training are continuously done to teach everyone how to use damage control equipment. An important part of winning in any emergency is to keep calm, remain alert, and work rapidly with the tools at hand. Unless the damage is very bad, there is much that damage control teams can do to keep the ship afloat and ready for action.	9-10
Damage Repairs	Explain that any rupture, break, or hole in the ship's outer hull plating below the waterline can let in seawater. If flooding is not controlled, the ship will sink. When the underwater hull is pierced, there are only two ways to control flooding. The first is to plug the holes; the second is to establish and maintain flood boundaries using the watertight compartmentation in the ship, so flooding will not spread.	11-12
Communications	Explain that good communications between different parts of the damage control organization are of vital importance. There are three main communication systems used in the damage control organization: the general announcing system (usually called the 1MC), sound-powered telephones, and messengers.	13-14

Chapter 2 / Section 2: NS3-M3U1C2S2 – Damage Repairs

Communications	Explain that the 1MC is not the primary means of transmitting damage control information, but it is a way of getting orders, information, and alarms throughout the ship. It may be used to announce the location of a bomb or shell hit, fire, or collision.	15
Communications	Explain that emergency alarms include the general alarm, used to call the crew to general quarters because of impending enemy attack, and general quarters for fire, collision, and CBR attack. The general alarm used for attack or fire is a series of single gong tones; the chemical alarm is a steady tone signal; and the collision alarm consists of a series of three pulses, with a short pause before the next series. Battle stations are manned for all of the emergency alarms.	16-17
Video on Communications	Show video on communications	18
Communications	Explain that the ship's battle circuits use sound-powered telephones. They are the principal means of communication throughout the ship. Their advantage over other systems is that they require no external source of power other than the talker's voice. Each repair party has its own circuit connecting it to Damage Control Central, to its roving patrols, and to other stations in its area.	19-20
Communications	Explain that when other methods of communication fail, messengers must be used to relay orders and information. Messengers must learn how to get around the ship to all the repair party stations and other areas. Messengers will often be given written messages for delivery, but they must also be able to deliver oral messages accurately.	21
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	22
Fire and Firefighting	Explain that any person aboard ship who discovers a fire must give the alarm. Another person must be notified to go for help. The fire report may be spread by any means, such as the telephone or other internal communication system. Damage Control Central is the headquarters area for fighting any fire. Once the alarm has sounded, anyone nearby should act promptly to contain or extinguish the fire. Other personnel in the fire or repair party will arrive quickly on the scene with the necessary equipment to carry on the fight.	23-25
Fire and Firefighting	Explain that fire is a constant threat aboard ship. All appropriate measures must be continually taken to prevent fires. Any fire of significant size that does occur can threaten the survivability of the ship and everyone aboard. They may start from spontaneous combustion (self-generated heat), carelessness, hits by enemy shells or missiles, explosion, or collision. A fire must be controlled quickly, since it may cause extensive damage or loss of the ship.	26-27
Fire and Firefighting	Explain that in order for a fire to occur, three physical requirements must be met: there must be a burnable fuel, it must be heated enough to burn, and there must be enough oxygen to keep it burning. These three requirements form the fire triangle, whose sides consist of fuel, heat, and oxygen. Removing any side of the triangle will result in extinguishing the fire (putting it out). Firefighters must determine the best way to put a fire out—in other words, which side of the triangle to remove. This is not always an easy choice.	28-31
Fire and Firefighting	Explain that removing the fuel is often not possible. It could be done, however, in an instance where liquid fuel was being fed by a pipeline. Closing the valves would cut the flow of the fuel, and the fire could then be allowed to burn itself out. Sometimes combustible materials can be removed or soaked with water—another way of eliminating fuel.	32

Chapter 2 / Section 2: NS3-M3U1C2S2 – Damage Repairs

Fire and Firefighting	Explain that oxygen can be removed in two ways. In a closed space, carbon dioxide (CO ₂) can be pumped in to displace the oxygen and starve the fire. Another method is to smother the fire with a blanket of chemical powders, foam, or sand.	33
Fire and Firefighting	Explain that removing the heat side of the triangle, or cooling the fire, is the method most often employed, usually by the use of lots of water, both solid stream and fog (spray), to cool the burning surface rapidly.	34
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	35
Classes of Fire	Explain that classes of fires are determined by type of fuel or material burning and the methods required to extinguish them.	36
Classes of Fire	Explain that Class A (Alpha) fires involve solid combustible materials such as wood, cloth, or paper. They often leave ashes. Explosives are also in this category. Water is the usual means of putting out Class A fires. Carbon dioxide (CO ₂) may be used on small fires, but not on explosives. The flames of a large fire are usually cooled down with fog. Then, a solid stream of water is used to break up the material for further cooling.	37-39
Classes of Fire	Explain that Class B (Bravo) fires involve flammable liquids such as oil, gasoline, other fuels, cleaning agents, and paints. CO ₂ is good for putting out small Class B fires. For larger fires, light water (a mixture of water and chemicals) or water fog or spray should be used. A solid stream of water should never be used on Class B fires; it will only scatter the fuel and spread the flames.	40-42
Classes of Fire	Explain that Class C (Charlie) fires are those burning in electrical or electronic equipment such as radios, radars, generators, and electric control panels. The main extinguishing agents are CO ₂ and dry chemical extinguishers. Liquids should not be used because they will damage the equipment and may be a shock hazard. If at all possible, electrical gear should be de-energized before any firefighting is undertaken, to eliminate the potential shock hazard. Electricity can travel along wet decks and electrocute firefighters.	43-46
Classes of Fire	Explain that Class D (Delta) fires involve combustible metals such as magnesium, titanium, sodium, and in some cases, aluminum. These elements are used in certain parts of ships, aircraft, missiles, some weapons, and computers and other electronic gear. A magnesium aircraft parachute flare, for instance, can burn at a temperature greater than 4,000 degrees Fahrenheit, with a brilliancy of two trillion candlepower. Dry-powder extinguishing agents containing sodium chloride granules or copper powder are used on this type of fire. Water can excite these fires and make them worse. Firefighters dealing with Class D fires should wear welders' goggles with dark lenses to protect their eyes from the often-intense glare of this type fire.	47-50
Review Question	The Review Question is "What types of materials on a ship are likely to form the "fuel" side of the fire triangle?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	51

Chapter 2 / Section 2: NS3-M3U1C2S2 – Damage Repairs

Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	52
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	53

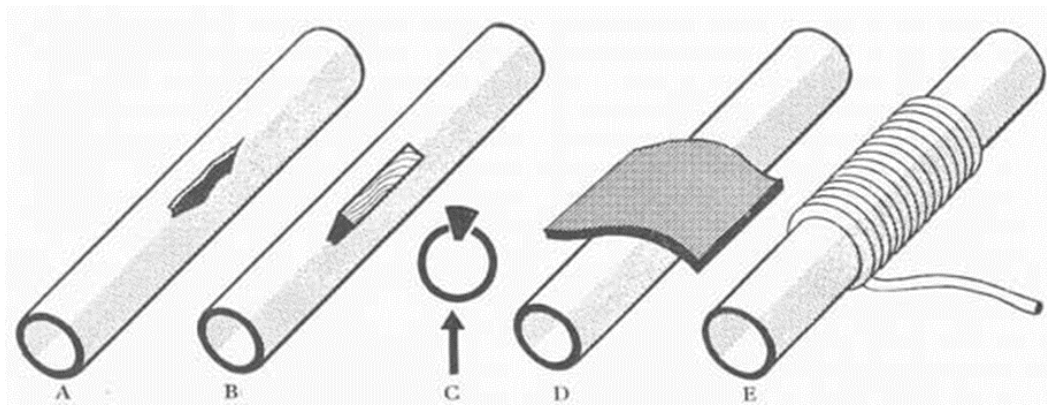
III. Supplemental Activities -

A. In Class Activity:

Supplies required: Garden hose, 24" of 2" PVC pipe with a hose connection and a cap. The PVC pipe will need to have about a 2" long cut in it (the leak). Twine and some balsa wood wedges, and rubber sheet (flexible plastic will work as well). The pipe works best if it is suspended between two supports so that the students can work on the pipe as if it was in a system on the ship; Handout for take home activity

When: This is a good activity to do at the end of the lesson.

- With the class: This is a getting wet activity or not (the patch can be done with the water turned off and then tested for effectiveness). You can demonstrate the proper technique for soft patching or describe the process prior to the activity. Be sure the students understand when a soft patch would be used and on what systems.



- Steps for pipe patching using the soft patch method:
 - ❖ May be used for small holes or cracks in low-pressure (150 psi) piping can often be repaired by applying a soft patch (step A). When it is possible, reduce the area of the hole first by driving in softwood plugs and wedges as necessary (step B). Do not drive the plugs and wedges in too far or else they will retard the flow of the fluids in the pipe (step C). Once the plugs and wedges are in place, trim them off flush with the outside surface of the pipe (step D). Cover the damaged area with a piece of rubber that will completely cover and extend about 2 inches past the damaged area on all sides (step D). Use two tightly wound layers of marlin or wire to hold the rubber in place (step E).

Chapter 2 / Section 2: NS3-M3U1C2S2 – Damage Repairs

- ❖ The soft patch can be modified or improved to suit the conditions at hand. Often it is advisable to use a curved piece of lightweight sheet metal between the rubber and the marline or wire. A coat of red lead on the face of the rubber will help and you can use marlin and oakum as a caulking material in the cracks.
- ❖ Ref: Damage Controlman, NAVEDTRA 14057 Chapter 8 page 8-19

B. Take Home Activity: US Navy ships are basically floating cities. Each ship has all the public works that a city would have to include the fire department. In today's lesson we learned of the Damage Control organization on US Navy ships and how they are the ship's fire fighters. This organization is also responsible for other casualties on ships, and are trained to combat these problems to allow the ship to continue its mission.

Using the handout “Job Requirements” explain the scenario and have the cadets follow the instructions: Instead of the ship being manned by the Navy, you are now responsible for hiring members for a new damage control locker. Your task is to write a job description for one of the positions in the locker to be posted on a job search site. The description should include any specify skills that will be required, and list benefits for taking the job (what will the Navy teach them while they are in the job).

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 3: NS3-M3U1C2S3 – Fire Prevention

(Section 3 of 3)

What Students Will Learn to Do:

Demonstrate knowledge of Navy ships, their construction, characteristics and damage control

Skills and Knowledge to be Gained:

1. Explain the systems used to fight fires aboard a ship
2. Describe the portable firefighting extinguishers used by the Navy
3. Describe the protective firefighting equipment used by the Navy
4. Describe the procedures for fighting fires

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	KeyTerm Definitions	Opening Question	Warm-Up Question	Fire Prevention (A)	Video1 Fire Prevention	Fire Prevention (B)
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Videos 3 & 4 Fire Prevention	Fire Prevention C	Check On Learning A	Firefighting Equipment	Protective Fire Clothing	Fire Prevention (B)	Check on Learning B	Fighting A Fire (A)
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Videos Fighting a Fire	Fighting A Fire (B)	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 1, Chapter 2. Place a checkmark beside the NS3-M3U1C2S3 PowerPoint presentation, and these two CPS question deck files: NS3-M3U1C2S3 - Key Terms and NS3-M3U1C2S3 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 3: NS3-M3U1C2S3 – Fire Prevention

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the systems used to fight fires aboard a ship including the portable extinguishers. We will learn about the protective firefighting equipment used by the Navy. Finally, we will discuss the procedures for fighting fires.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What are some ways to prevent fires (hint: think about the fuel, oxygen, heat triangle)?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on fire prevention.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
Fire Prevention	Explain that a fire is certain to cause some damage. The most firefighters can do is to minimize the damage and keep the fire from spreading. A main objective, therefore, is to prevent fires from starting. The rules for preventing fires are generally the same anywhere, but special precautions must be taken in the Navy and aboard ships because of the concentration of flammable fuels and explosives.	10-12
Video 1 on Fire Prevention	Show video 1 on fire prevention.	13
Fire Prevention	Explain that the first rule is to keep things squared away—clean, in good order, and in their proper places. Flammable materials must be kept away from potential fire-starters such as torches, cigarettes, and sparking equipment.	14-15
Fire Prevention	Explain that firefighting equipment must be well maintained. If a fire starts, the right gear must be immediately available and operating properly to prevent the fire from spreading. It is very important to use the correct type of firefighting agent to extinguish specific types of fires.	16-18

Chapter 2 / Section 3: NS3-M3U1C2S3 – Fire Prevention

Videos 3 & 4 Fire Prevention	Show videos 3 & 4 on fire prevention.	19-20
Fire Prevention	Explain that one of the more common causes of Class A fires is lighted cigarettes or matches thrown into trash cans. Smoking in bunks is strictly forbidden by regulations, but the regulations have been broken with serious consequences. Through spontaneous combustion, piled up oily rags and papers also commonly cause such fires.	21
Fire Prevention	Explain that Class B fires are very difficult to predict, especially if fumes leak in voids and tanks aboard ship. Sparking from welding torches, light switches, and even flashlights can be sufficient to cause an explosion and fire with gasoline fumes. Grease fires in galleys are not uncommon if hot oil or grease spills onto burners. The smoking lamp (used to give permission to smoke in authorized spaces) is out whenever handling fuels or explosives aboard a ship.	22-24
Fire Prevention	Explain that paint and oils should be kept away from electric wires. Frayed or worn wires and insulation must be repaired or replaced immediately. Dust and dirt should not be allowed to accumulate around electrical equipment. Unauthorized electrical appliances and overloaded circuits, extension cords, and plugs are an open invitation to overheating and fires.	25
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	26
Firefighting Equipment	Explain that the fire main system aboard ship is designed to deliver seawater to fireplugs and sprinkler systems, just like a city's fire main delivers water under pressure to the fire hydrants. Two connected 50-foot lengths of fire hose – one end attached to the fire main, the other fitted with a nozzle – are placed on racks at each fire station throughout a ship. Additional lengths of hose are rolled and stowed in repair lockers.	27
Firefighting Equipment	Explain that sprinkler systems are installed in spaces where flammable materials are stored, magazines, gun turrets, ammunition-handling rooms, and hangar bays aboard ships that operate aircraft. Some systems are automatically triggered when the temperature in the protected compartment reaches a certain temperature, but most are operated manually by control valves.	28-30
Firefighting Equipment	Explain that light water used to fight Class B fires acts as a blanket that floats on top of the burning liquid and smothers the fire. It should not be used on Class C fires because of the potential shock hazards involved.	31
Firefighting Equipment	Explain that two types of portable extinguishers are common: CO ₂ and PKP. Both are effective in fighting Class B and Class C fires. The CO ₂ extinguisher is used mainly for putting out electrical fires but is effective on any small fire. Because CO ₂ is heavier than air, it forms a smothering blanket over the fire. CO ₂ is quick to use and leaves no mess, but carbon-dioxide "snow" can be blown away by wind or draft. It is not poisonous, but contact with it can cause painful skin blisters.	32-35
Firefighting Equipment	Explain that dry chemical PKP extinguishers are mainly for Class B fires. The chemical used is potassium bicarbonate (similar to baking soda). It is called purple-K powder, or PKP. PKP is not poisonous and is four times as effective as CO ₂ for extinguishing fires. The dry chemical is an excellent firefighting agent, but its effects are temporary. It has no cooling effect and provides no protection against reflash. PKP should be used sparingly in confined spaces because it will reduce visibility and make breathing difficult.	36-37

Chapter 2 / Section 3: NS3-M3U1C2S3 – Fire Prevention

Firefighting Equipment	Explain that PKP can be used with light water to produce a highly effective extinguishing agent. The dry chemical beats down the fire, and the light water prevents a re-flash.	38
Firefighting Equipment	Explain that dry powder extinguishers are used to combat Class D fires. As previously mentioned, sodium chloride granules or copper powder are used in this type extinguisher. They are often installed in spaces that have materials in them that can be involved in this class of fire.	39
Protective Fire Clothing	Explain that any clothing that covers the skin will protect it from flash burns and other short-duration flames. In addition to their uniforms, personnel aboard Navy ships and shore stations that may be exposed to flame and heat in emergency conditions are issued flame-retardant hoods and long gloves that are worn whenever warranted. Eyes are protected with anti-flash goggles.	40
Protective Fire Clothing	Explain that if clothing catches on fire, one should not run, since this will fan the flames. Lie down and roll up in a blanket, coat, or anything that will smother the flames. If nothing is available, the person should roll over slowly, beating out the flames with his or her hands. If another person's clothes catch on fire, he or she should be put down and covered up (except the head) with a blanket or coat.	41
Protective Fire Clothing	Explain that the proximity firefighting suit (close-in suit) consists of coveralls, gloves, hood, and boots. Its helmet provides a protective cover for the oxygen breathing apparatus (OBA) that is normally worn with it. It is lightweight and resists penetration of liquids. The suit allows crew members to enter overheated or steam-filled compartments and to make crash fire rescues. The wearer is not expected to enter burning spaces or walk through flames, only to get close enough to rescue victims or assist in putting the fire out.	42-44
Protective Fire Clothing	Explain that the Navy's OBA is a self-contained unit designed to protect the wearer in a place lacking oxygen or containing harmful gases, vapors, smoke, or dust. The wearer breathes in a closed system in which oxygen is supplied by a chemical reaction in a disposable canister. All Navy personnel are trained in the use of the OBA in boot camp and in fleet training schools, as well as aboard ship during repair party training sessions. OBAs are being replaced in the fleet by compressed air tanks known as SCBAs (Self-Contained Breathing Apparatus)	45-46
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	47
Fighting a Fire	Explain that a fire may gain considerable headway before smoke is detected, especially if it has originated in an unattended space. The first sign may be smoke coming out of a ventilation outlet or seeping around a door or hatch cover. The smoke may have traveled some distance. Therefore, the first job of a repair or fire party is to locate the fire. This is done by team members called investigators, normally the first people to go out to respond to any damage or fire that may have occurred.	48-49
Fighting a Fire	Explain that the investigators check bulkheads, decks, and vents for heat to see if the fire is in an adjoining compartment. They may have to follow a trail of smoke. Once the fire is located, they check adjoining compartments to be sure it has not spread to them. As soon as the extent of the fire is determined, a full report is made to Damage Control Central. Upgraded material readiness conditions are set around the entire area.	50-52

Chapter 2 / Section 3: NS3-M3U1C2S3 – Fire Prevention

Fighting a Fire	Explain that while the firefighting is under way, the team sets up fire boundaries to isolate the fire and keep it from spreading. Fire boundaries are set in several ways. Combustible materials in adjoining spaces are moved or cooled to prevent spread of fire by heat transmission. Since fire can blister and ignite paint on bulkheads in adjoining compartments, fog or sprinklers are used to cool the bulkheads, decks, and overheads in adjoining spaces. Ventilation systems in the area are secured to cut off the oxygen supply to the fire and to limit the spread of smoke and gases to other compartments. Fire watches are posted in surrounding compartments.	53-56
Video on Fighting a Fire	Show video on fighting a fire.	57
Fighting a Fire	Explain that when the fire is isolated, electrical circuits in the area should be de-energized to protect against shock. Doors should be checked for heat and pressure behind them before their door dogs (heavy latches) are fully opened.	58-59
Fighting a Fire	Explain that after the fire has been extinguished, the area must be overhauled to prevent reflash of the fire. All smoldering or charred materials should be saturated thoroughly and removed if possible. The compartments must be checked for explosive vapors or liquids that might remain. Dewatering (removing water used in firefighting) is then begun. At this time, a full report is made to Damage Control Central on fire and smoke damage and flooding. The final step in fighting the fire is to set a reflash watch to be sure that the fire does not start again from a smoldering fragment or through vapor ignition. Gases, especially from fuels, can be ignited by heat or sparks if allowed to concentrate in or near an area that has not been properly overhauled.	60-63
Review Question	The Review Question is “What are the drawbacks of a PKP fire extinguisher?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	64
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	65
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	66

Chapter 2 / Section 3: NS3-M3U1C2S3 – Fire Prevention

III. Supplemental Activities -

A. In Class Activity:

Supplies required: none

When: This is a good activity to do at the end of the lesson

With the class: Have each of the cadets (can be done in small groups as well) conduct a zone inspection of the classroom, hall, and or office. The students should look specifically for any fire dangers in the room. For all discrepancies record what it is, what is the hazard, what could be the resulting type of fire it could cause, what would be the proper method of combating that type of fire, and most importantly, what can be done to reduce or remove the fire danger.

This activity can also be done as a take home activity for the cadet's home.

B. Take Home Activity: Divide the cadets into groups of four for this project.

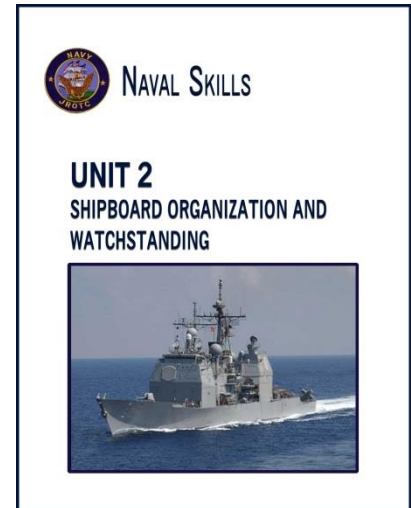
The groups will make a presentation representing each of the four classes of fires. The presentation should have an example of a fuel from each category of fire (A, B, C, and D). The presentation should explain the characteristics of each of the classes of fire, the methods of putting each class of fire out, and what part of the fire triangle (explain that is called a tetrahedron) the extinguishing agent is acting on. They should also list what methods do not work for extinguishing certain classes of fires and the dangers of using the wrong agent to combat a fire.

IV. Evaluation - see CPS database for chapter test questions.

MODULE 3; UNIT 2: Shipboard Organization and Watchstanding
Unit Overview

Unit Objective:

In this unit you will learn an understanding of the Navy's mission and organization to ensure combat effectiveness.



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Shipboard Organization	NS3-M3U2C1S1 – Administrative Organization
		NS3-M3U2C1S2 – Head of Departments
2	Watches	NS3-M3U2C2S1 – Shipboard Watches
		NS3-M3U2C2S2 – In-Port Watches

Module 3 Unit 2 Chapter 1: NS3-M3U2C1 – Shipboard Organization

What Students Will Learn to Do:

Demonstrate an understanding of the Navy's mission and organization to ensure combat effectiveness

Skills and Knowledge to be Gained:

1. Describe the administrative organization of a typical navy fighting ship, to include the responsibilities of key personnel
2. Describe the responsibilities of departments heads and division officers aboard Navy vessels
3. Describe the publications which establish the functional shipboard organization

Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.3. Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings...

Writing

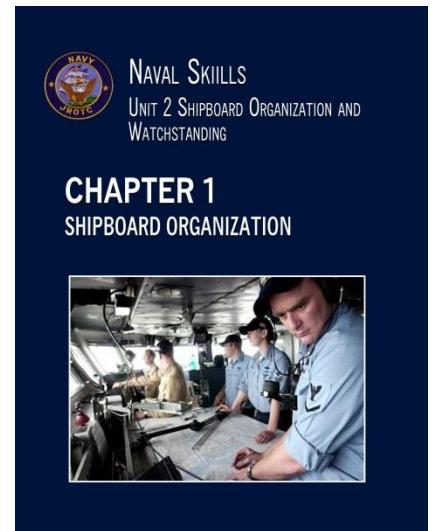
- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...



Module 3 Unit 2 Chapter 1: NS3-M3U2C1 – Shipboard Organization

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 1 / Section 1: NS3-M3U2C1S1 – Administrative Organization

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of the Navy's mission and organization to ensure combat effectiveness

Skills and Knowledge to be Gained:

1. Describe the administrative organization of a typical navy fighting ship, to include the responsibilities of key personnel

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Keyterms	KeyTerm Definitions	Opening Question	Introduction	Commanding Officer	Check On Learning A
Executive Officer	Navigator	Check on Learning B	Executive Assistants	Command Master Chief	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 2, Chapter 1. Place a checkmark beside the NS2-M3U2C1S1 PowerPoint presentation, and these two CPS question deck files: NS2-M3U2C1S1 - Key Terms and NS2-M3U2C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 1: NS3-M3U2C1S1 – Administrative Organization

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that a naval ship's crew is made up of the officers and enlisted personnel necessary to fight the ship. A ship's organization, then, is set up to meet combat needs. The crew can operate efficiently in peacetime but can adapt quickly to meet wartime needs. Whether in time of peace or war, each crew member has an important job. The chapters in this unit will discuss the way ships' personnel are organized in the U.S. Navy.	1-3
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the administrative organization of a typical Navy fighting ship. We will also learn about the responsibilities of its key personnel including the commander, navigator, and executive assistants.	4-6
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	7
Key terms - Definitions	Reinforce the correct definition for each key term.	8-10
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Why do you think it’s important to have a structured command of a ship?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on shipboard organization.	11
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	12
Introduction	Explain that the basic shipboard departments are operations, combat systems (weapons), engineering, supply, and, on ships having manned aircraft, air. There may be some other departments as well, depending upon the type and size of the ship.	13
Introduction	Explain that each type of ship has what is known as an Administrative Organization for running the ship. The administrative organization described in this chapter is that of a typical naval fighting ship, or combatant.	14
Commanding Officer	Explain that every commissioned ship in the Navy operates under the authority of an officer ordered to command her. Regardless of rank, he or she is called "captain." The <i>Commanding Officer (CO)</i> is the line officer in actual command of a ship.	15
Commanding Officer	Explain that the CO is totally responsible for the command. His or her authority is also total, within the limits set by law and Navy Regulations and the reporting senior.	16

Chapter 1 / Section 1: NS3-M3U2C1S1 – Administrative Organization

	Subordinates in the chain of command may be delegated authority to manage the details of running the ship, but delegation of authority in no way relieves the CO of responsibility for the safety and operation of the command.	
Commanding Officer	Explain that the CO strives to keep the command ready for war service. He or she is assisted by the executive officer, who has charge of administration and training of the ship. The CO gives directions to the executive officer. That officer then works with the ship's department heads to conduct training, exercises, and drills to keep the crew ready.	17
Commanding Officer	Explain that the main responsibility of the CO is the safety of the ship. This means, among other things, proper handling and stowage of ammunition, making sure the ship is watertight, careful navigation, posting of proper lookouts, and safe maneuvering and navigation. Since the CO cannot handle all these matters personally, he or she depends on the assistance of good subordinate officers. For example, the navigator must know the ship's position at all times, but the CO is still responsible for the safe navigation of the ship. During combat, the CO's battle station is that station from which he or she can best fight the ship. In the event of the loss of the ship, the CO waits until all personnel are off the ship before leaving.	18-19
Commanding Officer	Explain that the CO supervises everyone under his or her command. He or she must direct the investigation of conduct offenses, and assign punishments under the Uniform Code of Military Justice. The CO, in turn, is held responsible for his or her command by higher authority.	20
Commanding Officer	Explain that the welfare, morale, and living conditions of the crew are a CO's constant concern. The Executive Officer and his or her assistants manage these affairs, but the CO must always be concerned as well.	21
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	22
Executive Officer	Explain that the Executive Officer, often called "the exec" or "XO," is the line officer next in rank to the CO. He or she is the direct representative of the CO. The XO is responsible for all matters relating to personnel, ship's daily routine, and discipline in the ship. All orders issued by the XO have the same force as if issued by the CO.	23
Executive Officer	Explain that the executive officer is responsible for: <ul style="list-style-type: none"> • Coordination of all departments • Assignment of personnel and upkeep of their records • Preparation and maintenance of ship's organization bills and orders • Supervision and coordination of work, exercises, training, and education • Supervision of loading and berthing plans • Navigation (smaller ships only) • Supervision of ship's correspondence 	24
Executive Officer	Explain that with the help of department heads, the XO coordinates all ship's work. This includes drills and exercises, the personnel organization, policing of the ship through the master-at-arms force, and inspections of the ship. The XO is responsible for the cleanliness, good order, and military appearance of ship and crew.	25
Executive Officer	Explain that the XO supervises the department heads in the performance of their duties and is in charge of the instruction of junior officers. The XO is responsible for the entries made in the crew's service records. He or she investigates matters involving conduct and discipline of the crew, normally through the executive assistants.	26

Chapter 1 / Section 1: NS3-M3U2C1S1 – Administrative Organization

Executive Officer	Explain that he or she supervises whenever all hands are called for any particular duty, exercise, or evolution, except during combat. When the ship is cleared for action, the XO inspects her, receives reports from the various departments, and reports to the CO the condition of the ship. If the CO is incapacitated or killed, the XO becomes the acting CO. For this reason, the XO's battle station is located some distance from the captain's. In modern ships, the CO often is in the combat information center (CIC), and the XO is on the bridge.	27
Navigator	Explain that the <i>navigator</i> is responsible to the CO for the safe navigation and piloting of the ship. In small ships, navigation is an extra duty of the XO. Large ships usually have a separate navigator.	28
Navigator	Explain that the navigator keeps the CO, XO, and officer of the deck advised on the ship's location and maintains a position plot by celestial, visual, electronic, or other navigational means. He or she must study all charts and other sources of information before entering pilot waters and give careful attention to the course of the ship and the depth of water when near land or shoals. The navigator's staff maintains records of all observations concerning navigation of the ship. They obtain and correct all navigational charts, sailing directions, light lists, and other navigation publications.	29
Navigator	Explain that the navigator is responsible for the operation and care of navigational equipment. He or she is also responsible for the care and proper operation of the steering gear, except for the steering engines and motors. In general, the navigator is in charge of the bridge, pilot house, chart room, and wings of the bridge for maintenance and upkeep.	30
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	31
Executive Assistants	Explain that several additional officers and senior enlisted personnel work directly under the XO. The size of the staff depends on the size of the ship. In small ships several of these duties are assigned to one person, or as collateral duties, that is, in addition to primary duties.	32
Executive Assistants	Explain that the Administrative Assistant helps the XO in details of administration.	33-34
Executive Assistants	Explain that the Personnel Officer assigns enlisted personnel according to the ship's bills. He or she is responsible for the enlisted service records.	35
Executive Assistants	Explain that the Enlisted Career Counselor keeps all crew members informed about career and educational opportunities. He or she counsels all enlisted crewmen about any career decisions or career-related problems they may have.	36
Executive Assistants	Explain that larger ships may have a chaplain, a legal officer, and a public affairs officer. The chaplain is responsible for religious activities of the command. The chaplain ministers to the spiritual needs of ship's personnel and often helps with personal counseling.	37
Executive Assistants	Explain that the Legal Officer advises the CO and XO on matters concerning discipline and administration of justice. He or she often serves as an investigator for the XO on disciplinary charges. The public affairs officer (PAO) carries out the public affairs program of the ship. He or she keeps the CO and XO informed on public relations matters and prepares articles and photography for release to the news media (newspapers, radio, and TV).	38

Chapter 1 / Section 1: NS3-M3U2C1S1 – Administrative Organization

Executive Assistants	Explain that the Combat Cargo Officer in amphibious ships has charge of the loading and unloading of troops, billeting and messing of troops, and the loading, stowage, and unloading of cargo.	39
Executive Assistants	Explain that the Special Services Officer organizes all the welfare, recreational, and athletic activities of the ship. In foreign ports, he or she often arranges tours for members of the crew.	40
Executive Assistants	Explain that the Senior Watch Officer (SWO) is responsible to the CO for assignment of all deck watchstanders, both under way and in port. The SWO prepares the officer deck watch bills, supervises the enlisted watch bills, and coordinates and directs the training of deck watch officers.	41
Executive Assistants	Explain that the Chief Master-At-Arms (CMAA), normally one of the more senior petty officers on board, is responsible for enforcing regulations and keeping good order and discipline. He or she is in charge of supervising most working parties, and is responsible for the security and welfare of any prisoners in the ship's brig. The CMAA may have several assistant petty officer masters-at-arms (MAAs) to help carry out these duties.	42
Command Master Chief	Explain that the Command Master Chief, normally the senior enlisted chief petty officer aboard, serves as the principal enlisted adviser to the CO. The command master chief has direct access to the CO on matters that affect the welfare, morale, and well-being of the enlisted crew	43
Review Question	The Review Question is “Why are the battle stations of the CO and XO separated?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	44
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	45
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	46

Chapter 1 / Section 1: NS3-M3U2C1S1 – Administrative Organization

III. Supplemental Activities -

A. In Class Activity:

Supplies required: handout for take home activity

When: This is a good activity to do at the beginning of the lesson.

- Today you will learn about the CO and XO, and their jobs on a ship. How would you describe the XO's job? How is the XO's job different than the CO's job? Which job is harder? Who has the most responsibility? Which job would you want?

B. Take Home Activity: Using the handout, "Ship Command", have the cadets write a paper describing how the command structure on a ship different from the leadership structure of a company? Have them also address the similarities between the ship command structure and a large company? Also include an explanation of why the two organizations are not run the same way when they both have the same goal - to succeed.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 2: NS3-M3U2C1S2 – Head of Departments

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of the Navy's mission and organization to ensure combat effectiveness

Skills and Knowledge to be Gained:

1. Describe the responsibilities of departments heads and division officers aboard Navy vessels
2. Describe the publications which establish the functional shipboard organization

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Heads of Departments (A)	Check On Learning A	Heads of Departments (B)	Check on Learning B
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Heads of Departments (C)	Division Officers	Functional Organization	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 2, Chapter 1. Place a checkmark beside the NS3-M3U2C1S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U2C1S2 - Key Terms and NS3-M3U2C1S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 2: NS3-M3U2C1S2 – Head of Departments

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss responsibilities of department heads and division officers aboard Navy vessels. We will also learn about the publications which establish the functional shipboard organization.</p>	1-3
Opening Question(Random Pick a Student – “RPS”)	<p>This Opening Question is “List some of the “everyday” jobs that must be done on a ship, unrelated to combat.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on heads of departments.</p>	4
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	5
Heads of Departments	<p>Explain that a ship's major departments are operations, combat systems or weapons, engineering, supply, and air. Each has a department head, a middle-grade officer in charge of that department. Except in staff departments (medical, dental, supply), the department head is a line officer eligible for command in the event of the loss of his or her superior officers. In aircraft carriers, the operations and air departments are headed by naval aviators.</p>	6
Heads of Departments	<p>Explain that the head of a department represents the CO in all matters related to the department. All persons assigned to the department are subordinate to him or her. All department heads have equal status. They report directly to the XO for administrative matters, and directly to the CO on matters in their departments affecting overall readiness of the ship, while keeping the XO informed of such reports. The department heads' duties cover a broad area. They assign, organize and train their personnel. They are members of the XO's training board. They are responsible for the proper use and care of departmental equipment, as well as the cleanliness and upkeep of spaces assigned.</p>	7-8
Heads of Departments	<p>Explain that heads of departments and their principal assistants are assigned battle stations where they can best supervise their assigned personnel in combat.</p>	9
Heads of Departments	<p>Explain that the Operations Officer collects, evaluates, and disseminates combat and operational information wherever needed in the command. He or she also is responsible for operations of the ship and assigned airborne aircraft.</p>	10

Chapter 1 / Section 2: NS3-M3U2C1S2 – Head of Departments

Heads of Departments	<p>Explain that the operations department is responsible for:</p> <ul style="list-style-type: none"> • Surface, air, and subsurface search (radar and sonar) • Electronic warfare (listening to and jamming enemy communications and electronics equipment) • Aircraft when airborne and under combat or operational control of the ship • Collection, display, analysis, and dissemination of intelligence information • Preparing operations plans and training schedules • Planning of seamanship evolutions • Gathering weather information and informing the command • Ship's communications, if there is no communications department 	11-14
Heads of Departments	<p>Explain that in most ships the Communications Officer is a division officer in the operations department. In some large ships, however, such as aircraft carriers and amphibious command ships, he or she is a department head. The communication officer is responsible for visual and electronic communications and all the communications equipment. He or she is also responsible for the routing of all messages in the ship. He or she must be familiar with all tactical and communications publications. He or she is in charge of communications watch and signal officers, conducting their training, and supervising their watchstanding. The communications officer supervises cryptographic (encoded communications) operations, and looks after the security of crypto publications and equipment.</p>	15-16
Heads of Departments	<p>Explain that most of the newer naval warships have either a combat systems or a deck department. Ships mainly concerned with ordnance or aircraft have a combat systems department headed by a Combat Systems Officer. Other ships, such as amphibious and logistics ships, have a deck department headed by the First Lieutenant, who is assisted by a weapons or gunnery officer. (Some older ships have a <i>weapons department</i> headed by a Weapons Officer, instead of a combat systems department and officer.)</p>	17-19
Heads of Departments	<p>Explain that aviation units in a ship without an air department are assigned to the combat systems department; they make up the aviation division. These units retain their own basic organization even when so assigned. An embarked Marine Corps detachment is assigned to the combat systems or deck department, as well.</p>	20
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	21
Heads of Departments	<p>Explain that the combat systems officer is responsible for the operation and maintenance of the ship's armament and fire-control equipment. He or she must see to the stowage and care of ammunition, including the magazines and sprinkler systems.</p>	22-23
Heads of Departments	<p>Explain that the First Lieutenant is in charge of deck evolutions and repair and care of the ship's exterior, and in control of the paint, sail, and boatswain's lockers. This officer is in charge of lifeboats and rafts, life jackets, and other survival equipment. He or she sees that all gear about the weather decks is properly secured. The first lieutenant is in charge of any cargo loading or offloading operations.</p>	24-26
Heads of Departments	<p>Explain that the Engineering Officer, sometimes called the Chief Engineer, is the head of the engineering department. He or she is responsible for the operation, care, and maintenance of all propulsion and auxiliary machinery, electrical-power generators, switchboards, and wiring. Engineering personnel operate the ship's engines, power, light, telephone, ventilation, heat, refrigeration, compressed air, and water systems. The engineering officer is in charge of the stowage, care, and use of fuels and lubricants. He or she maintains the engineering log, engineer's bell book, and other</p>	27-29

Chapter 1 / Section 2: NS3-M3U2C1S2 – Head of Departments

	engineering records.	
Heads of Departments	Explain that a Damage Control Assistant working with the engineering officer maintains the ship's damage control organization, including the control of ship's stability, list, and trim, and the ship's damage control equipment. He or she is responsible for training ship's personnel in damage control, including defensive measures against chemical, biological, and nuclear weapons.	30-31
Heads of Departments	Explain that a Main Propulsion Assistant assists the engineering officer in all duties pertaining to the maintenance and operation of the ship's propulsion and auxiliary machinery.	32
Heads of Departments	Explain that nuclear-powered ships have a reactor department headed by a Reactor Officer, whose job is the operation, care, and safety of the reactor plants and auxiliaries.	33
Heads of Departments	Explain that the reactor officer is a technical assistant to the CO on matters of reactor safety. He or she supervises disposal of radioactive wastes from the ship's reactor plants, is responsible for the operation of the main engines, and maintains the engineer's bell book.	34
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	35
Heads of Departments	Explain that in ships that have an air department, the head of that department is the Air Officer, who directs the launching and landing of aircraft and their handling on deck. He or she is responsible for crash salvage operations and aircraft firefighting. The air officer is in charge of aircraft-handling equipment such as elevators, catapults, and arresting gear, and is responsible for the care, stowage, and issue of aviation fuels and lubricants.	36-37
Heads of Departments	Explain that on aircraft and helicopter carriers, the Air Wing Commander is the head of the embarked air squadrons. The title usually is Aviation Officer in the case of a helicopter detachment on a non-aviation-type ship.	38
Heads of Departments	Explain that the air wing commander directs tactical training of the air wing, coordinates and supervises all activities of the embarked squadrons and detachments, and sees to the material readiness of the wing as a whole. The air wing commander works with the ship's operations officer in matters concerning employment, scheduling, training, and tactical air operations.	39
Heads of Departments	Explain that the Supply Officer heads the supply department. He or she is a staff corps officer responsible for ordering, receiving, storing, issuing, shipping, selling, transferring, accounting for, and maintaining all stores and spare parts in the command. He or she is in charge of the equipment in the supply department such as forklift trucks, computers, ice cream machines, and vending machines. He or she is in charge of the general mess and all food preparation in the command. He or she manages all the ship's services—laundry, barber shop, tailor shop, ship's store, snack bar—and supervises the personnel who take care of the officers' staterooms, wardroom, and food preparation. He or she is in charge of disbursing pay, and maintaining the pay records of all personnel in the command.	40-42
Heads of Departments	Explain that the head of the medical department of a larger ship is the medical officer, the senior officer of the Medical Corps serving on board. He or she is directly responsible for the health of personnel of the command. The medical officer advises the CO in all matters affecting health of personnel on board.	43

Chapter 1 / Section 2: NS3-M3U2C1S2 – Head of Departments

Heads of Departments	Explain that most large ships and tenders have a dental department with the senior officer of the Dental Corps serving as department head, or dental officer, responsible for the dental care and oral health of ship's personnel. The dental officer and subordinates may be called upon to help the sick and wounded in cases of emergency. In smaller ships the medical and dental departments may be combined.	44-45
Division Officers	Explain that the departments of a ship are composed of divisions. These divisions are organized into sections or watches. The division is the basic unit of personnel on board ship. The number of divisions in a department varies depending upon the size and function of the ship. A division may be very small, or as large as a hundred members or more, such as a deck division on an aircraft carrier.	46
Division Officers	Explain that each division is headed by a division officer. Division officers are responsible to their department heads. The division officer is the first commissioned officer in the chain of command over enlisted personnel. The division officer is a guide, leader, counselor, and supervisor. He or she is the one officer whom division personnel see every day. He or she must show a very personal type of leadership, always finding time for personal contact with assigned personnel. The assignment as division officer is often a young officer's first really important assignment. It is his or her first chance to practice leadership skills. A division officer sets the pace and the example for the division. Almost every duty performed gets instant attention. He or she must issue clear instructions, and give orders in such a way that the morale and spirit of the division is maintained. Running the training program is one of the most important jobs of a division officer. Because of the rapid personnel changes in today's Navy, it is a continuous job.	47-49
Functional Organization	Explain that every ship has a Ship's Organization and Regulations Manual and Battle Organization Manual; each division has a Watch, Quarter, and Station Bill. These documents assign all personnel to their jobs. The purpose is to see that the crew functions as a well-coordinated team in any military situation.	50
Functional Organization	Explain that the Ship's Organization and Regulations Manual contains the administrative, operational, and emergency bills necessary to handle almost anything that could happen. This manual has the force and effect of <i>Navy Regulations</i> . It tells the divisions and departments their normal responsibilities.	51
Functional Organization	Explain that the Battle Organization Manual sets out the ship's organization for battle conditions. It is an important tool that COs use to prepare their ships to fight. The book has four chapters showing battle stations, conditions of readiness, battle bill, and interior communications systems.	52-54
Review Question	The Review Question is "Compare the organizational structure of your school to that of a naval ship. How are they alike and different?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	55
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	56
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	57

Chapter 1 / Section 2: NS3-M3U2C1S2 – Head of Departments

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Whiteboard or mobi tablet; handout for take home activity

When: This is a good activity to do at the end of the lesson

- Discussion (peer share first then discuss as a class- put up points on the whiteboard
- Have the students define what the division officer does, what is their most important job? Is that what a division officer spends most of their time doing, what do you think they spend most of the time doing? Who is the primary trainer for a division officer?

B. Take Home Activity: Using the hand out “Organizational Chart”, have the cadets draw the operational and the administrative organizational chart of a CG. Are the operational and administrative chain of command the same? Their chart(s) should show at a minimum the following positions:

- CO, XO, CMC, Department Heads, Division Officers, primary assistants, and key support personnel.
- Who do the department heads report to? Is it the same person on all matters? Or does the order of who is informed different depending on the information?

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 2: NS3-M3U2C1S2 – Head of Departments

Activity 1: Take Home Activity- Organizational Chart

Name: _____ Date: _____ Class: _____

Instructions: Draw the operational and the administrative organizational chart of a CG. Are the operational and administrative chain of command the same? Your chart(s) should show at a minimum the following positions:

CO, XO, CMC, Department Heads, Division Officers, primary assistants, and key support personnel.

Who do the department heads report to? Is it the same person on all matters? Or does the order of who is informed different depending on the information?

Module 3 Unit 2 Chapter 2: NS3-M3U2C2 – Watches

What Students Will Learn to Do:

Demonstrate an understanding of the Navy's mission and organization to ensure combat effectiveness

Skills and Knowledge to be Gained:

1. Describe the administrative organization of a typical navy fighting ship, to include the responsibilities of key personnel
2. Describe the responsibilities of departments heads and division officers aboard Navy vessels
3. Describe the publications which establish the functional shipboard organization

Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

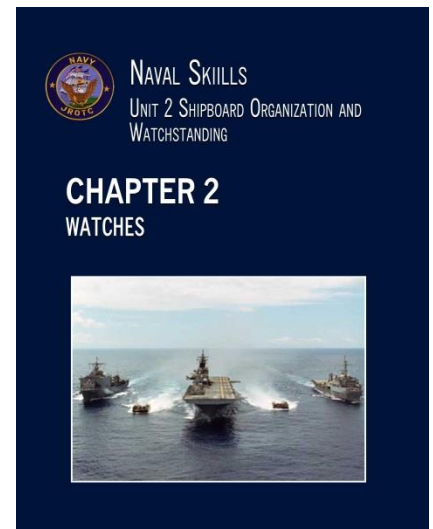
- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- W.11-12.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.6. Adapt speech to a variety of contexts and tasks...

Language

- L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...



Module 3 Unit 2 Chapter 2: NS3-M3U2C2 – Watches

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 2 / Section 1: NS3-M3U2C2S1 – Shipboard Watches

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of the Navy’s mission and organization to ensure combat effectiveness

Skills and Knowledge to be Gained:

1. Describe the watch structure used in the U.S. Navy
2. Cite the duties and responsibilities of shipboard watchstanders
3. Describe the duties performed by crewmen during underway watches

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 2, Chapter 2. Place a checkmark beside the NS3-M3U2C2S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U2C2S1 - Key Terms and NS3-M3U2C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 1: NS3-M3U2C2S1 – Shipboard Watches

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the watch structure used in the U.S. Navy. We will also learn about the duties and responsibilities of shipboard watchstanders. Lastly, we will learn about the duties performed by crewmen during underway watches.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-9
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Besides getting tired, what other things might make being on lookout difficult?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on watches.	10
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	11
Introduction	Explain that "watch" in the Navy is a word with several meanings. It sometimes refers to the location of the person on watch (for example, the bridge watch or comm watch), or to his or her <i>watch section</i> (for example, port or starboard, first or second). It may also refer to the individual on watch, such as the <i>lookout watch</i> . Watches take precedence over all normal duties and jobs that a person must routinely do aboard ship or a shore station.	12
Introduction	Explain that traditional shipboard watches are normally four hours long, except for two 1600-1800 and 1800-2000 <i>dogwatches</i> in the early evening. These divided or “dogged” watches allow crewmembers to go off watch at 1800 to eat their evening meal, and to rotate the watches so people are not standing the same watch every day. An alternative watch schedule in use on a number of ships today features four five-hour-long watches from 0200 until 2200, then a mid-watch lasting from 2200 – 0200. This schedule facilitates the morning and evening meals for watch standers, and eliminates the two early evening dogwatches.	13-15
Introduction	Explain that shore station watches are normally eight or twelve hours long. Watches ashore are usually less demanding and not so frequently stood.	16
Introduction	Explain that as mentioned in the prior chapter, each division is responsible for	17

Chapter 2 / Section 1: NS3-M3U2C2S1 – Shipboard Watches

	maintaining a <i>Watch, Quarter, and Station Bill</i> for all the personnel in the division. This is based on the ship's or shore station's <i>Battle Bill</i> and the <i>Organization and Regulations Manual</i> . They show each person's name, rate, and billet number; the battle station; the duty section assignment; the watch assignments; the station or duty in the event of an emergency such as fire, collision, or man overboard; and cleaning station.	
Shipboard Watches	Explain that, as mentioned above, crewmembers of a ship are assigned to various watches both at sea and in port. All crewmembers standing watch at a given time comprise a numbered watch section. Underway during routine operations, smaller ships usually have three rotating watch sections; larger ships may have four or more. Sometimes when involved in very demanding operation, ships may go to only two underway watch sections, called "port and starboard," so that roughly one-half the crew is always up on watch at any given time. In port, most ships have four or more rotating watch sections each duty day.	18
Shipboard Watches	Explain that during routine conditions at sea and in port, those persons not on watch are involved in ship's work, drills, recreation, and rest. When the ship goes to general quarters for battle or some other emergency, all watch personnel are relieved and go to assigned battle stations.	19-21
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	22
Shipboard Watches	Explain that watches must be relieved on time. That does not mean the relief shows up at the exact minute the watch changes, but normally about fifteen minutes before the exact time. This is both a courtesy and a practical procedure. This period allows all pertinent information and instructions to be passed on to the relief from the person going off watch before the watch is relieved. In the case of night watches topside, this period is also necessary for the reliever's eyes to adjust for night vision.	23
Shipboard Watches	Explain that when reporting to the person to be relieved, the relief will say, "I am ready to relieve you." The watchstander then passes on to the relief all the pertinent information and instructions. When the relief understands everything and is ready to assume the watch, he or she says, "I relieve you." The person being relieved then responds: "I stand relieved." After that, the new person is responsible for the watch. When enlisted watches are relieved, and an officer of that watch is present, the change of watchstanders is reported to that officer. A watch officer or Senior Petty Officer is placed in charge of each watch. Normally, there is a Duty Officer or Petty Officer for each duty and watch section of each department. Each duty and watch section is roughly equal in size and in experience	24
Shipboard Watches	Explain what the Command Duty Officer (CDO) is. To provide continuity throughout each duty day, most ships appoint a senior officer to act as CDO each day when the ship is in port. This officer represents the CO when he or she is off the ship or otherwise unavailable. The CDO makes sure all events in the XO's plan of the day (POD) for the ship are carried out.	25
Shipboard Watches	Explain that officer of the Deck (OOD). The OOD is the officer on watch in charge of the ship. He or she must have good knowledge of the policies of the CO, XO, and CDO and must make decisions. The safety and well-being of the ship depends, to a large extent, on the OOD. Under way, the OOD is on the bridge and can give orders to the Helmsman at the wheel. The OOD may also delegate this to the Junior Officer of the Deck (JOOD) in order to train that person for OOD responsibilities. In port, the OOD stands watch on the ship's quarterdeck.	26-27

Chapter 2 / Section 1: NS3-M3U2C2S1 – Shipboard Watches

Shipboard Watches	Explain that the Navy strongly encourages taking the highest possible leadership roles.	28
Topside Watches Underway	Explain that there are two basic types of enlisted watches in a topside underway watch section: deck watches and navigational watches. The makeup of a standard traditional enlisted underway watch section is described below. On newer ships outfitted with high-tech ship control and navigation systems, several of these watch assignments may be eliminated or combined.	29
Topside Watches Underway	Explain what the Boatswain's Mate of the Watch (BMOW) is. The BMOW is the petty officer in charge of the topside watch. His or her principal deck watchstanders include the helmsman, the lee helmsman, the messenger, the bridge sound-powered telephone talkers, lookouts, and when stationed, the lifeboat watch. The navigation watches include the quartermaster of the watch and the after steering watch. The BMOW is the main enlisted assistant to the OOD. He or she sees that all deck watch stations are manned, and that all in the off-going watch are relieved. He or she must see that all watchstanders are instructed and trained in their duties. He or she must be a qualified helmsman.	30
Topside Watches Underway	Explain what the Helmsman is. The Helmsman must be fully qualified to steer the ship. He or she steers courses ordered by the Conning Officer, the officer who gives orders to the helm.	31
Topside Watches Underway	Explain what the Lee Helmsman is. The person who stands watch at the engine-order telegraph on the bridge is called the Lee Helmsman. This person rings up the conning officer's orders to the engine room on the telegraph and sees that all bells are answered correctly. He or she should be a qualified Helmsman. The Helm and Lee Helm watches often alternate when on watch in order to spell each other and to keep alert. On ships with automatic propulsion control systems, the Helm and Lee Helm are in the same console, and both are operated by the same watchstander.	32
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	33
Topside Watches Underway	Explain what the Messenger is. The Messenger stands watch on the bridge and delivers messages, answers telephones, and carries out other duties assigned by the OOD.	34
Topside Watches Underway	Explain what the Bridge Sound-Powered Telephone Talkers are. A number of bridge sound-powered telephone circuits must always be operating when the ship is underway. Talkers relay messages over these circuits between the OOD and all stations on the circuit. It is very important that all stations "get the word" about all important events taking place during the watch.	35-36
Topside Watches Underway	Explain what the Lookouts are. Lookouts stationed on the ship's superstructure report aircraft sightings and all surface sightings of ships, craft, obstructions, and so on. They report on the condition of the ship's navigational lights every half-hour at night. The after lookout is stationed on the fantail with a lifebuoy close at hand in the event of a man overboard. Additional lookouts may be posted during periods of fog or low visibility. Each Lookout will have a sound-powered telephone set to relay all sightings to the bridge.	37-41
Topside Watches Underway	Explain what the Lifeboat Watch is. Lifeboat Watches enable fast recovery of any person in the water. Ships conducting air operations, on plane guard detail behind an aircraft carrier, or engaged in other potentially hazardous operations like underway replenishment, muster a ready lifeboat crew for each watch, so the ship can launch a	42

Chapter 2 / Section 1: NS3-M3U2C2S1 – Shipboard Watches

	lifeboat on short notice. The Watch usually does not have to remain on the lifeboat station. But it must be on call, up and awake and ready for fast action.	
Topside Watches Underway	Explain what the Quartermaster of the Watch (QMOW) is. The QMOW maintains the <i>Quartermaster's Notebook</i> , which records among other things all orders to the helm or lee helm, and assists the OOD in navigational matters. The QMOW is a qualified Helmsman.	43-44
Topside Watches Underway	Explain what the after steering is. This watch is stationed in an emergency steering station in the after part of the ship. This person is able to take over the helm in the event of a casualty to the bridge. He or she has direct control of the steering gear. Usually the OOD directs actual shift of steering control to the after station several times each day. This guarantees that all gear is working correctly and keeps watchstanders alert.	45
Review Question	The Review Question is, "Explain how duty sections normally divide up a ship's crew in-port vs. underway." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	46
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	47
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	48

III. Supplemental Activities –

A. In Class Activity:

Supplies Required: Whiteboard or Mobi tablet for class compilation; Handout for take home activity

When: The In Class activity will take place prior to the lesson.

- In Class: The class will discuss the different things we do to protect items that we care about such as a home. Reasons will be given for purchasing things such as alarm systems or guard dogs. Attention will then turn to protecting a ship. Cadets will brainstorm reasons for a ship to maintain a watch. A list will be compiled as a class and discussed.

B. Take Home Activity: Cadets will complete the "Which Watch Would You?" Activity.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 2: NS3-M3U2C2S2 – In-Port Watches

(Section 2 of 2)

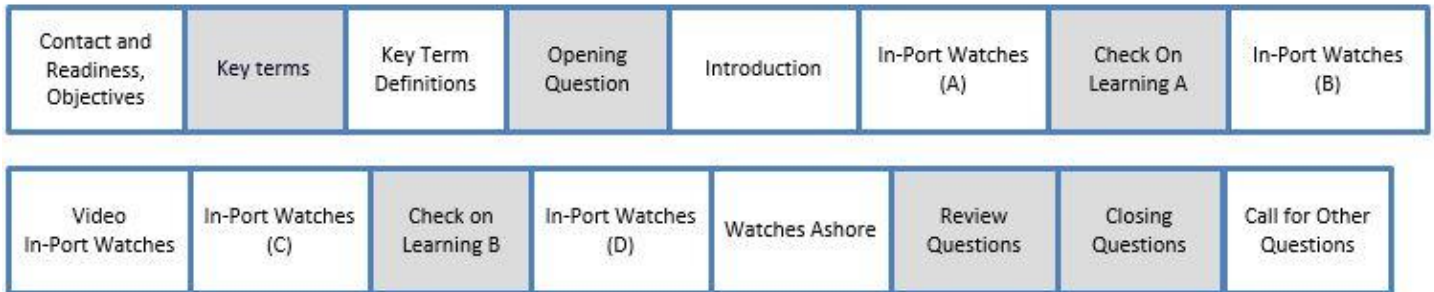
What Students Will Learn to Do:

Demonstrate an understanding of the Navy’s mission and organization to ensure combat effectiveness

Skills and Knowledge to be Gained:

1. Describe the duties performed by crewmen during In-port Watches
2. Describe the duties of Navy personnel performing Watches ashore
3. Describe the duties of Navy personnel performing Barracks Security Watches

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 2, Chapter 2. Place a checkmark beside the NS3-M3U2C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U2C2S2 - Key Terms and NS3-M3U2C2S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 2: NS3-M3U2C2S2 – In-Port Watches

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will learn about the duties performed by crewmen during In-port Watches. We will also discuss the duties of the Navy personnel performing Watches ashore and Barracks Security Watches.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Why does the Navy post “side boys” when dignitaries are boarding or departing a ship?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on in-port watches.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
In-Port Watches	Explain that the In-port Shipboard Watch is similar in some ways to the Underway Watch, but there are important differences. In the first place, the Primary Watch station is shifted from the bridge to the quarterdeck. The quarterdeck is located on the main deck of the ship, usually at the head of the brow (access) through which persons board or leave the ship. The OOD stands watch on the quarterdeck.	10-13
In-Port Watches	Explain that another major difference between Watches In-port and Under Way is that much of the ship’s equipment is shut down (secured) while the ship is in port, therefore, not as many Withstanders are required. The ship’s company is therefore divided into several rotating in-port duty sections, normally three while deployed overseas, and from four to six while in U.S. ports and naval bases. Each person in a duty section must remain on board throughout the twenty-four-hour period his or her section is on duty. Those personnel not in that day’s duty section are free to go on liberty after working hours and on weekends.	14
In-Port Watches	Explain that the enlisted in port deck watch section is generally headed by the Petty Officer of the Watch (POOW). This is a Senior Petty Officer qualified to lead the Enlisted Watch. The rest of the Watch section consists of the Brow Watch, Security Watches and Patrols, Messenger, duty MAAs, and Side Boys as required.	15-16

Chapter 2 / Section 2: NS3-M3U2C2S2 – In-Port Watches

In-Port Watches	Explain what the Petty Officer of the Watch (POOW) is. The POOW is the OOD's primary enlisted assistant in port. He or she supervises and instructs sentries and messengers and carries out the daily routine and orders as the OOD directs. When neither the OOD nor any Junior Officer of the Watch (JOOW) is near the brow, the POOW returns salutes of those leaving and arriving. The POOW calls away boats in accordance with the boat schedule, calls away evolutions scheduled in the Plan of the Day, and assembles liberty parties for inspection by the OOD. If a QMOW (see below) is not assigned, the POOW maintains the deck log, keeps the OOD informed of significant changes in barometric pressure, and requires the messenger to make calls listed in the call book.	17-18
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	19
In-Port Watches	Explain what the Brow Watch is. A Brow Watch is sometimes posted at the foot of the brow on the pier. This person maintains security of the brow and will attend to military and ceremonial duties for visiting dignitaries.	20
In-Port Watches	Explain what the Security Watches and Patrols are. These Watches may be posted to increase the security of the ship. Duties include being alert for evidence of sabotage, theft, or fire; checking security of weapons magazines; making soundings of tanks and spaces; inspecting damage control fittings; and making hourly reports to the OOD.	21
In-Port Watches	Explain what the Quartermaster of the Watch (QMOW) is. When assigned, the QMOW will maintain the deck log, handle absentee pennants of the CO and any embarked officials, check anchor and aircraft warning lights, hail boats, and assist with the rendering of honors. He or she takes bearings when at anchor, and takes temperature and barometer readings every hour. If a QMOW is not assigned, these duties will be carried out by the POOW, the messenger, and the duty quartermaster in the navigation division.	22-23
In-Port Watches	Explain what the Anchor Watch is. When the ship is at anchor, this watch is posted near the ground tackle (pronounced "tay-cul": the anchor and anchor chain and associated equipment). He or she keeps a continuous watch on the anchor chain to check the strain and how the chain is tending. The anchor watch talks by sound-powered phone to the QMOW and the OOD. Special alertness is called for if the ship is moored to a buoy, since the buoy may drag.	24
In-Port Watches	Explain what the Side Boys are. When high-ranking officials are expected to arrive or depart on official visits to the ship, Side Boys are mustered, inspected, and instructed in their duties by the POOW. They are stationed on either side of the quarterdeck to render honors to the arriving or departing officials. When the POOW pipes the side on the Boatswain's pipe, two to eight Side Boys, depending on the rank of the honored officer, will form a passageway to or from the brow. They salute on the first note of the pipe and drop their salute together on the last note.	25-27
In-Port Watches	Explain that the Side Boys must be smart in appearance and grooming, with polished shoes and immaculate uniforms. Enlisted women maybe detailed to this duty, but they are still called Side Boys.	28
Video on In-Port Watches	Show Video on In-Port Watches	29
In-Port Watches	Explain what the Duty Master-at-Arms (MAA) is. The duty MAA is a watch of the executive department. This person is a regular member of the MAA force who stands duty under the direction of the XO. He or she also performs the duties of the sergeant	30

Chapter 2 / Section 2: NS3-M3U2C2S2 – In-Port Watches

	of the guard in ships without Marines. In this job, the duty MAA is responsible for brig sentries and orderlies.	
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	31
In-Port Watches	Explain that the OOD is assisted by several other watch officers and enlisted watchstanders on duty on the bridge, other topside areas, and throughout the ship. All ship's departments will have duty personnel "on Watch," both under way and in port, handling the responsibilities of the department. The Operations /Communications Department has watch sections on duty at all times in the radio room, signal bridge, and CIC while under way and reduced Watches in these spaces in port. There is always a Duty Hospital Corpsman. The Engineering Department has a number of Watches in its engineering spaces: boilers, main engines, generators, auxiliaries, and so on, as the situation requires. The Supply Department has personnel assigned to handle spare parts. The primary enlisted topside Watches will be described below. The other Departmental Watches are not described in detail here, since most of them require specialized training and qualifications.	32-33
Watches Ashore	Explain that all major Naval stations and bases, like ships, have Watches that are stood by officers and enlisted personnel assigned to duty there. However, with the exception of forward bases supporting operations in locations such as Iraq and Afghanistan, the pace of activity ashore is usually not as fast as that on board ship, so Watch and Duty assignments are usually not so frequent, except during special exercises or times of increased readiness.	34
Watches Ashore	Explain that because they are not so often stood, nor as demanding as most Shipboard Watches, most Shore Station Watches are longer than those on board ship, usually eight or twelve hours duration. On occasion, especially during evening hours and on weekends, duty personnel not on Watch may be allowed to stand their duty on call in quarters or at home.	35
Watches Ashore	Explain that major shore staffs and stations usually have an officer assigned as CDO for each day, and they may also have an OOD, who stands his or her Watches in a duty office. These may be assisted by several enlisted Watchstanders, including a Duty MAA, Communications Watch, and, on larger stations, a Shore Patrol Watch.	36-37
Watches Ashore	Explain that the Barracks Security Watch is a Watch maintained in all shore station barracks for protection against fire, for the safety of personnel and material, and for carrying out routines. This Watchstander is responsible for fulfilling the provisions of the fire bill, emergency bill, and barracks regulations. The Barracks Watch is also responsible for keeping order and discipline.	38
Watches Ashore	Explain that all NJROTC cadets must be aware of the need for a Barracks Security Watch, and learn how to stand one. Why? Because NJROTC cadets are normally scheduled to attend "mini-boot camps" as part of their Naval Science program. These mini-boot camps are held at various military bases around the country. While there, cadets normally stay in barracks at the base.	39-40
Watches Ashore	Explain that the NJROTC units also routinely visit Naval bases and installations around the country. During these visits Cadets are often housed in barracks as guests of the Base Commander. NJROTC units are responsible for the security, cleanliness, and discipline of the barracks that they occupy.	41

Chapter 2 / Section 2: NS3-M3U2C2S2 – In-Port Watches

Review Question	The Review Question is, “What things should an NJROTC cadet keep in mind when standing barracks security watch?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	42
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	43
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	44

III. Supplemental Activities -

A. In Class Activity:

Supplies required: “Watches Bubble Map” handout for in class activity.

When: The in-class activity should take place prior to the lesson

- Cadets will make a Bubble Map brainstorming what it means to be a good guest. They will then relate these ideas to the lesson about how to conduct themselves when visiting a ship.

B. Take Home Activity:

Cadets will study this the website page regarding Navy customs:

<http://www.public.navy.mil/usff/Pages/customs.aspx>

They will then come to class prepared to have a class discussion about these customs and how we use these terms and don’t realize the connection to the Navy.

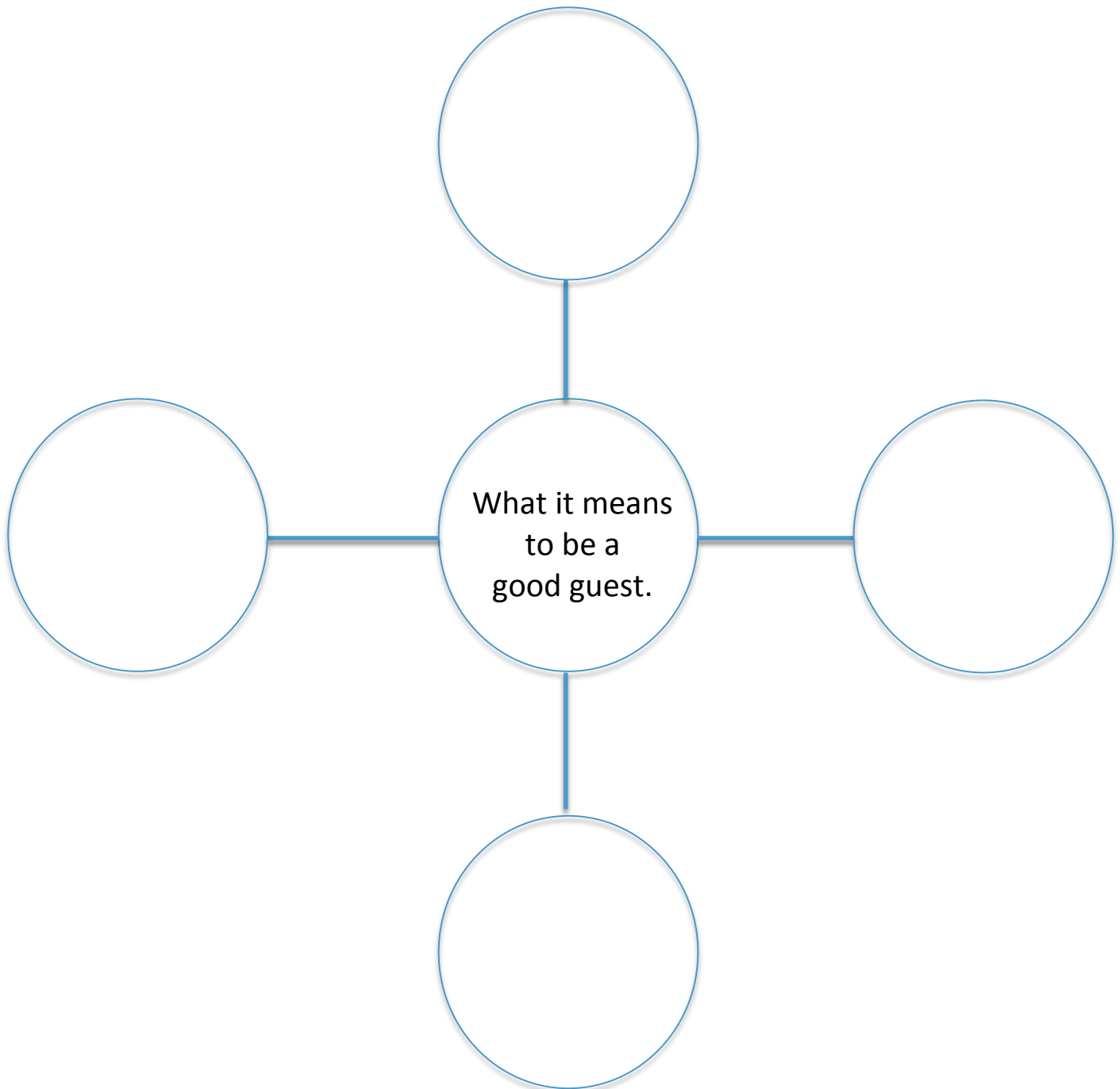
IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 2: NS3-M3U2C2S2 – In-Port Watches

Activity 1: In Class Activity- Watches Bubble Map

Name: _____ Date: _____ Class: _____

Directions: Use the bubble map to brainstorm what it means to be a good guest. Relate these ideas to the lesson about how to conduct one's self when visiting a ship. This is just a basic bubble map, add as many bubbles as you can.

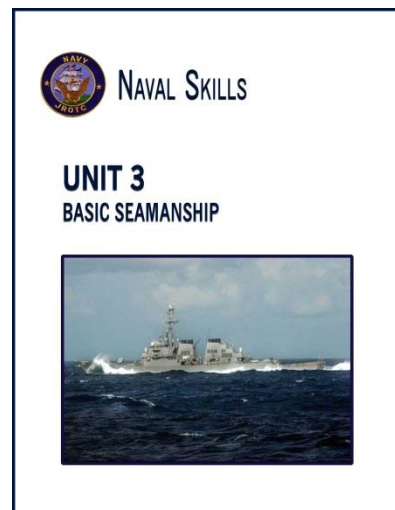


MODULE 3; UNIT 3: Basic Seamanship

Unit Overview

Unit Objective:

In this unit you will learn an understanding of basic care, makeup, and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship.



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Deck Seamanship	NS3-M3U3C1S1 – Deck Personnel
		NS3-M3U3C1S2 – Handling Fiber Line
2	Ground Tackle & Deck Equipment	NS3-M3U3C2S1 – Anchors and Related Equipment
		NS3-M3U3C2S2 – Anchoring
3	Small Boat Seamanship	NS3-M3U3C3S1 – Boat Nomenclature
		NS3-M3U3C3S2 – Coxswain

Module 3 Unit 3 Chapter 1: NS3-M3U3C1 – Deck Seamanship

What Students Will Learn to Do:

Demonstrate an understanding of basic care, makeup and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship

Skills and Knowledge to be Gained:

1. Cite the duties and responsibilities of deck department personnel
2. Cite the duties and responsibilities of boatswain's mates
3. Define marlinspike seamanship
4. Describe the types and makeup of ropes used in the Navy
5. Describe the proper procedure for handling fiber rope
6. Describe how to tie knots, bends and hitches
7. Cite the importance of securing at sea

Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

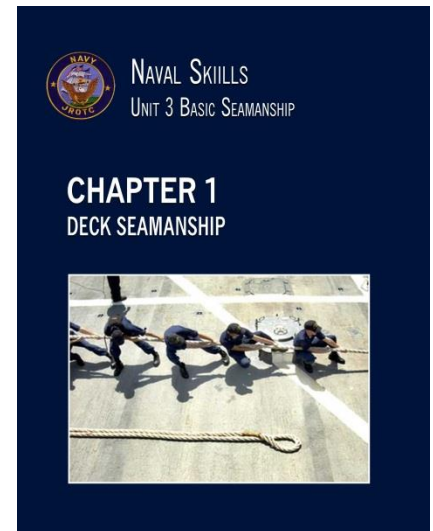
- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately...
- W.11-12.7. Conduct short as well as more sustained research projects to answer a question or solve a problem...
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.5. Make strategic use of digital media...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...



Module 3 Unit 3 Chapter 1: NS3-M3U3C1 – Deck Seamanship

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 1 / Section 1: NS3-M3U3C1S1 – Deck Personnel

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of basic care, makeup and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship

Skills and Knowledge to be Gained:

1. Cite the duties and responsibilities of deck department personnel
2. Cite the duties and responsibilities of Boatswain's mates
3. Define Marlinspike Seamanship
4. Describe the types and makeup of ropes used in the Navy

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	Deck Personnel
Check On Learning A	Boatswain's Mates	Marlinspike Seamanship	Check on Learning B	Rope And Line	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 3, Chapter 1. Place a checkmark beside the NS3-M3U3C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U3C1S1 - Key Terms and NS3-M3U3C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 1: NS3-M3U3C1S1 – Deck Personnel

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that the first requirement of everyone who sails in the ships of the U.S. Navy is seamanship. Seamanship is defined as “the knowledge and skill pertaining to the operation, navigation, management, safety and maintenance of a ship.” Seamanship has three main components: the art and skill of handling a vessel, skill in the use of deck equipment, and the care and use of various kinds of line, called Marlinspike Seamanship. On board ship, the people most concerned with seamanship every day are those in the deck department. Sailors who work in the ship's office, radio shack, or engine room may not be called upon for much seamanship in their normal everyday duties. This does not mean, however, that seamanship is unimportant for them.	1-6
Unit Overview	Explain that seamanship is the skill that ties every member of the Navy together. Whether an admiral or a seaman, a Navy person wears a uniform that says he or she is familiar with the art of seamanship. Regardless of what job specialty a Sailor selects, that Sailor first becomes a Seaman, then a Technician. The pride with which a person performs seamanship duties will carry over into the specialty ratings.	7-8
Unit Overview	Explain that many times, especially in smaller ships, everyone must help the deck force. Enlisted persons may have to carry stores on board, assist in replenishment, or help in mooring or unmooring the ship. Officers are expected to be able to supervise all such activities. In emergencies or general quarters, all hands may have to do all manner of seamanship evolutions from manning guns, standing lookout watches, or handling boats, to fighting fires. All departments must keep their spaces (compartments) clean and painted, exercise good safety procedures, and do preventive maintenance of their equipment.	9-11
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will learn about the duties and responsibilities of deck department personnel and Boatswain’s mates. We will also learn about Marlinspike seamanship. We will also learn discuss the types and makeup of ropes used in the Navy.	12-14
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	15
Key terms - Definitions	Reinforce the correct definition for each key term.	16-22
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Name some of the tasks a Sailor does on deck.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on deck seamanship.	23

Chapter 1 / Section 1: NS3-M3U3C1S1 – Deck Personnel

Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	24
Introduction	<p>Explain that skills used in the conduct of shipboard evolutions such as cargo handling, underway replenishment, and mooring, requiring the use of lines, anchoring gear, and other such equipment, are collectively referred to as deck seamanship. Most of these evolutions are carried out by personnel of the deck department aboard large ships and the deck division aboard smaller ships.</p>	25-26
Introduction	<p>Explain that the first lieutenant is in charge of the deck department or division. The title goes back to the early days of British naval sailing ships. Then, the Captain was served by a number of Lieutenants, each in charge of a division. The First Lieutenant was the most senior and knowledgeable in the business of working and maneuvering a man-of-war under sail. He was the Specialist in seamanship. This title has survived to this day. The First Lieutenant, assisted by the ship's Boatswain, is in charge of all deck seamanship evolutions, as well as the care and maintenance of most of the ship's exterior.</p>	27-28
Deck Personnel	<p>Explain that the personnel under the First Lieutenant who carry out most seamanship duties are members of one or more deck divisions, depending upon the size of the ship. Most large auxiliaries and amphibious ships have three deck divisions. The first division has charge of the forward part of the ship; the second, the ship's boats and boat decks; and the third, the after part of the ship.</p>	29-31
Deck Personnel	<p>Explain that on ships having aviation personnel aboard, non-aviation personnel, especially those in the deck department, are traditionally referred to as "Blackshoes," while aviation personnel are collectively called "Brownshoes." These nicknames refer to the shoe colors of surface line officers who wear black shoes, as opposed to naval aviators who by custom wear brown shoes with their khaki uniforms.</p>	32
Deck Personnel	<p>Explain that the Seaman Apprentice (SA) reporting on board ship from boot camp (recruit training) is usually assigned to one of the deck divisions. These new personnel do the physical work that must be done by the deck force in any ship. This includes upkeep of ship's compartments, living areas, decks, and external surfaces. Seamen maintain the decks, deck machinery, other equipment, external structures, lines, and rigging.</p>	33-36
Deck Personnel	<p>Explain that SA duties also include the deck Watches such as Helmsman, Lookout, Messenger under way and in port, and other special Watches such as Sentry duty and anchor watches. During general quarters, Seamen are members of gun crews and damage-control parties. During Seamanship tasks, they will operate small boats, booms, cranes, and winches.</p>	37-39
Deck Personnel	<p>Explain that before a Seaman Apprentice (E-2) can become a striker for advancement to a specialty rating, he or she must first satisfy the requirements for Seaman (E-3). To qualify for this rate, the E-2 must prove competent at Marlinspike, deck, and boat seamanship. He or she must be able to do these things to the satisfaction of the leading petty officers and division officer, receive their recommendation for advancement, and take a written exam on deck seamanship.</p>	40-41

Chapter 1 / Section 1: NS3-M3U3C1S1 – Deck Personnel

Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	42
Boatswain's Mates	Explain that the enlisted supervisors of the deck force are boatswain's mates. They direct and train seamen in military duties and in all activities that have to do with Marlinespike, deck, and boat seamanship. They also act as Petty Officers in charge of gun crews and damage-control parties during general quarters. Underway, they stand Boatswain's mate of the watch on the bridge; in port they stand petty officer of the watch on the quarterdeck. During replenishment operations under way, Boatswain's mates have most of the key jobs at the transfer stations.	43-45
Boatswain's Mates	Explain that the Boatswain's mates on board ship have much influence on their enlisted. They spend most of their day supervising seamen. They have the responsibility of training, and working with, almost every new person reporting on board ship. Many people receive their first impressions of shipboard life in the deck division. The work is often hard, and the hours are long. Seamen are often in the open, exposed to the weather. The life of a deck Seaman is demanding, so the leadership provided by Boatswain's mates is very important.	46-48
Boatswain's Mates	Explain that on larger ships, the First Lieutenant often has a Chief Warrant Boatswain as an assistant, in addition to deck division officers. In such cases, this officer is called the ship's Boatswain. The senior Boatswain's mate will serve as the leading Boatswain's mate, and assists the ship's Boatswain. First-class Boatswain's mates normally serve as division petty officers.	49
Marlinespike Seamanship	Explain that the Marlinespike is a tapered steel tool used for separating strands of rope. It is the basic tool of the seaman, and has become the symbolic "tool of the trade."	50
Marlinespike Seamanship	Explain that Marlinespike Seamanship concerns the use and care of fiber line and wire rope used at sea. It includes every kind of knotting and splicing, as well as all fancywork done with rope, twine, and cord. It takes knowledge and skill to become proficient in marlinespike seamanship. A good seaman has a real appreciation for a sound piece of line or a good square knot or splice. One look at the way a person handles a line tells experienced people whether or not that person is a Seaman. It is not a difficult art, but to learn it well takes time, patience, and practice. Knowledge of marlinespike seamanship is the real test for deck Sailors, and is most important to their chances for advancement.	51-54
Marlinespike Seamanship	Explain that many NJROTC cadets will want to try their hand at tying knots, and some may even wish to do some fancy or ornamental work. It can be fun, as well as practical.	55
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	56
Rope and Line	Explain that rope is a general term that can be applied to both fiber and wire. In the Navy, though, fiber rope is called line. Fiber rope is called rope as long as it is still in its original coil. Once the rope has been uncoiled and cut for use, it is not called rope anymore. Rope made from wire is called wire rope, or just wire.	57-58
Rope and Line	Explain that line is made from either natural fibers of various plants (manila, sisal, hemp, cotton, and flax), or synthetic fibers such as nylon. Of the natural fibers, manila is the one most often used aboard ship. It is strongest and most expensive. It is made from the fibers of the abaca, or wild banana plant, raised chiefly in the Philippines,	59-60

Chapter 1 / Section 1: NS3-M3U3C1S1 – Deck Personnel

	hence the name manila. At one time, most all line used on Navy ships was made from manila.	
Rope and Line	Explain that today, however, nylon line has replaced manila for almost all shipboard applications in the Navy except high-line transfer of personnel between ships at sea. Although nylon line is more expensive than manila, it is nearly three times as strong and lasts five times as long. For these reasons, nylon line is often cheaper in the long run, even though its initial cost is greater than that of manila.	61-62
Rope and Line	Explain that nylon does not rot or age as rapidly as natural fiber, so it keeps its strength better throughout its life. It is also less bulky, requires less stowage space, and is more flexible, making it easier to handle. Nylon is practically waterproof. It does not decay, and resists marine fungus growths. But nylon also stretches more than manila under load. This is why it is not used for transferring people or cargo from ship to ship by highline. Nylon will stretch about 50 percent before breaking, but when it does, it snaps like a rubber band, so it can be very dangerous under heavy strain.	63-64
Rope and Line	Explain that although wire rope has not been in general use for some years, some ships still use it for situations where extra strength is required, such as when storms or high winds are expected. Because such rope tends to form spurs or burrs on the surface over time, people handling it should always wear heavy leather work gloves. They should take care not to rub against it, since the sharp burrs can easily pierce light clothing and inflict severe cuts.	65-66
Rope and Line	Explain that regardless of the material from which it is made, all line is formed in basically the same way. The natural or synthetic fibers are twisted together in one direction to form yarns or threads. These yarns or threads are twisted together in the opposite direction to form strands, which are in turn twisted together in the opposite direction to form the line. General-purpose line made in this manner is known as plain-laid.	67-68
Rope and Line	Explain that the degree of twist of the strands or the type of lay of the strands will cause the strength of different types of line to vary. For instance, hard twisting increases the friction that holds the line together and makes it less likely to absorb moisture. But too many twists reduce the strength of the fibers. Most line used on board ship is three-strand, plain-laid, and has a right-hand twist or lay. Right-laid line must always be coiled down right-handed or clockwise.	69-71
Rope and Line	Explain that single- or double-braided nylon line is also carried on board ship for such things as hoisting signal flags (halyards). Braided line will not unlay or untwist when it is free to rotate on swivels as signal halyards must do. Plain-laid line will tend to unlay or untwist under similar conditions.	72
Rope and Line	Explain that length of line is normally measured in fathoms, feet, or meters (1 fathom equals 6 feet). However, the size of a line is its circumference, measured in inches. The size of wire rope is its diameter, measured in inches across the widest part.	73
Rope and Line	Explain that the largest line used for general shipboard purposes in the Navy is 10-inch, normally referred to as a hawser. A hawser is the name given to any rope larger than 5 inches in circumference that is generally used for towing or mooring. Five-inch manila is used for personnel high-line transfer rigs in most cases. Any small stuff less than six-thread is called by name rather than by the number of threads.	74-75
Rope and Line	Explain that line less than 1 ¼ inches in circumference is called small stuff and is identified by the number of threads in the line. Twenty-four thread, with about 1 ¾ - inch circumference, is the largest small stuff. Other sizes of small stuff are twenty-one thread (1 ½ inch), fifteen-thread (1 ¼ inch), twelve thread (1 ⅜ inch), nine-thread (1	76-77

Chapter 1 / Section 1: NS3-M3U3C1S1 – Deck Personnel

	inch), and six-thread ($\frac{3}{8}$ inch).	
Rope and Line	Explain that the smallest small stuff is called by the name, marline, seizing stuff, and small white line. Marline is the most common small stuff referred to by name. It is made of two-stranded, left-laid, tarred hemp. It is not much larger than ordinary household wrapping cord. It is most often used for serving, or covering a larger line for protection from abrasion. Seizing stuff is similar to marline, though stronger because it is three-stranded and right-laid. Small white line is made from cotton or flax and is used for lead lines, flagstaff halyards, and the like. It is like household "clothes line."	78-81
Review Question	The Review Question is, "Name and describe nautical terms used in the U.S. Navy." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	82
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	83
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	84

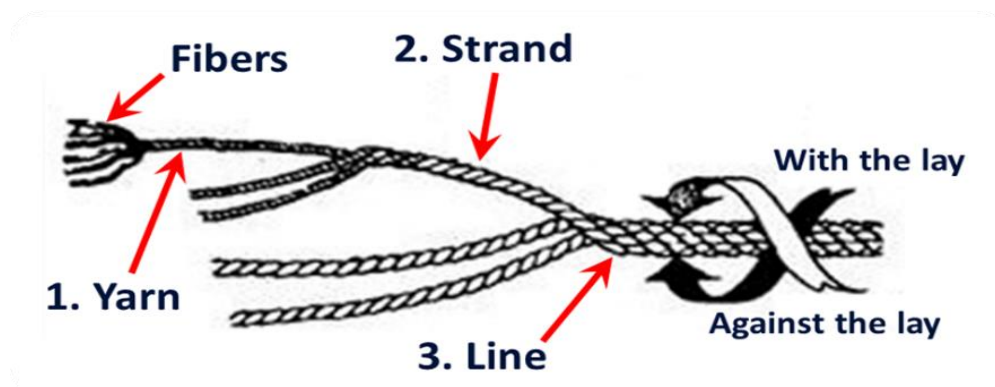
III. Supplemental Activities -

A. In Class Activity:

Supplies required: Enough yarn for cadets to make a small rope; handout for take home activity

When: After the section of the lesson on Rope.

- Part 1 - As a class, discuss the difference between the meaning of Ropes and Line and when it is appropriate to use each term.
 - Ropes:
 - Manufactured from wire, fiber, or a combination of the two.
 - Lines:
 - Fiber rope
 - Natural: cotton, hemp
 - Synthetic: nylon, polyester, polypropylene, polyethylene
- Part 2 – Have the cadets break into groups of 3-4 and have them practice creating a foot long piece of rope out of strands of Yarn. (See illustration below)



Chapter 1 / Section 1: NS3-M3U3C1S1 – Deck Personnel

B. Take Home Activity: Using the handout “Boatswain’s Mate”, have the cadets research the Boatswain’s mate’s duties and prepare a one page paper describing who he/she is and what their duties include and why is he important to the crew.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 2: NS3-M3U3C1S2 – Handling Fiber Line

(Section 2 of 2)

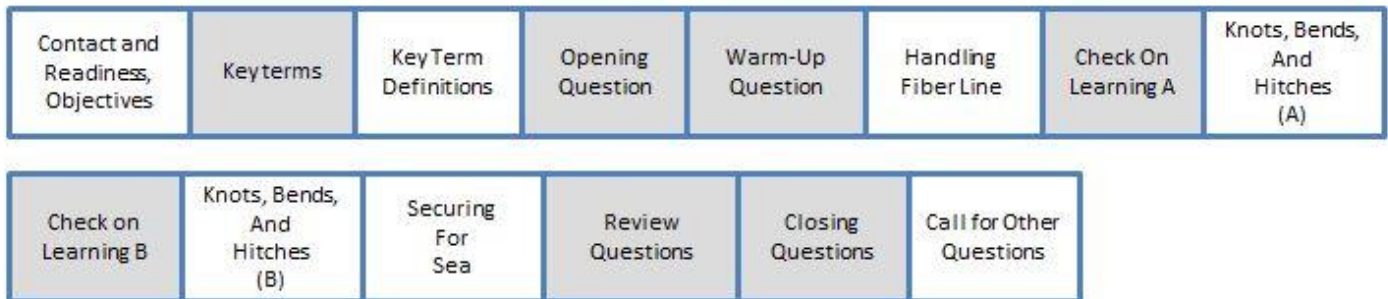
What Students Will Learn to Do:

Demonstrate an understanding of basic care, makeup and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship

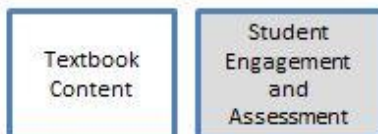
Skills and Knowledge to be Gained:

1. Describe the proper procedure for handling fiber rope
2. Describe how to tie knots, bends and hitches
3. Cite the importance of securing at sea

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 3, Chapter 1. Place a checkmark beside the NS3-M3U3C1S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U3C1S2 - Key Terms and NS3-M3U3C1S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 2: NS3-M3U3C1S2 – Handling Fiber Line

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the proper procedure for handling fiber rope. We will learn how to tie different types of knots as well as bends and hitches. Lastly, we will discuss the importance of securing while at sea.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-9
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “What care can be taken to extend the life of natural fiber line?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on handling fiber line.	10
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	11
Handling Fiber Line	Explain that when preparing to use any line larger than small stuff, it is usually a good idea to lay it out on deck in one of several established ways. Doing so will help in handling the line, plus help to avoid kinks in the line as it is run out. It also contributes to the shipshape and seamanlike appearance of the ship or boat.	12
Handling Fiber Line	<p>Explain that established ways to lay down a fiber line include:</p> <ul style="list-style-type: none"> • Coiling • Faking • Flemishing 	13
Handling Fiber Line	Explain that ‘coiling down a line’ means to lay it in circles on the deck, roughly one coil or circle on top of the other. Right-laid line is always coiled down in a clockwise direction, and left-laid line in a counterclockwise direction. Coiling down in the wrong direction results in annoying and possibly dangerous kinks and twists. When a line is coiled down, the end on top is ready for running. Coiling is the fastest way of making up line or wire, and the most common.	14-15
Handling Fiber Line	Explain that ‘faking down’ a line is to lay it out in long, flat rows on the deck, one alongside the other. The main advantage of working with line that is properly faked	16-18

Chapter 1 / Section 2: NS3-M3U3C1S2 – Handling Fiber Line

	down is that it runs off with little chance of fouling or kinking. Mooring lines are commonly made ready by faking them down before coming in to a pier.	
Handling Fiber Line	Explain that a third method used for laying down short lengths of line is 'flemishing'. To 'flemish down a line' is to lay it down in a flat helical coil on the deck, somewhat like a wound clock spring, with the bitter end (end of the line) in the center. The line is laid down loosely and wound tight to form a "mat" by placing the hands flat on the line and twisting in the direction the line is laid.	19
Handling Fiber Line	Explain that most rope and line on board ship is stowed in the Boatswain's locker. This is a storage compartment, usually in the forward part of the ship, which holds all the line, wire, and tools used by the deck force.	20-21
Handling Fiber Line	Explain that coils of line are stored on shelves or platforms clear of the deck so they will stay dry. They should not be covered, but should be open to the air, since natural fiber is apt to mildew and rot if damp. Small stuff is stored on a shelf in order of size, with the starting end of the line out for easy reach.	22-23
Handling Fiber Line	Explain that the bitter end of a line should always be whipped to prevent it from unlaying, or fraying. A good Seaman cannot stand to see a good piece of line frazzled out. To prevent such fraying, a temporary plain whipping can be put on with a piece of small stuff. The whipping line is laid down along the line and bound down with a couple of turns. Then the other end of the whipping should be laid on the opposite way and bound a couple of turns from the bight of the whipping and pulled tight.	24-25
Handling Fiber Line	Explain that a 'permanent whipping' is put on with a palm and needle. A palm is a tough piece of leather that fits into the palm of the Seaman's hand, serving somewhat the same purpose as a thimble. This is rarely done to line or rope smaller than 1 ¾ inches, but normally is done with larger lines.	26
Handling Fiber Line	Explain that the bitter end of a nylon line is usually secured by taping the end of each strand and then taping all strands together and fusing the end of the line with a hot iron or torch. The heat will melt and fuse the line together.	27
Handling Fiber Line	Explain that a good rule to remember with any line is that all loose ends must be cut or tucked, in order for the ship to maintain a smart, shipshape appearance. Attention to such detail is important; the ship that takes care of such details usually performs well.	28
Handling Fiber Line	Explain that wet fiber lines should be dried thoroughly before stowing. If this cannot be done, the line should be faked out on gratings under cover so it can dry as quickly as possible. All fiber lines shrink when wet and stretch again when dried out. For this reason, wet lines in use should be slackened when the weather becomes damp or lines become wet with rain.	29-31
Handling Fiber Line	Explain that a line with a kink should never be placed under strain. A heavy strain on a kinked or twisted line will cause permanent distortion or damage, seriously weakening the line. When a kink has been forced into each strand, it is impossible to work it out.	32
Handling Fiber Line	Explain that line will weaken with use and exposure. Nylon line will gradually change its color from yellowish-white to gray. It is necessary to inspect the inner part of a line to determine its real condition, though. The strands are unlaied either by hand or with a fid, a pointed, round, tapered wooden tool designed for splicing fiber lines. If weakened, the yarns will show bristles and a decrease in diameter. Lines in such weakened condition should not be used—certainly never for supporting people aloft or over the side.	33-36
Handling Fiber Line	Explain that natural fiber line under heavy strain will make cracking noises as the strands work against the strain. When such noises increase in intensity, this is a	37-39

Chapter 1 / Section 2: NS3-M3U3C1S2 – Handling Fiber Line

	<p>warning that the line may part. A visible sign of such strain will appear in the form of a steamlike vapor over a weakening area if the line is wet. Nylon may not emit such noises unless against a cleat or bitt, but will stretch and eject the steamlike vapor. Natural fiber line will stretch very little, even under heavy strain. It will lose about 30 percent of its strength over a two-year period with normal, careful use.</p>	
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	40
Knots, Bends, and Hitches	<p>Explain that the term 'knot' is often used as an all-inclusive term, but experienced Seamen distinguish between knots, bends, and hitches. Knots are used to form eyes (loops) or to secure a cord or line around an object such as a package. Generally they are intended to be permanent, so they are hard to untie. Hitches are used to fasten a line to or around an object such as a ring or stanchion (a metal or wooden pole) or another piece of line. Joining two lines together is called bending a line. Bends are used to secure lines together.</p>	41-45
Knots, Bends, and Hitches	<p>Explain that most Navy men and women are expected to know how to tie the square knot, bowline, and single and double becket bends, and the round turn and two half hitches. Most also should know the clove hitch. There are terms to help describe the parts of a line and specific configurations.</p>	46-47
Knots, Bends, and Hitches	<p>Explain that the square knot, also called the reef knot, is the best-known knot for bending two lines together. It can also be made to secure small stuff around a package. It can sometimes slip and can jam under strain. It can be loosened by pulling first one and then the other end.</p>	48
Knots, Bends, and Hitches	<p>Explain that a landlubber trying to tie a square knot often comes out with a granny knot. For a square knot, both parts of the line must be under the same bight (half-loop). Here is the proper way to tie a square knot: Take the end in your right hand, and pass it over and under the part in your left hand. With your right hand, take the end that was in your left, and pass it under and over the part in your left hand.</p>	49-50
Knots, Bends, and Hitches	<p>Explain that the 'bowline' is one of the most useful knots. It has many variations. The chief use of the bowline is to form an eye at the end of a line, but it also can be used to secure a line to a ring or padeye (a deck fitting resembling a vertical steel plate rounded on the top and welded to the deck along the bottom, with a hole near the top), to form a loop around a stanchion or other object, or to bend two lines together. The bowline neither slips nor jams, and it ties and unties easily. It is the best knot to use for bending a heaving line or messenger to the eye of a hawser or cable because it is quick to tie and easy to get off.</p>	51
Knots, Bends, and Hitches	<p>Explain that the method of tying a bowline is as follows: Form a small horizontal loop in the line about where you want the eye to be formed, with the standing part (long side) of the line underneath. Pass the bitter end up through the loop, around behind the standing part, and back down through the loop (i.e., up, around, and down). Tighten the knot by applying some strain to the eye with the standing part of the line.</p>	52
Knots, Bends, and Hitches	<p>Explain that a bowline on a bight produces two loops, and is used to hoist a person. Bowline on a bight knot instructions: Double a section of line and form a small horizontal eye in the doubled line. Pass the bight up through the eye, forming a large double loop. Spread open the bight and pass it over the double loop and up past the eye, ending above the eye and around the double standing part. Pull tight.</p>	53

Chapter 1 / Section 2: NS3-M3U3C1S2 – Handling Fiber Line

Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	54
Knots, Bends, and Hitches	Explain that the chief value of the becket bend, also known as a sheet bend, is to bend together two lines of different sizes. If there is a great difference in sizes, or the strain on the line is to be great, a double becket bend should be used. A becket bend is better than a square knot, because it won't slip and it is much easier.	55-56
Knots, Bends, and Hitches	Explain that to fashion a single becket bend, make a bight on one line and run the bitter end of the other line up through it. Pass the bitter end around behind both parts of the bight and back under itself. The third step, to make a double becket, is made by taking another turn around the bight.	57
Knots, Bends, and Hitches	Explain that the 'clove hitch' is the best all-around knot for bending a line to a ring, spar, or anything else that is round or nearly round. The clove hitch can be easily tied, and it will hold as long as there is a strain on it. Once the strain is taken off, however, the hitch must be checked and tightened to prevent the bitter end from pulling out when the strain is reapplied. For that reason, it is a good idea to put a half hitch on the end of it.	58
Knots, Bends, and Hitches	Explain that to tie this hitch, take a turn around the object with the bitter end, pass the end across the standing part, and take another turn. (Notice that both turns go around in the same direction.) Then pass the bitter end under itself alongside the standing part, and the hitch is complete.	59
Knots, Bends, and Hitches	Explain that another way to make the clove hitch is to form two underhand loops. Lay the second loop on top of the first. A half hitch on the end secures the line from coming loose when the strain is relaxed.	60-61
Knots, Bends, and Hitches	Explain that since the clove hitch may slide along a slippery object, the round turn with two half hitches is often used instead. The chief advantage of the round turn and two half hitches is that it will not slip along the object to which it is secured. If the angle of pull is acute (less than 90 degrees), this hitch should be used. The round turn and two half hitches is especially useful on a spar (pole) because it grips tightly and holds its position.	62
Knots, Bends, and Hitches	Explain that this hitch is made by taking a round turn around the object and then making two half hitches around the standing part. (The two half hitches actually consist of a clove hitch formed around the standing part of the line.)	63
Securing for Sea	Explain that knots, bends, and hitches are necessary to ensure the safety of people working, for many Seamanship evolutions, and for securing equipment to prevent damage during rough seas. You can never underestimate the force of the sea!	64
Securing for Sea	Explain that lines must be in good shape and strong enough to hold the gear and people who depend on them. For heavy weather, all objects must be lashed tightly against something solid. The lines should be taut so the object will not "work" with the pitch and roll of the ship. Chafing gear, consisting of a padded sleeve or canvas, should be placed around lines to prevent wearing on sharp corners and rough surfaces. Lines should never be tied to electric cables, small piping, or other movable objects. Safety first is always the rule when working with lines and wire rope.	65-68
Review Question	The Review Question is, "Which knots are essential for every Sailor to learn to tie?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	69

Chapter 1 / Section 2: NS3-M3U3C1S2 – Handling Fiber Line

Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson with follow-up reinforcement and discussion as appropriate.	70
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	71

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handout for both in class and take home activities; enough rope or thick string to give each cadet 2 – one foot pieces.

When: At the end of the lesson

- Navy knots are an important aspect of training, The Navy suggests you learn these 5 knots and master them. By the time you have to take a skills test for the Navy, you should be able to tie these knots under water, so practice as much as you can. It's one of the most important things you can learn to do.
- Separate the cadets into partners and have them practice tying these knots. Then fill out their handout with examples of when to use each type of knot.

B. Take Home Activity: Using the handout, Coiling, Faking and Flemishing”, have the cadets write a paragraph on the difference in coiling, faking and flemishing and when it is appropriate to use each. Make sure to give specific details in your answers.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 2: NS3-M3U3C1S2 – Handling Fiber Line

Activity 1: In Class Activity - Navy Knots

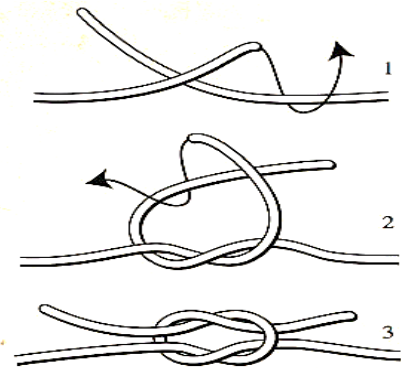
Name: _____ Date: _____ Class: _____

Navy knots are an important aspect of training, The Navy suggests you learn these knots and master them. By the time you have to take a skills test for the Navy, you should be able to tie these knots under water, so practice as much as you can. It's one of the most important things you can do to learn to do.

Instructions: Practice tying each of the knots below and give examples of when you would each knot.

Square Knot -

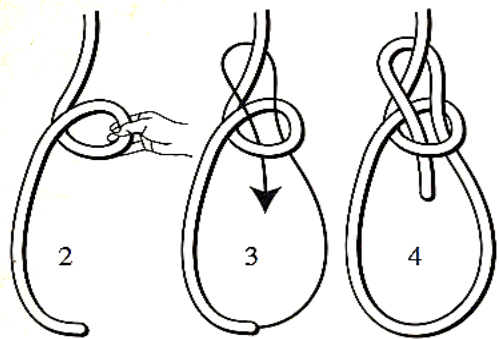
1. Cross two pieces of rope to form an X.
2. Tie a half knot, also known as a half-hitch.
3. Cross the ropes a second time and tie another half-hitch
4. Pull the ends to form a square knot.



Examples of when you would use a square knot:

Bowline Knot -

1. Position a rope in front of you, with one end closest to you.
2. Create a loop close to the end, leaving enough rope for the loop and knot.
3. Pass the end of the rope through the loop, creating a half-hitch.
4. Pull the rope back through the loop, around the standing edge. Grasp the standing edge and pass the rope through the loop, and pull it tight. This will create your knot.



Memory aid: The rabbit comes out of his hole, looks around and goes around behind the tree and back down his hole.

Examples of when you would use a bowline knot:

Chapter 1 / Section 2: NS3-M3U3C1S2 – Handling Fiber Line

Becket Bend Knot -

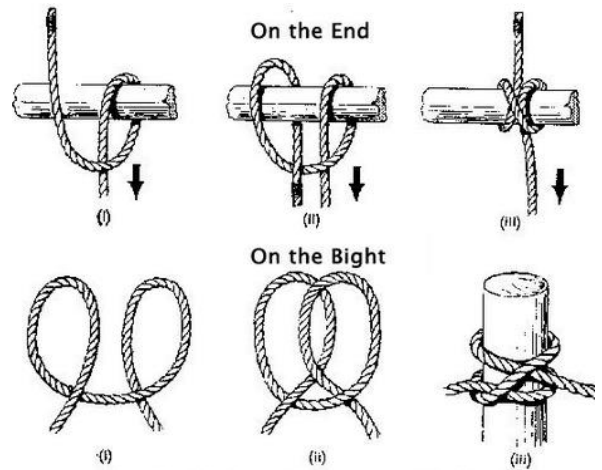
1. Place two ropes of different diameter in front of you.
2. Create a loop with the thicker rope and hold it in your hand. Pass the thinner rope through and around the loop of the bigger rope.
3. Loop around the long, then short, ends of the rope. Tuck the smaller rope under itself to create your knot.



Examples of when you would use a Becket Bend knot:

Clove Hitch Knot and Right Angle Knot

1. Lay out your rope, with a loop midway from the end.
2. Create a second loop identical to the first, but from the other end.
3. Lay the loops on top of each other, so they form a knot, creating what looks like a pretzel.
4. Pull the ends tight. For a right angle knot, you will pass the working end of your rope around what you're trying to hitch to twice.



Examples of when you would use a Clove Hitch knot:

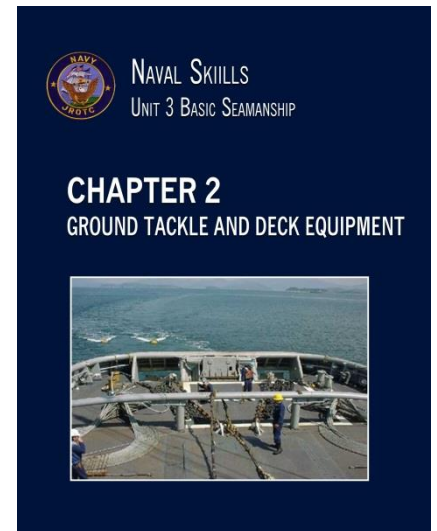
Module 3 Unit 3 Chapter 2: NS3-M3U3C2 – Ground Tackle and Deck Equipment

What Students Will Learn to Do:

Demonstrate an understanding of basic care, makeup and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship

Skills and Knowledge to be Gained:

1. Explain the terms associated with and the use of ground tackle
2. Explain the terms associated with and the use of anchors
3. Explain the terms associated with and the use of anchor chains and related equipment
4. Describe the operation of an anchor windlass
5. Explain the terms associated with and the procedures used in anchoring
6. Explain the terms associated with and the use of deck and pier fittings in mooring
7. Explain the terms associated with and the procedures used for mooring lines to a pier
8. Describe the equipment and basic procedures used in towing
9. Describe the equipment used and explain the terms associated with cargo handling
10. Explain the procedure used during underway replenishment



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately...
- W.11-12.7. Conduct short as well as more sustained research projects to answer a question or solve a problem...
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.5. Make strategic use of digital media...

Module 3 Unit 3 Chapter 2: NS3-M3U3C2 – Ground Tackle and Deck Equipment

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 2 / Section 1: NS3-M3U3C2S1 – Anchors and Related Equipment

(Section 1 of 2)

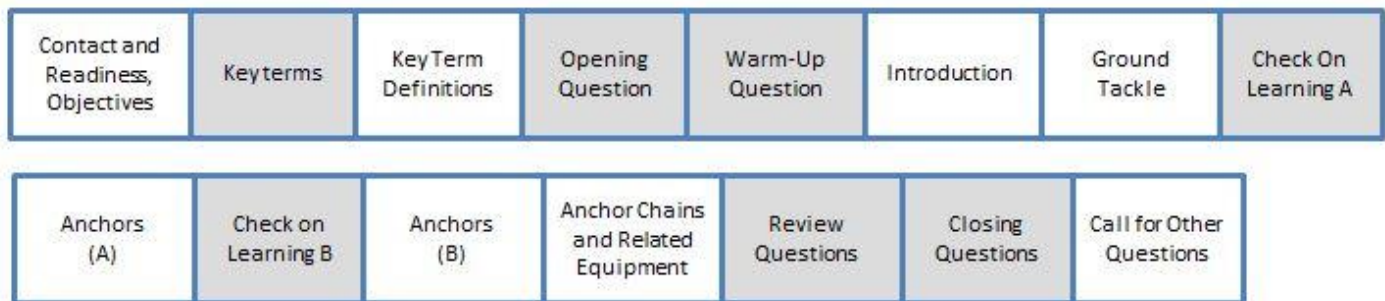
What Students Will Learn to Do:

Demonstrate an understanding of basic care, makeup and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship

Skills and Knowledge to be Gained:

1. Explain the terms associated with and the use of ground tackle
2. Explain the terms associated with and the use of anchors
3. Explain the terms associated with and the use of anchor chains and related equipment
4. Describe the operation of an anchor windlass

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 3, Chapter 2. Place a checkmark beside the NS2-M3U3C2S1 PowerPoint presentation, and these two CPS question deck files: NS2-M3U3C2S1 - Key Terms and NS2-M3U3C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 1: NS3-M3U3C2S1 – Anchors and Related Equipment

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the terms associated with ground tackle and anchors. We will also learn about anchor chains and related equipment. Finally, we will discuss the operation of an anchor windlass.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-13
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Based on your current knowledge, what types of deck equipment may be used aboard a Navy ship?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on ground tackle and deck equipment.	14
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	15
Introduction	Explain that the first major group of deck equipment is used in anchoring and mooring with anchors. Ground tackle (pronounced: tay'kel) is equipment, as anchors, chains, or windlasses, for mooring a vessel away from a pier or other fixed moorings. Mooring is the means by which a ship, boat, or aircraft is secured in a particular place, as by cables and anchors or by lines. Other deck equipment has to do with mooring the ship, including the deck fittings to which lines are made fast. A third major group of deck equipment is the rigging and booms, which are used to handle cargo.	16-19
Ground Tackle	Explain that ground tackle is the equipment used in anchoring and mooring with anchors. A chain stopper holds the anchor securely in place when not actually in the process of letting it go or heaving it in. A pelican hook is a hook-like device for holding the link of a chain or the like, consisting of a long shackle with a hinged rod held closed with a sliding ring. An anchor wildness is a machine used to hoist, or weigh the anchor. "Anchor's Aweigh" refers to the point when the anchor breaks free from the bottom, and the ship is under way.	20-23
Ground Tackle	Explain that before the development of anchor chain, anchors were raised and lowered by fiber hawsers and wire ropes. Thus, the large pipe through which the cable passes from the deck to the ship's side received its name: hawsepipe. A hawsepipe is	24-25

Chapter 2 / Section 1: NS3-M3U3C2S1 – Anchors and Related Equipment

	an iron or steel pipe in the bow of a vessel through which an anchor chain passes from the deck to the ship's side. This is not to be confused with the chain pipe. A chain pipe is an iron or steel pipe in the deck of a vessel through which an anchor chain runs from the windlass down into the chain locker.	
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	26
Anchors	Explain that when a ship has one anchor down, she is anchored. When she has two anchors down and swings from a mooring swivel connected to both, she is moored. (A ship secured to a pier with lines or to a buoy with an anchor chain is also moored.) In a type of mooring common in the Mediterranean (called a Med moor), a ship usually has the stern tied up to a pier, and an anchor out on each side of the bow. Anchors used by the Navy today are grouped into four types: the patent or stockless anchors, the mushroom anchor, the lightweight anchors, and the two-fluke, balanced-fluke anchor.	27-35
Anchors	Explain that most naval ships have patent or stockless anchors because they are easy to stow and handle. They can be raised directly into the hawsepipe because there is no long stock. Stockless anchors are also called bower anchors because they are always carried on and used from the bow. The arms, or flukes, of this kind of anchor can swing to either side to permit the anchor to dig into the harbor bottom. The largest stockless anchors weigh 30 tons and are used on aircraft carriers.	36-37
Anchors	Explain that submarines are equipped with a mushroom anchor so they can anchor even when submerged. The mushroom is also used to anchor buoys and barges.	38
Anchors	Explain that lightweight type (LWT) anchors are relatively new, and have been used mostly for small craft until recently. The LWT anchor has a short stock, which makes it easy to stow in the hawsepipe. The LWT anchor tends to bury itself deep in the bottom when under strain, and has better holding power than the stockless anchor. Also, a LWT anchor only half the size of a stockless has the same holding power as a stockless anchor. This makes the cost of the anchor and the gear to handle it much lower.	39-40
Anchors	Explain that the two fluke, balanced fluke anchor is used for anchoring some new surface ships and the newest submarines. It is housed in the bottom of the ship. It is used on board some surface ships in place of a bower anchor, in order to prevent interference with the ship's bow sonar dome.	41
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	42
Anchor Chains and Related Equipment	Explain that even though it is made up of links, an anchor chain is usually called an anchor cable by custom. Modern naval anchor chain is made of high-strength steel links. The size of chain varies according to the size of the ship and her anchors. All links are studded, that is, a solid piece is welded in the center of the link to prevent chain kinking. To give you some idea of the weight of a large anchor chain, a single link of a large aircraft carrier chain weighs about 250 pounds! Most ships are equipped with two anchors and two chains.	43
Anchor Chains and Related Equipment	Explain that the lengths of chain that make up the ship's anchor cable are called shots. A standard shot is 15 fathoms, or 90 feet, long. Shots are connected by detachable links, painted red, white, or blue to let the anchor detail know how much chain has run out. The number of adjacent links painted white indicates the shot number. Each link of the next-to-last shot is painted yellow. The entire last shot is painted red. This is to warn that the chain is out almost to its bitter end.	44-50

Chapter 2 / Section 1: NS3-M3U3C2S1 – Anchors and Related Equipment

Anchor Chains and Related Equipment	Explain that on most ships, standard short swivel shots called "bending shots" attach the anchor chain to the anchor (see illustration). These swivel shots consist of detachable links, regular chain links, a swivel, an end link, and a bending shackle. The bending shackle is attached to the anchor shackle.	51
Anchor Chains and Related Equipment	Explain that chain stoppers (see illustration) are made up of a turnbuckle inserted in a short section of chain. A pelican hook is attached to one end of the chain, a shackle at the other. Chain stoppers are used for relieving stress on the windlass when anchored, holding the anchor taut in the hawsepipe, or for holding an anchor and its swivel shot when they are disconnected from the chain.	52-54
Anchor Chains and Related Equipment	Explain that an anchor windlass is the machine used to hoist a bow anchor. A ship with a stern anchor has a stern-anchor winch to hoist it. On combatant ships the anchor windlass is a vertical type winch with control, friction brake handwheel, capstan, and wildcat above deck, and an electric and hydraulic drive for the wildcat and capstan below deck (see illustration). Auxiliary ships have a horizontal windlass that is above deck, with two wildcats, one for each anchor. The capstan, or warping head, is the linehandling drum on top of the shaft of the anchor windlass. Just below the capstan is the drum or wildcat, which contains teeth (whelps) that grab the links of the anchor chain and prevent it from slipping. The wildcat is fitted with a brake to stop the chain at the desired length in the water (scope).	55-59
Review Question	The Review Question is "Name and describe the different types of anchors used in the U.S. Navy." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	60
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	61
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	62

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handout "Anchors"

When: After the lesson

- Have the cadets give the correct name of each anchor, label each part and give an example of when this particular anchor is used.

B. Take Home Activity: Using the handout "Deck Equipment", have the cadets write a one page explaining what Riggings & Booms, Ground Tackle and Deck Fittings are used for. Have them use diagrams in their explanations to show how they all work together.

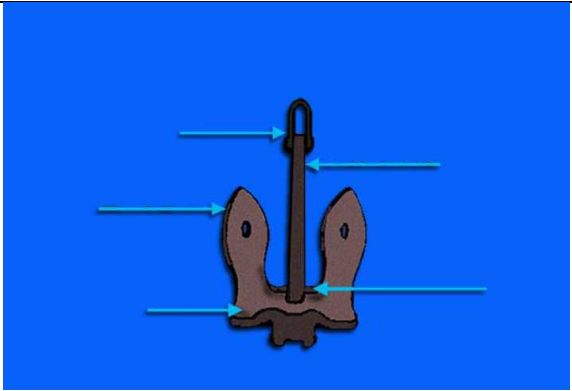
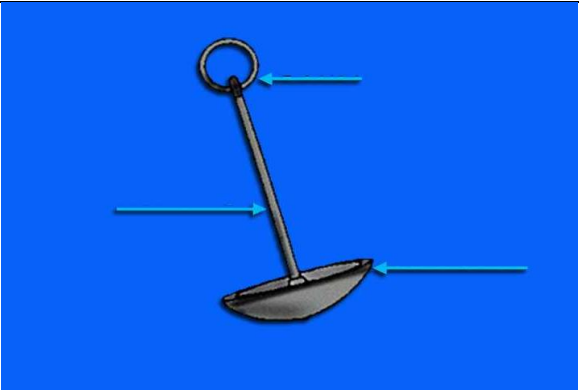
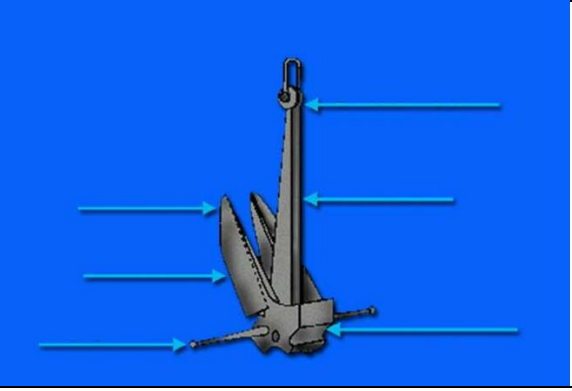
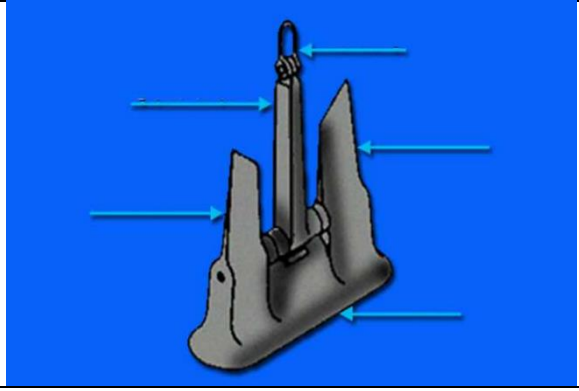
IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 1: NS3-M3U3C2S1 – Anchors and Related Equipment

Activity 1: In Class Activity- Anchors

Name: _____ Date: _____ Class: _____

Directions: Give the correct Name of each Anchor, label each part and give an example of when this particular anchor is used.

Name:	Name:
	
Uses:	Uses:
Name:	Name:
	
Uses:	Uses:

Chapter 2 / Section 1: NS3-M3U3C2S1 – Anchors and Related Equipment

Activity 1: Take Home Activity – Deck Equipment

Name: _____ Date: _____ Class: _____

Directions: Write a one page report explaining what Riggings & Booms, Ground Tackle and Deck Fittings are used for. Use diagrams in your explanation to show how they all work together.

Chapter 2 / Section 2: NS3-M3U3C2S2 – Anchoring

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of basic care, makeup and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship

Skills and Knowledge to be Gained:

1. Explain the terms associated with and the procedures used in anchoring
2. Explain the terms associated with and the use of deck and pier fittings in mooring
3. Explain the terms associated with and the procedures used for mooring lines to a pier
4. Describe the equipment and basic procedures used in towing
5. Describe the equipment used and explain the terms associated with cargo handling
6. Explain the procedure used during underway replenishment

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	KeyTerm Definitions	Opening Question	Warm-Up Question	Anchoring (A)	Video Anchoring	Anchoring (B)
Video2 Anchoring	Check On Learning A	Mooring	Check on Learning B	Towing	Cargo Handling (A)	Video Cargo Handling	Cargo Handling (B)
Underway Replenishment	Review Questions	Closing Questions	Call for Other Questions				

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 2 / Section 2: NS3-M3U3C2S2 – Anchoring

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 3, Chapter 2. Place a checkmark beside the NS3-M3U3C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U3C2S2 - Key Terms and NS3-M3U3C2S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the terms associated with and the procedures used in anchoring. We will learn about deck and pier fittings in mooring. Next we will discuss the procedures used for mooring lines to a pier. We will learn about towing and the basic equipment and procedures used. We will also discuss cargo handling. Finally, we will learn about the procedures used during underway replenishment as well as towing.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-12
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “As a review from the last section, describe the four types of anchors.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on anchoring and mooring	13
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	14
Anchoring	Explain that the first lieutenant is in charge of the anchor detail on the forecastle while anchoring and weighing anchor. Either the ship's boatswain or a senior boatswain's mate assists the first lieutenant. A person from the auxiliary machinery division and an electrician's mate, both from the engineering department, are in the anchor windlass	15-16

Chapter 2 / Section 2: NS3-M3U3C2S2 – Anchoring

	room to handle any problems with the equipment. The first lieutenant is in direct contact with the bridge by sound-powered telephone.	
Anchoring	Explain the methods of "Letting Go". In preparing to anchor, all but one of the chain stoppers are removed, and the brake is released so the anchor in the hawsepipe is supported only by the remaining stopper. Sometimes the anchor may be walked out (slowly lowered) to a position just above the water surface by the windlass before the restraining stopper is attached. With all in readiness, the first lieutenant orders all hands (except a person with a sledgehammer to release the last stopper) to stand clear of the chain. This is a safety precaution because nothing will stand in the way of the rapidly moving chain once the stopper is released. On the order "Let go!" relayed from the bridge, the pelican hook is knocked open with the sledgehammer, and the anchor and chain plunge with a roar through the hawsepipe into the water.	17-18
Video 1 on Anchoring	Show video 1 on anchoring	19
Anchoring	Explain that the amount of chain played out (veered) is known as the scope of chain used to anchor. Usually a ship anchors in water less than 20 fathoms deep. Under favorable sea conditions, the common practice is to use a scope of chain that is five to seven times the depth of the water, with six times the depth being a common rule of thumb. More chain may be played out if rough weather is expected.	20
Anchoring	Explain that with the chain veered to the proper scope, it should hang in a slight catenary (downward curve). Normally a stopper is attached, and the ship will be slowly backed down to imbed (set) the anchor into the sea floor. If too little chain is let out, the flukes will not dig well into the bottom, and the anchor is apt to drag. Loud rumbles will be heard if the anchor drags on a rocky bottom, and a series of vibrations may be felt on a mud bottom.	21
Anchoring	Explain that before the anchor is hoisted, the windlass engine is tested. The wildcat is engaged, the brake released, a strain is taken on the chain, and the stoppers are cast loose. Just before the ship gets under way, the anchor is usually heaved into short stay. This is a condition in which there is the minimum amount of chain out that keeps the anchor from breaking loose from the bottom; the chain is nearly vertical in the water. Only the officer of the deck can order heaving to short stay, and then only after receiving permission from the captain.	22
Anchoring	Explain that when the ship is ready to get under way, the anchor is heaved in as ordered from the bridge. Status reports are made to the bridge from time to time, usually when the various shot markers become visible at the water's edge. (Examples: "Fifteen fathoms at the water's edge"; and when the anchor is at short stay, aweigh, in sight, and secured for sea or ready for letting go.)	23
Anchoring	Explain that as the chain comes in, it is hosed off to remove mud. Often, the shot markings are repainted. Some links of each shot are tested by striking them with a hammer. All links are tested if the chain was subjected to a heavy strain. If a link rings, it is all right; if it sounds flat, it may be damaged, and in this event, it must be marked for later replacement.	24-25
Video 2 on Anchoring	Show video 2 on anchoring	26

Chapter 2 / Section 2: NS3-M3U3C2S2 – Anchoring

Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	27
Mooring	Explain that a ship is moored when she is made fast to a mooring buoy, when she is swinging on a bight of chain between two anchors, or when she is secured by lines alongside a pier or another ship. Mooring a ship to a pier, buoy, or another ship, and unmooring, are some of the most basic jobs of the deck department. These tasks require skillful use of mooring lines and deck winches. Deck fittings such as cleats, bitts, bollards, chocks, and towing padeyes are used in the process (see illustration). Quick, efficient line handling when coming alongside or getting under way is one of the marks of a smart ship.	28-29
Mooring	Explain that a cleat is a device welded to the deck that looks like a pair of projecting horns. It is used for fastening a line or wire. Bitts are cylindrical objects made of steel implanted in the deck. They are arranged in pairs, each pair mounted on a separate footing. Usually there is a set of bitts forward and aft of each mooring chock, for use in securing mooring lines.	30
Mooring	Explain that a mooring chock is a heavy fitting on the deck edge with smooth rounded surfaces through which mooring lines are led. Mooring lines are run from bitts on deck through chocks to bollards on the pier when a ship is moored. Chocks are of three kinds: (1) open chock, a mooring chock open at the top; (2) closed chock, a mooring chock closed by an arch of metal across its top; and (3) roller chock, a mooring chock that contains a set of rollers for reducing friction.	31
Mooring	Explain that a bollard is a strong cylindrical upright on a pier, around which the eye or bight of a ship's mooring line is placed. A towing padeye is a large padeye of extra strength located on the stern that is used in towing operations.	32
Mooring	Explain that ships are moored to piers, wharves, and other ships with a set of mooring lines. In general, they are as light as possible to ease handling. They are also strong enough to take a big strain during mooring, and to hold a ship in place when secured.	33-34
Mooring	Explain that mooring lines are numbered from forward to aft in the order that they are run out from the ship. Many ships are normally moored with six lines, though large ships may use seven or eight, aircraft carriers thirteen, and small ships as few as four. In any event, the lines are grouped according to their use as bow, stern, spring, or breast lines.	35-37
Mooring	Explain that the bow line, line one, is the mooring line that runs through the bull-nose or chock nearest the bow of the ship. For larger ships this line is led well up the pier to stop the ship from moving aft; similarly the last line, the stern line, is led aft to stop any forward motion of the ship. For smaller ships, however, the bow and stern lines lead directly to the pier to serve as breast lines. Bow spring lines lead fore and aft at an angle and control the fore-and-aft movement of the ship. Quarter spring lines do a similar job from the ship's quarter.	38-44
Mooring	Explain that breast lines are at a right angle to the ship and control the distance to that part of the ship from the pier. Breast lines are designated bow, waist, or quarter breast lines.	45
Mooring	Explain that the size of mooring line used depends on the type of line and size of ship. Destroyers normally use 5-inch nylon. Smaller Navy ships use 4-inch nylon, and large ships like aircraft carriers use 8-inch nylon. If manila is used for mooring lines, the next larger sizes of manila line are used.	46

Chapter 2 / Section 2: NS3-M3U3C2S2 – Anchoring

Mooring	Explain that when the ship is secured, the mooring lines are normally doubled up. To double up a line, an additional bight of it is passed around the fitting on the pier or other ship to which the line is attached. Then slack is taken out until the two parts of the bight are alongside the original part of the line. Thus, three parts of the line absorb the strain, rather than just one. Often with a line to a pier, the three parts are bound together with small stuff, and a conical rat guard is placed about midway up the line, with the open end facing the pier, so that rats and mice cannot crawl up the line onto the ship.	47-48
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	49
Towing	Explain that most routine towing in the Navy is handled by harbor tugs, fleet tugs, salvage vessels, and submarine rescue vessels. Such vessels are especially fitted for this task. All ships, however, must be able to tow or be towed in an emergency.	50-51
Towing	Explain that on the stern of most Navy ships, a towing pad-eye is located on the centerline. The towing assembly has a large pelican hook that is shackled to the towing pad and made fast to a towing hawser. The hawser is attached to one of the towed ship's anchor chains, which is let out through the bull-nose and veered to about 20 fathoms.	52-53
Towing	Explain that the length of the towline—hawser and chain—is adjusted to hang in a deep catenary. This catenary helps to relieve surges on the line caused by movements of the two ships. Proper towing technique requires that the towline be of such scope that the two craft are "in step." Both must reach the crest of a wave at the same time, or the towline will be whipped out of the water under terrific strain. Once properly rigged, the towing vessel must barely get under way as the towed vessel begins to move. A sharp start or jerk may part the towing hawser. Speed is gradually increased to about 5 or 6 knots for the duration of the tow.	54-55
Cargo Handling	Explain that cargo is loaded or offloaded by ship's gear, or dockside winches and floating cranes when in port. At sea the ship's gear is used for underway replenishment (UnRep) either by another ship (ConRep), or by helicopters (VertRep), in which case very little ship's gear will be used. Amphibious and mobile logistic ships have heavy-lift cargo systems. In such ships, deck seamanship is mainly concerned with heavy-cargo handling. Sailors in these ships need to know about all the parts of cargo gear and the various "rigs" for handling cargo.	56-57
Video on Cargo Handling	Show video on cargo handling	58
Cargo Handling	Explain the term rigging is used for all wires, ropes, and chains supporting masts or kingposts (vertical poles), and operating booms and cargo hooks. Standing rigging includes all lines that support masts or kingposts but do not move, such as stays and shrouds. Running rigging includes all movable lines that run through blocks, such as lifts, whips, and vangs, described below.	59-61
Cargo Handling	Explain that a boom is a long pole built of steel. The lower end is fitted with a gooseneck, which supports the boom in a boom step bracket. The free end is raised or lowered and held in position by a cable called a topping lift. Booms range in capacity from 5 to 75 tons. Booms are moved into position, and cargo is moved into and out of holds by running rigging.	62
Cargo Handling	Explain that topping lifts move the free end of the boom vertically and hold it at the proper height. Inboard and outboard guys, or vangs, move the boom horizontally or	63-65

Chapter 2 / Section 2: NS3-M3U3C2S2 – Anchoring

	hold it in working position over a hatch or dock. The cargo hook is raised or lowered by cargo whips running from winches. Just remember - rigging and running cargo...handling gear requires skilled, trained deck Sailors.	
Underway Replenishment	Explain that in addition to anchoring and mooring, one of the more frequent deck seamanship evolutions done by deck personnel of naval ships is underway replenishment (UnRep) while alongside another ship. Such operations may involve the transfer of fuel, cargo, ordnance, and sometimes personnel by highline transfer.	66
Underway Replenishment	Explain that normally the ship receiving the transfer maneuvers alongside the supplying ship. Once alongside, light heaving lines are first passed to the supplying ship, then thick transfer wires (manila line in the case of personnel transfer) are attached to messenger lines and passed back to the receiving ship, where they are fastened to appropriate fittings. Slack is removed from the wires or highline until they are taut. Then fuel transfer probes and hoses, or in the case of cargo or ordnance transfer, pallets suspended from moveable trolleys, are slid along the taut span wires from the supplying to the receiving ship.	67
Underway Replenishment	Explain that for personnel transfers, a boatswain's chair is suspended beneath the manila highline. Upon completion of the replenishment or personnel transfer operations, the wires or highlines are detached and retrieved, and the receiving ship maneuvers away from the supplying ship.	68
Underway Replenishment	Explain that often vertical replenishing by helicopters (VertRep) will take place simultaneously with UnRep, or sometimes independently. Except for ships not having an air detachment, deck personnel are not normally much involved with this, as this is the province of the air department personnel.	69
Review Question	The Review Question is "Describe the equipment used with cargo handling." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	70
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	71
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	72

Chapter 2 / Section 2: NS3-M3U3C2S2 – Anchoring

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handouts for in class and take home activity

When: After the lesson

- Have the cadets write a paragraph on each topic below:
 - Anchoring a vessel
 - Mooring a ship to a mooring buoy
 - Mooring alongside a pier
 - Mooring alongside another ship describing the complete process of anchoring a vessel.
- Remind the cadets to use thorough descriptions of each of the steps

B. Take Home Activity: During Underway Replenishment (UnRep) Operations, there are specific safety helmets worn by personal for different assignments. Have the cadets use the handout “Underway Replenishment Operations”. Research what each color represents and give an explanation of the job that is done while wearing it.

Key:



IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 2: NS3-M3U3C2S2 – Anchoring

Activity 1: Take Home Activity – Underway Replenishment Operations

Name: _____ Date: _____ Class: _____

Name the Station Job that goes with each safety helmet and give a brief description of their duties



White with Green Cross -

Yellow -

Green -

Blue -

Orange -

White with Red Cross -

Red -

Purple -

Brown -

Grey -

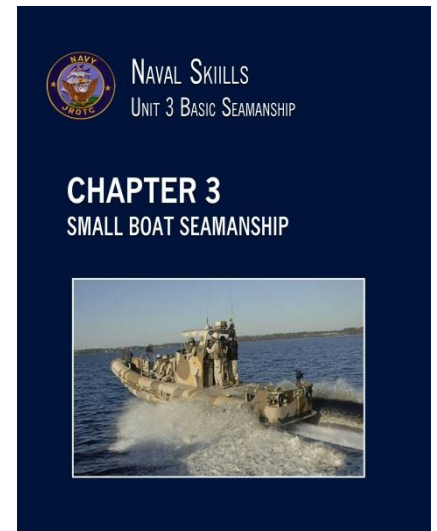
Module 3 Unit 3 Chapter 3: NS3-M3U3C3 – Small Boat Seamanship

What Students Will Learn to Do:

Demonstrate an understanding of basic care, makeup and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship

Skills and Knowledge to be Gained:

1. Describe the purpose of small boat seamanship
2. Identify nomenclature that applies to small boat parts and their structure
3. Describe the upperworks of a small boat
4. Describe the propulsion and rudder of a small boat
5. Identify types of small craft as they apply to the NJROTC program
6. Describe the duties of the coxswain
7. Describe the procedures for small boat handling
8. Given a set of maneuvering problems related to small craft, use recognized concepts to maneuver a boat in a classroom
9. Describe boat etiquette as practiced by the United States Navy



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products...
- W.11-12.8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively...

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.5. Make strategic use of digital media...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...

Module 3 Unit 3 Chapter 3: NS3-M3U3C3 – Small Boat Seamanship

- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor's Guide.

Chapter 3 / Section 1: NS3-M3U3C3S1 – Boat Nomenclature

(Section 1 of 2)

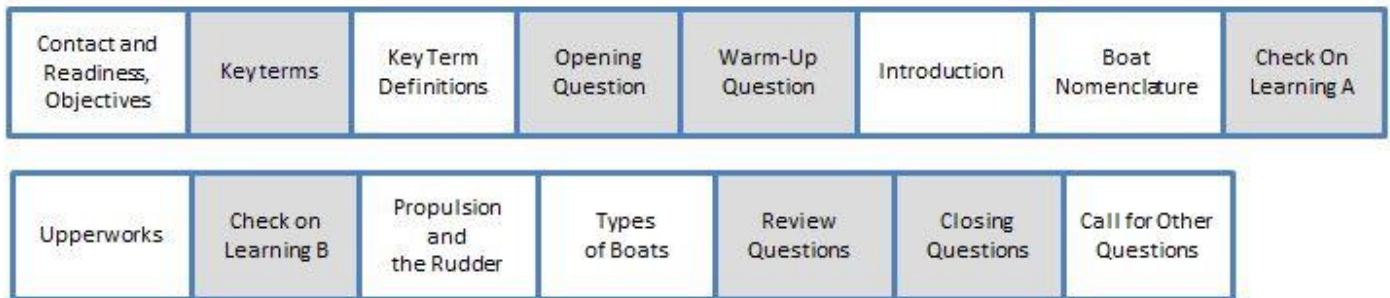
What Students Will Learn to Do:

Demonstrate an understanding of basic care, makeup and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship

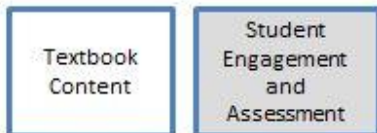
Skills and Knowledge to be Gained:

1. Describe the purpose of small boat seamanship
2. Identify nomenclature that applies to small boat parts and their structure
3. Describe the upperworks of a small boat
4. Describe the propulsion and rudder of a small boat
5. Identify types of small craft as they apply to the NJROTC program

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 3, Chapter 3. Place a checkmark beside the NS3-M3U3C3S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U3C3S1 - Key Terms and NS3-M3U3C3S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

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II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will learn about the purpose of small boat seamanship. We will discuss and identify nomenclature that applies to small boat parts and their structure. Next we will learn about the upperworks, propulsion, and rudder of a small boat. Finally, we will discuss and identify types of small craft as they apply to the NJROTC program.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-11
Opening Question(Random Pick a Student – “RPS”)	<p>This Opening Question is, “What could small boats be used for on a large Navy ship?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on anchoring and mooring</p>	12
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	13
Introduction	Explain that at some time or another during unit visits to naval bases and ships or in recreational activities, you will be concerned with small boat seamanship. In this chapter we will discuss the particular characteristics of small boats, including nomenclature (vocabulary), boat handling, and boat etiquette. Most of our discussion of boat handling will be concerned with powerboats, as opposed to sailboats, because that is the type of boat with which most NJROTC cadets will come into contact during their training.	14-15
Introduction	Explain that the first thing that anyone who will be in or around a small boat needs to know is the nomenclature that applies to the craft. There are two basic kinds of small boats with which we will be concerned are powerboats and sailboats. A powerboat is any vessel that is propelled through the water by some type of motor or engine. A sailboat is a vessel that is propelled mainly by the wind, through the use of some type of sail. Some boats called motor-sailers, are designed to be propelled by both power and sail at the same time, but under the rules of the road, and for purposes of our discussion, they are considered power-driven vessels.	16-17

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Boat Nomenclature	<p>Explain that the hull is the largest part of a boat and is the structure that floats in the water. There are two basic hull designs:</p> <ul style="list-style-type: none"> • the displacement type, which plows through the water • the planing type, which skims on the surface <p>Most sailboats and many powerboats have displacement hulls, while high-speed powerboats usually have planing hulls. But regardless of the type of hull, the basic nomenclature used to describe them is the same for both sailboats and powerboats.</p>	18-22
Boat Nomenclature	<p>Explain that like a ship, the pointed forward portion of the hull is called the bow, and the opposite rear portion is the stern. The extreme back end of the stern, usually fairly flat in a powerboat, is called the transom. At the bottom of the hull is the keel. The keel is usually fairly deep in a sailboat and relatively shallow in a powerboat. On the top of the hull is the deck. The depth to which the hull sinks in the water is the draft of the hull, and its maximum width is the beam. The line the water makes with the hull is the waterline.</p>	23-27
Boat Nomenclature	<p>Explain that boats that have two fairly shallow-draft V-shaped hulls connected together by the boat's upperworks are called catamarans, and those having three such hulls are trimarans.</p>	28
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	29
Upperworks	<p>Explain that structures placed on the hull, corresponding to the superstructure of a ship, are called cabins. Vertical openings in the cabin are called doors, and horizontal openings in the cabin and deck are hatches. Windows, particularly in a sailboat, are called ports. The forward window or sets of windows in a powerboat are the windshield.</p>	30-32
Upperworks	<p>Explain that larger boats have a kitchen, or galley, and one or more bathrooms, called heads. Separate bedrooms on a boat are called staterooms.</p>	33-34
Upperworks	<p>Explain that the position of the steering gear for the boat, which may be inside or outside the cabin, or in some cases both, is called the helm. In many sailboats, the helm is located in the cockpit, a depressed area aft of the cabin, or, in some cases, amidships between two cabins.</p>	35-36
Upperworks	<p>Explain that the edge of the deck, called the rail, usually has vertical metal stanchions that support one or more rows of lifelines. In the front of the bow on most sailboats and many powerboats is the pulpit, a wooden platform that overhangs the bow and provides room to handle the forward sail and anchor. It may be supported underneath by the bowsprit, a beam that extends from the bow beneath the platform. Some powerboats have an auxiliary helm and engine controls on a platform elevated for better visibility called a flying bridge.</p>	37-41
Upperworks	<p>Explain that sailboats have one or more vertical poles called masts used to support one or more sails, collectively called the rig of the sailboat. A powerboat may have a short stubby mast for the radar and radio antennas, and on some types called trawlers these may even be high enough to carry a steadying sail.</p>	42-43
Upperworks	<p>Explain that if a sailboat has two or more masts, one is the main and the other the mizzen, if aft of the mainmast or foremast, forward of the mainmast. The position of the mainmast may vary according to the type of rig the boat has. Metal wires, rods, or lines used to support the masts are the standing rigging, and the various lines used to</p>	44-48

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	support and control the sails are the running rigging. Horizontal supports near the top of the masts that support the standing rigging are the spreaders, and horizontal poles near the base of the masts used to support the bottom of the sails are booms.	
Upperworks	Explain that there is a great deal of other nomenclature peculiar to sailboats that we will not include here. Any basic text on sailing will usually contain a section on sailboat nomenclature, which can be referred to if the need arises.	49
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	50
Propulsion and the Rudder	Explain that the propulsion machinery on a powerboat is called the engine, and on a sailboat, the auxiliary. Boat engines may be fueled by either gasoline- or diesel. They transmit their power to the propeller or screw under the stern via the propeller shaft. The propeller shaft corresponds to a drive shaft on a car.	51-53
Propulsion and the Rudder	Explain that most powerboat propellers are three-bladed. Some sailboats have a two-bladed propeller that can be aligned with the back of the keel to reduce drag through the water while operating on sail alone. Powerboats may have one or more engines. The engines may be permanently installed inside the hull, in which case they are called inboard, or they may be semiportable and on the stern, in which case they are called outboard. Most Navy small boats have inboard engines. Near the propeller is the rudder, or in some cases two rudders, that control the direction of travel of the boat.	54-58
Types of Boats	Explain that there are hundreds of different types of sailboats and powerboats, collectively called pleasure boats if they are operated mainly by civilians as leisure-time activities. In the Navy, most powerboats, called small craft, with which NJROTC cadets will come into contact fall into one of only a few categories: amphibious craft, utility boats, officers' boats, and inflatables.	59-61
Types of Boats	Explain that amphibious craft include such boats as landing craft of several sizes and types, some of which are equipped with bow ramps that can be lowered to discharge troops or cargo when the boats reach shore. Amphibious craft also include various types of control boats that look like traditional powerboats and other specialized types of craft such as hovercraft and tracked amphibians that can swim ashore and then climb the beach to discharge their troops and cargo inland.	62-65
Types of Boats	Explain that utility boats are essentially open powerboats of sizes ranging from about 25 feet to about 75 feet, and are designed for hauling personnel and light cargo between ships and fleet landings ashore. Most have a single screw and rudder.	66-67
Types of Boats	Explain that officer's boats are smaller, traditional-looking powerboats with cabins intended to carry senior officers and other ship's officers. They are usually of less capacity than comparably sized utility boats. Most ships have only one or two of these cabins. These are reserved for use primarily by the ship's captain or higher-ranking officers who may be embarked on the ship. The captain's boat is called a gig. A boat used by an officer of higher rank than the ship's captain is called a barge.	68-70
Types of Boats	Explain that modern inflatables come in many shapes and sizes. Traditional double-ended whaleboats of years past have largely been replaced by Rigid Hull Inflatable Boats (RHIB) to fill the small boating needs of most Navy ships. The latest RHIBs are water jet propelled, eliminating the need for a propeller and rudder.	71-72

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Review Question	The Review Question is, “What kinds of small craft are cadets likely to see during training?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	73
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	74
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	75

III. Supplemental Activities – Small Boat Seamanship

A. In Class Activity:

Supplies required: Handout for in class and take home activities

When: At the end of the lesson

- Have the cadets use the handout “Parts of a Boat” and name the parts of the boat and give a description. Answer key for the instructor is on the following page.

B. Take Home Activity: using the handout “Types of Boats”, have the cadets name 5 different types of small craft the Navy uses and give examples of when they would be used.

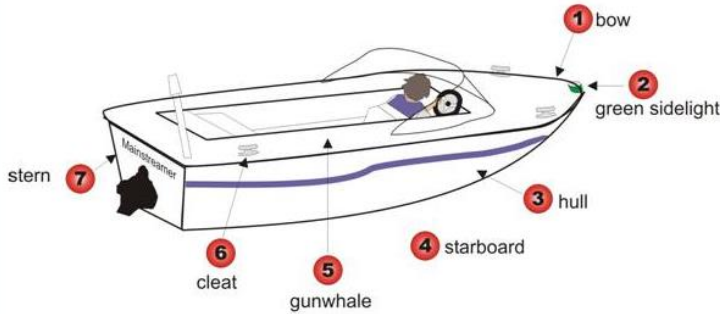
- Amphibious Craft
- Utility/Personnel Boats
- Gigs/ Officer’s Boats
- Inflatables
- Barges

IV. Evaluation - see CPS database for chapter test questions

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Answer Keys:

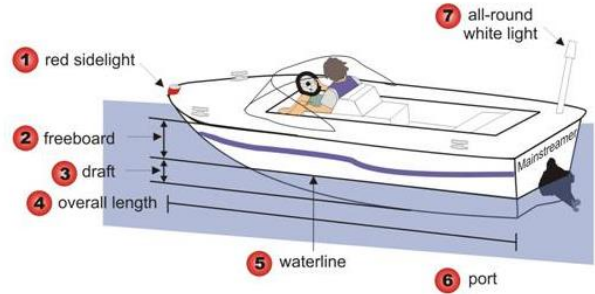
Motor Boats - Starboard Side



Starboard side of the boat

1. Bow (pronounced "bough") - the front of the boat
2. Green sidelight - the green light on the side of a boat that is visible to another boat approaching from the starboard side or head-on
3. Hull - the main body of the boat
4. Starboard - as you are looking toward the bow, the direction to your right
5. Gunwale (pronounced "gunnel") - the top of the sides of the boat
6. Cleat - a metal fitting for attaching ropes
7. Stern - the back end of the boat

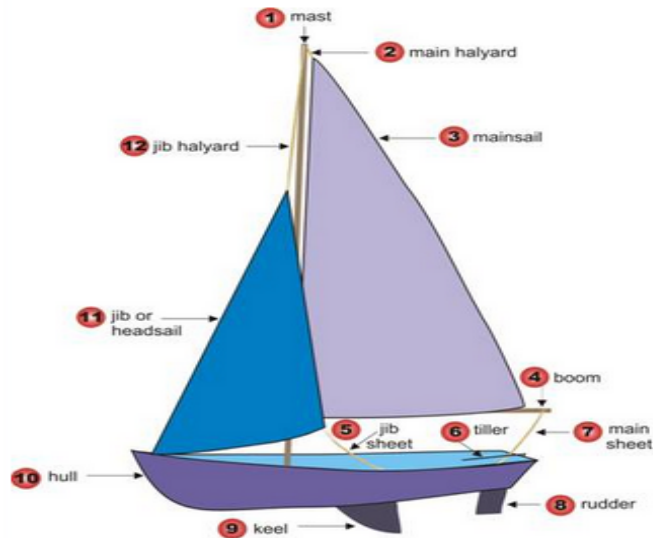
Motor Boats - Port Side



Port side of the boat

1. Red sidelight - the red light on the side of a boat that is visible to another boat approaching from the port side or head-on
2. Freeboard - the minimum distance from the surface of the water to the gunwale
3. Draft - the depth of the boat below the waterline
4. Overall length - the length of the hull excluding any attachments
5. Waterline - the line on a hull to which a boat sinks
6. Port - as you are looking toward the bow, the direction to your left
7. All-around white light - a white light able to be seen by other boats from any direction

Sailboats



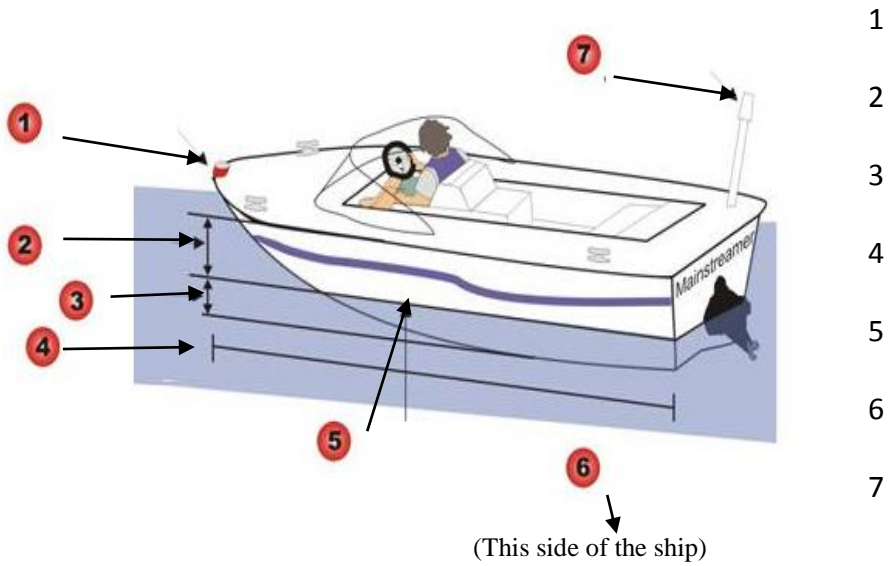
1. Mast - the main support for the sails
2. Main halyard - the line (called a "sheet") used to raise and lower the mainsail (#3)
3. Mainsail - the principal sail on the mast (#1)
4. Boom - the support for the foot of the mainsail (#3)
5. Jib sheet - the line (sheet) used to control the angle of the jib, or headsail (#11), to best catch the wind
6. Tiller - the lever used to turn the rudder (#8), which steers the boat
7. Main sheet - the line (sheet) used to control the angle of the mainsail (#3) to best catch the wind
8. Rudder - the underwater device that connects to the tiller (#6) and controls the direction of the boat
9. Keel - the underwater projection that gives the boat stability
10. Hull - the main body of the boat
11. Jib or headsail - the front sail
12. Jib halyard - the line (sheet) used to raise or lower the jib, or headsail (#11)

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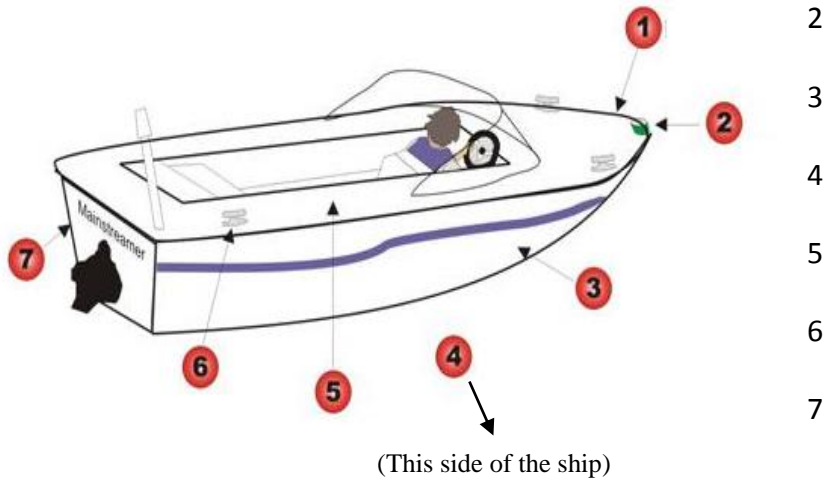
Activity 1: In Class Activity – Parts of a Boat

Name: _____ Date: _____ Class: _____

Directions: Name the part of the boat and give a brief description of it.



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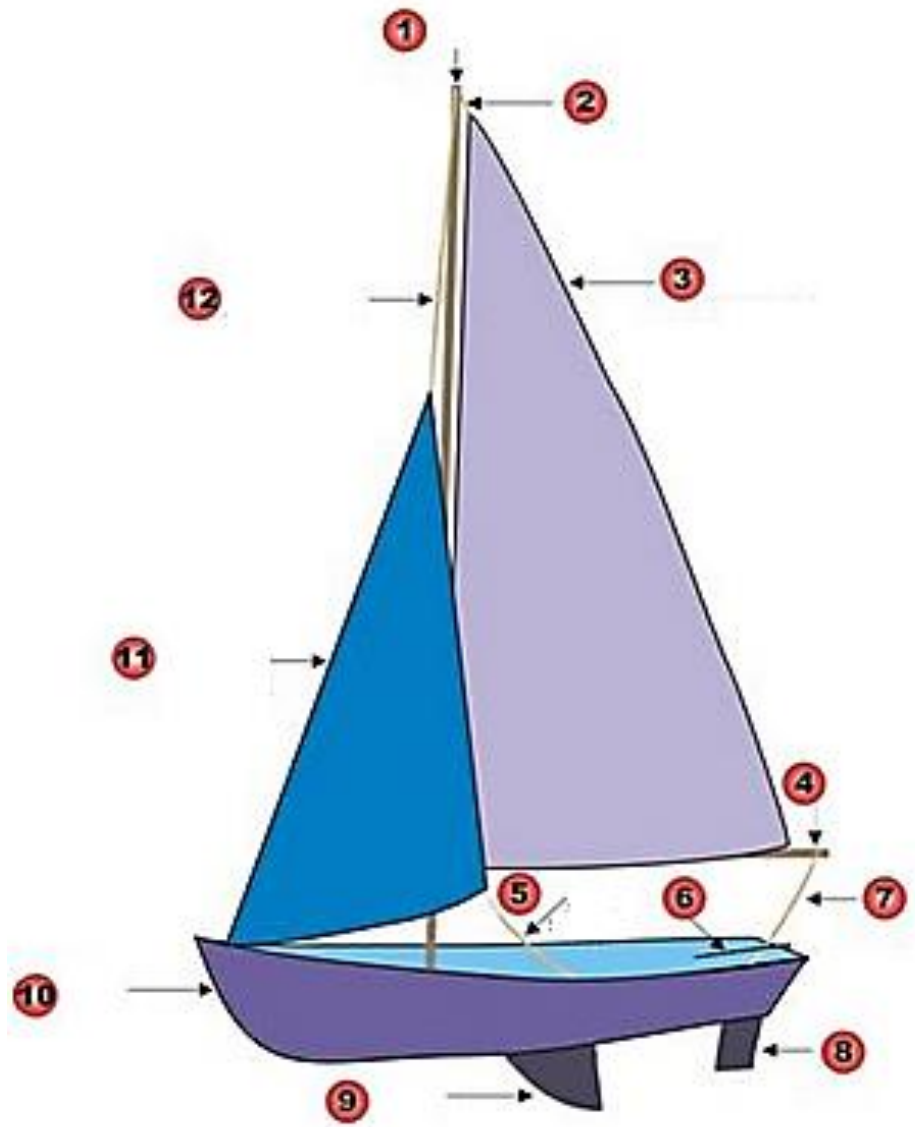


- 1
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Parts of a Boat – pg. 2

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Activity 1: Take Home Activity – Types of Boats

Name: _____ Date: _____ Class: _____

Directions: Name 5 different types of small craft the Navy uses and give examples of when each might be used.

Chapter 3 / Section 2: NS3-M3U3C3S2 – Coxswain

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of basic care, makeup and use of fiber lines and wire ropes, ground tackle and deck equipment, as it relates to basic seamanship

Skills and Knowledge to be Gained:

1. Describe the duties of the coxswain
2. Describe the procedures for small boat handling
3. Given a set of maneuvering problems related to small craft, use recognized concepts to maneuver a boat in a classroom
4. Describe boat etiquette as practiced by the United States Navy

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Coaxswain	Boat Handling (A)	Check On Learning A
Boat Handling (B)	Check on Learning B	Making A Landing	Twin-Screw Boats	Boat Etiquette	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 3, Chapter 3. Place a checkmark beside the NS3-M3U3C3S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U3C3S2 - Key Terms and NS3-M3U3C3S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 3 / Section 2: NS3-M3U3C3S2 – Coxswain

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will learn about the duties of the coxswain. We will discuss the procedures for small boat handling. Next we will discuss when given a set of maneuvering problems related to small craft, use recognized concepts to maneuver a boat in a classroom.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What sort of forces can affect the movement of a boat in water?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on coxswain, boat handling, and boat etiquette.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
Coxswain	Explain that the person in charge of handling a civilian boat, regardless of its size or type, is customarily called the boat's captain. This tradition is followed almost universally in both commercial and pleasure boating. In the Navy, the person in charge of a sailboat is also called the captain, but in the case of powerboats of all sizes and types, the person in charge of the boat, its crew, and any passengers is called the coxswain (pronounced coc'-sun). The coxswain is responsible for the maneuvering and safety of the boat under all circumstances except when a commissioned line officer is embarked as either a boat officer or passenger; these officers may then give directions under certain circumstances to the coxswain.	10-12
Boat Handling	Explain that in order to become a good boat handler, a person must understand the forces that act on the boat and cause it to move in one way or another. These forces can be broadly classified into two types: those that are controllable by the boat handler, such as the propeller force and rudder pressure, and those that are uncontrollable, such as wind and current. It is the interplay of all forces acting simultaneously that determines how a boat will react in any given situation.	13-16

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Boat Handling	Explain that generally, a boat is moved by forces resulting from pressure differences. One such force is propeller thrust. A rotating propeller or screw creates high and low pressure areas on opposite sides of the blades.	17
Boat Handling	Explain that when a right-handed propeller, the type normally used on a single-screw boat, is rotating clockwise as viewed from astern, the low-pressure area is on the forward face of the propeller blades, resulting in forward movement of the boat. When the propeller rotates counterclockwise, an opposite effect occurs, and the boat backs.	18-19
Boat Handling	Explain that next in importance to propeller thrust is side force, which tends to move the boat's stern sideways in the direction of propeller rotation. The upper blades exert a force opposite to that of the lower blades, but the lower blades are moving in water of greater pressure. Consequently, the force of the lower blades is greater. It is as though the lower blades were touching the bottom and pushing the stern to the side. When going ahead the stern tends to starboard, and when backing, to port. Side force is greatest when the boat begins moving from a stationary position, or nearly so, and decreases rapidly as the boat's speed increases. Side force is greater when backing than when going ahead.	20-23
Boat Handling	Explain that screw current, caused by the action of a rotating propeller, consists of two parts. The portion flowing into the propeller is the suction current, and the portion flowing away from the propeller is the discharge current. Suction current is a relatively minor force in boat handling. Discharge current is a major force in two main respects: it is a strong force acting on the rudder with the screw going ahead, and it is a strong component of side force when the screw is backing because of the discharge current acting against the boat's hull.	24-27
Boat Handling	Explain that single-screw ships and boats have a single rudder mounted directly behind the propeller. Twin-screw ships and boats usually have a rudder mounted directly behind each propeller, but some have a single rudder mounted between and just behind the propellers.	28-29
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	30
Boat Handling	Explain that basically, a rudder is used to attain or maintain a desired heading. The force necessary to do this is created by dynamic pressure against the surface of the rudder. The magnitude of this force and the direction in which it is applied produce the rudder effect that controls stern movement and, through it, the boat's heading. Factors having a bearing on rudder effect include rudder size, rudder angle, rudder location, boat's speed, direction of propeller rotation, headway, sternway, suction current, discharge current, and side force. The diverse effects of all of these factors can be lumped together under a single term, resultant force, which indicates the direction and amount of net force exerted on a boat's stern.	31-33
Boat Handling	Explain that a single-screw vessel is most difficult to maneuver at very low speeds where rudder effect is minimal, while at the same time propeller side force is greatest.	34
Boat Handling	Explain that One of the most notable characteristics of a single-screw boat or ship is its tendency to back to port. Four distinct forces affect a boat's steering when backing: <ul style="list-style-type: none"> • The discharge current from the propeller (which tends to throw the stern to port) • The suction current caused by the propeller drawing in water from astern 	35

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	<p>(which adds to the steering effect of the rudder, although not by any great amount)</p> <ul style="list-style-type: none"> • The sidewise pressure of the blades (which forces the stern to port) • The normal steering effect of the rudder <p>Let us examine the effect of the forces just described in a few typical situations. We will assume there is no wind, tide, or current, except in certain instances where it is so stated.</p>	
Boat Handling	<p>Explain that when a boat is dead in the water, with right rudder on, and the screw starts turning over, the screw current hits the rudder and forces the stern to port. With left rudder on, the stern moves to starboard. As the boat gathers way, the effect of the screw current diminishes and the normal steering effect of the rudder controls the boat's head.</p>	36
Boat Handling	<p>Explain that when the boat is proceeding ahead in the normal manner and the rudder is put right, the boat first falls off to port. If the rudder is put left, the boat goes to starboard. The entire boat is thrown slightly (almost imperceptibly) to the side, but the stern gives way to a greater extent. The boat advances two or three boat lengths along the line of the original course before it commences to gain ground in the desired direction. At higher speeds, this advance is slightly less than at lower speeds, and turns are executed more quickly. Because of the advance, trying to execute a turn to avoid an obstacle only a short distance ahead can result in disaster.</p>	37-38
Boat Handling	<p>Explain that when backing down, four distinct forces are involved in steering. They are discharge current, side force, suction current, and rudder effect. The combination of these forces is such that it is almost impossible to back in a straight line.</p>	39-40
Boat Handling	<p>Explain that Relationship of discharge current to speed when boat and screw are going ahead. When backing long distances, it usually is necessary to occasionally reverse the rotation of the screw and shift the rudder long enough to straighten out the boat.</p>	41-42
Boat Handling	<p>Explain that strong winds affect backing ships and boats. Ships with high superstructures forward, as well as many boats, will back into strong winds, because their upperworks act as weathervanes. Until you discover differently, assume a boat will more easily land to port.</p>	43
Boat Handling	<p>Explain that when trying to avoid danger ahead with screw backing remember that direction changes entail adjustment.</p>	44
Check on Learning Questions B (Lesson questions 5-6)	<p>Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.</p>	45
Making a Landing	<p>Explain that many books on boat handling tell the beginner to make a landing heading into the wind, if possible, or to make it on the side of the pier where wind or current will set the boat down on the pier. This is good advice, but any Sailor knows that a boat coxswain often has few chances to select landings. Consequently, the coxswain must learn the effects of the elements on each boat and to control the boat under any condition. The coxswain will be then able to get under way or make a landing when and where necessary in a smart, seamanlike manner. With experience, the coxswain eventually will be able to adjust to any circumstances and handle the boat correctly in an almost second-nature manner.</p>	46-47
Making a Landing	<p>Explain that the pointers that follow, plus a firm understanding of the preceding section, will assist a person learning the basics of boat handling. A boat handler should remember, though, that boats do not always respond exactly as theory predicts and</p>	48

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	there is no substitute for actual experience. Throughout this section, we assume that the boat handler knows how far the boat, going at various speeds, will travel before a reversing screw stops the boat or changes its direction. We also assume that the boat handler knows how far the boat will fetch (glide) with the screw in neutral.	
Making a Landing	Explain that making a port-side-to landing is easier than making a starboard-side-to landing because of the factors previously discussed. With no wind, tide, or current with which to contend, the approach normally should be at an angle of about 20 degrees with the pier. The boat should be headed for a spot slightly forward of where you intend to stop. Several feet from that point (to allow for advance) put your rudder to starboard to bring your boat parallel to the pier, and simultaneously commence backing. Quickly throw the bow painter (bow line) over. Then, with the painter around a cleat to hold the bow in, you can back down until the stern is forced in against the pier.	49-50
Making a Landing	Explain that if wind and current are setting the boat off the pier, make the approach at a greater angle and speed. The turn is made closer to the pier. In this situation it is easier to get the stern alongside by using hard right rudder, kicking ahead, and using the bow line as a spring line. To allow the stern to swing in to the pier, the bow line must not be snubbed too short.	51
Twin-Screw Boats	Explain that on twin-screw boats, the starboard screw is right-handed and the port screw is left-handed. The lateral (sidewise) forces produced by one screw cancel those of the other when both are going ahead or astern. When one is going ahead and the other is going astern, however, the forces complement each other, and the effect is doubled. For this reason, maneuvering a twin-screw boat is considerably easier than maneuvering a single-screw boat. You need not worry about the separate forces or their combined effect; think of it as a lever with a force (screw) at each end and the load (boat) in the middle. Thus, you can readily see how much more quickly a particular maneuver may be accomplished by using the correct propeller combinations along with the appropriate rudder angle.	52-53
Twin-Screw Boats	Explain that for example, to turn your boat 180 degrees to starboard from a dead stop, use right full rudder, port engine ahead, and starboard engine astern. The boat will make the turn in little more than its own length, whereas a single-screw boat would require considerably more space to complete the same turn. It is also much easier to get into a short berth or other confined space with a twin-propeller boat.	54
Boat Etiquette	Explain that in the Navy the observance of proper boat etiquette is second in importance only to safety aspects of boat handling when it comes to judging the competence of a boat's coxswain and crew. Boat etiquette is concerned with customs, honors, and ceremonies observed by the boat coxswain and crew. Most of these are traditions that have been passed along through the years since the founding of our Navy over two hundred years ago.	55-56
Boat Etiquette	Explain that The customs that have been established promote the smooth loading of passengers, help govern boat traffic, and expedite the movement of boats at gangways and piers. Proper boat etiquette is a sign of good seamanship. It also makes a lasting impression on all who observe it. Clean boats and sharp, courteous crews draw favorable comments.	57-58
Boat Etiquette	Explain that hand salutes are rendered to boats carrying officers and officials in much the same way as salutes would be made when passing such individuals while walking on land. Junior boats salute the senior first, and the senior returns the salute. It is not the size or type of boat, but the rank of the officer aboard that determines a boat's	59-60

Chapter 3 / Section 2: NS3-M3U3C3S2 – Coxswain

	seniority. Thus, a small boat carrying a commander is senior to a large boat carrying a lieutenant. Usually it is possible to tell by the officer's uniform or by the flag flown which boat is senior. In cases of doubt, however, it is best to go ahead and salute.	
Boat Etiquette	Explain that Boat salutes are rendered by a boat's coxswain and by the senior officer embarked. The engine of the junior boat should be idled during the salute, and after the return of the salute, speed may be resumed. Coxswains always rise to salute unless it is dangerous or impractical to do so. Officers generally do not rise to salute, but do so from a seated position if visible to the other boat.	61-62
Boat Etiquette	Explain that during morning or evening colors, a boat's engine should be idled or stopped and the clutch disengaged. The boat officer (if assigned) and the coxswain stand at attention and salute in the direction of the ceremony if it is possible to do so without losing control of the boat.	63
Boat Etiquette	Explain that a coxswain in charge of a boat salutes when officers enter or leave his boat if the situation allows. For example, when a boat is alongside a ship's accommodation ladder, the coxswain oftentimes is too busy maintaining control of the boat to salute.	64
Boat Etiquette	Explain that through the years, certain courtesies have come to be practiced by the crews and passengers of boats. The basic rule in Navy manners, as in civilian life, is to make way for a senior quickly, quietly, and without confusion.	65
Boat Etiquette	Explain that the procedure for boarding and leaving boats is as follows: juniors board boats first, and leave after seniors, unless the senior officer gives orders to the contrary. The idea is that the senior officer should not have to wait in a boat for anyone. The senior gets out first, because normally his business is more important and pressing than that of the personnel of lower rank. Generally, seniors take the seats farthest aft; in boats with no officers embarked, the after part of the boat (or stern sheets) is usually reserved for chief petty officers.	66
Boat Etiquette	Explain that subject to the requirements of the rules for preventing collisions, junior boats must avoid embarrassing senior boats. At landings and gangways, juniors should give way to seniors. Juniors should show deference to their seniors at all times by refraining from crossing the bows of their boats or ignoring their presence.	67-68
Boat Etiquette	Explain that the national ensign and personal flags and pennants of officers are properly displayed from small boats as described below. National Ensign. The national ensign is displayed from boats of the Navy at the following times: <ul style="list-style-type: none"> • When under way during daylight in a foreign port • When ships are required to be dressed or full dressed • When going alongside a foreign vessel • When an officer or official is embarked on an official occasion • When, in uniform, a flag or general officer, a unit commander, a commanding officer, or a chief of staff is embarked in a boat of his or her command or in one assigned to his or her personal use • At such other times as may be prescribed by the senior officer present 	69-70
Boat Etiquette	Explain that When embarked in a boat of the naval service on official occasions, an officer in command, or a chief of staff when acting for him or her, displays from the bow of the boat his or her personal flag or command pennant or, if not entitled to either, a commission pennant.	71-72

Chapter 3 / Section 2: NS3-M3U3C3S2 – Coxswain

Review Question	The Review Question is “What are the reasons for setting forth standards for boat etiquette?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	73
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	74
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	75

III. Supplemental Activities -

A. In Class Activity:

Supplies Needed: Handout – Handouts for in class and take home activities

When: This activity is best at the end of the lesson after talking about boat etiquette.

- Have the cadets fill out the Boat Etiquette Map, adding additional circles of etiquette rules to the basic foundation.

B. Take Home Activity: Using the Handout “Boat to Island”, have the cadets record their results after they practice and play the game - steering their boat to the island at this website: <http://illuminations.nctm.org/Activity.aspx?id=3536> by Illuminations.nctm.org.

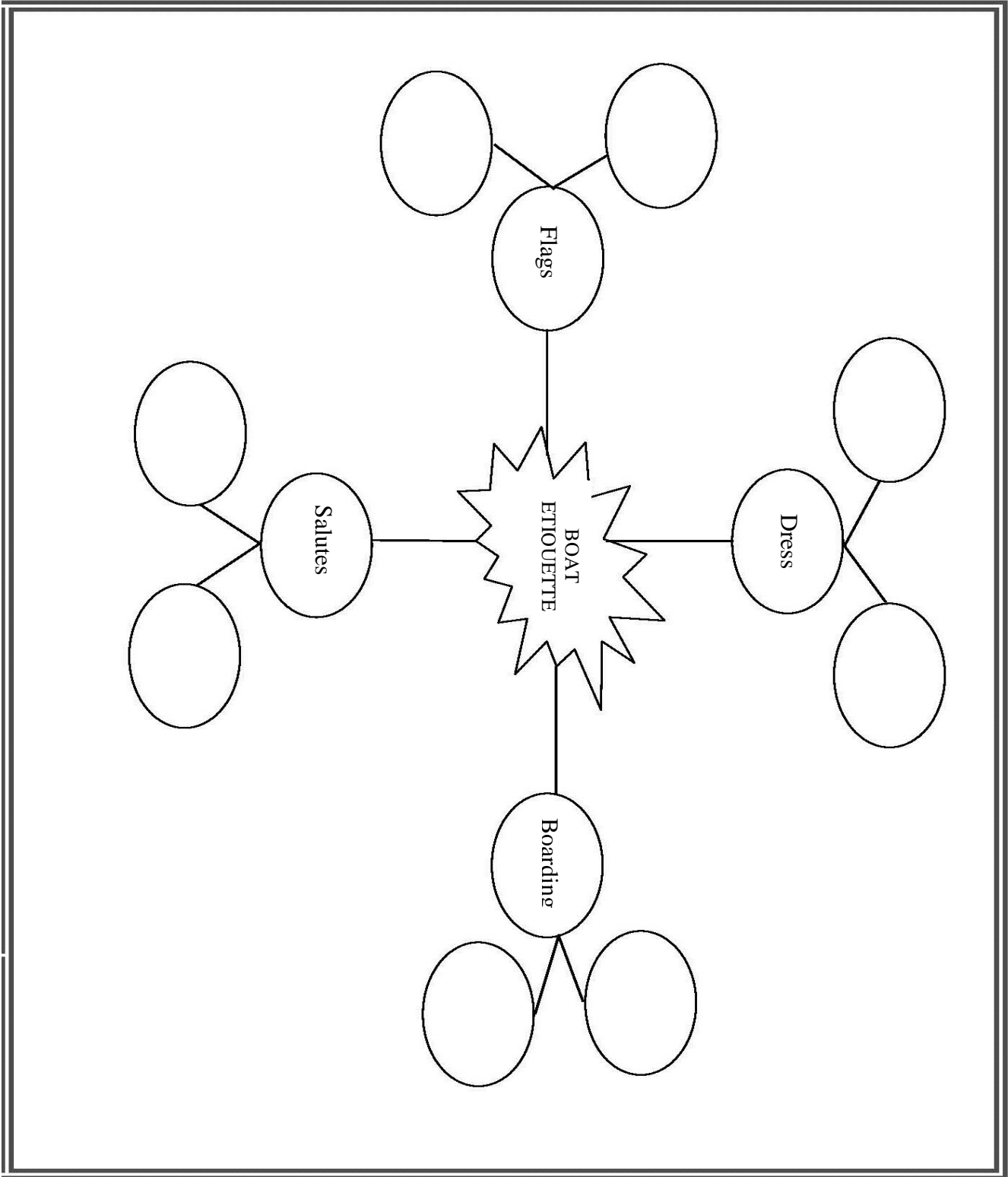
IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 2: NS3-M3U3C3S2 – Coxswain

Activity 1: In Class Activity – Boat Etiquette Mind Map

Name: _____ Date: _____ Class: _____

Directions: this is a basic map, add additional circles of etiquette rules to the basic foundation.



Chapter 3 / Section 2: NS3-M3U3C3S2 – Coxswain

Activity 1: Take Home Activity – Boat to Island

Name: _____ Date: _____ Class: _____

Directions: Go to the website: <http://illuminations.nctm.org/Activity.aspx?id=3536>

Read the instructions and then try your hand at getting the boat to the island in both static and dynamic mode. What were your results?

STATIC or DYNAMIC MODE	BOAT VELOCITY VECTOR	WATER VELOCITY VECTOR	RESULT – Hit or Miss the Island
STATIC MODE			
STATIC MODE			
STATIC MODE			
STATIC MODE			
STATIC MODE			
DYNAMIC MODE			
DYNAMIC MODE			
DYNAMIC MODE			
DYNAMIC MODE			
DYNAMIC MODE			

Now play the game. What was your final score?

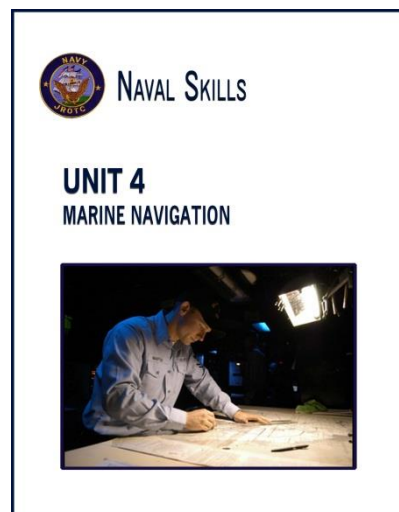
Did you Master the art of landing your boat?

MODULE 3; UNIT 4: Marine Navigation

Unit Overview

Unit Objective:

In this unit you will learn a basic understanding of navigation and the significant instruments used in this science.



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Introduction to Navigation	NS3-M3U4C1S1 – Knowledge of Navigation
		NS3-M3U4C1S2 – Nautical Measurements
		NS3-M3U4C1S3 – Nautical Charts
		NS3-M3U4C1S3 – Piloting
2	Aids to Navigation	NS3-M3U4C2S1 – Navigational Lights
		NS3-M3U4C2S2 – Buoys
3	Time and Navigation	NS3-M3U4C3S1 – Time and Time Pieces
		NS3-M3U4C3S2 – Kinds of Time

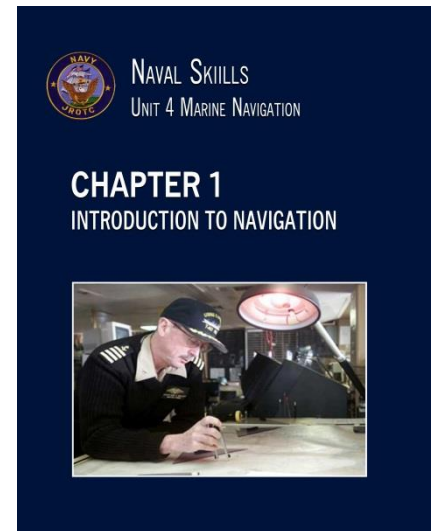
Module 3 Unit 4 Chapter 1: NS3-M3U4C1 – Introduction to Navigation

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Define navigation
2. Describe the terrestrial sphere as it relates to navigation
3. Cite the significance of the great circle
4. Define circular measurement
5. Describe the relationship of meridians as they pertain to measurement
6. Describe how distance is represented by a parallel circle on a globe
7. Explain how latitude and longitude are used to locate places on a map
8. Describe how nautical measurements are made at sea
9. Describe true and relative bearing
10. Explain the use of nautical charts
11. Describe how Mercator projection is used by navigators
12. Explain the purpose for the basic types of nautical charts
13. Describe how courses, bearings and lines of position are plotted on a nautical chart
14. Describe the navigational equipment and other means used to pilot a ship



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately...
- W.11-12.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products...

Module 3 Unit 4 Chapter 1: NS3-M3U4C1 – Introduction to Navigation

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.
- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately ...
- SL.11-12.5. Make strategic use of digital media...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 1 / Section 1: NS3-M3U4C1S1 – Knowledge of Navigation

(Section 1 of 4)

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Define navigation
2. Describe the terrestrial sphere as it relates to navigation
3. Cite the significance of the great circle
4. Define circular measurement
5. Describe the relationship of meridians as they pertain to measurement
6. Describe how distance is represented by a parallel circle on a globe
7. Explain how latitude and longitude are used to locate places on a map

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	Video Navigation
The Terrestrial Sphere	Great Circles	Check On Learning A	Circular Measurements	Meridians	Check on Learning B	Parallels	Latitude And Longitude
Review Questions	Closing Questions	Call for Other Questions					

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 4, Chapter 1. Place a checkmark beside the NS3-M3U4C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U4C1S1 - Key Terms and NS3-M3U4C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 1: NS3-M3U4C1S1 – Knowledge of Navigation

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that navigation is the art and science by which mariners find a ship's position and guide it safely from one point to another. Most of you would know how to guide yourself or a ship by following a magnetic compass needle. The problem is knowing how to find your location in the first place. The navigator's first job is to locate the ship's exact position on the Earth. The navigator can then recommend a course to be steered in order to arrive safely at the destination. The word "Navigate" comes from the Latin <i>Navis</i> , meaning "ship" and Agere- Meaning "to move or direct" The Latin word <i>navis</i> comes from the ancient Greek <i>nafs</i> , meaning "ship".	1-2
Unit Overview	Explain that we have now used a tool that is important in locating places called a map. In this unit, we will talk about maps of the Earth, particularly, maps that show the locations of places important to the maritime nations of the world on a flat surface. The type of map used to navigate on the water is called a nautical chart. The charts we will talk about may be defined as "pictures of the navigable waters of the Earth." Charts are what the navigator uses when plotting courses and finding positions of his or her ship. The navigator cannot refer to a highway, a crossroads, or towns. There has to be a way of locating the ship on the ocean. The following chapters will describe how this is done.	3-4
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss navigation. We will learn about the terrestrial sphere and discuss how it relates to navigation. We will discuss the significance of the great circle and define circular measurement. Next we will discuss the relationship of meridians as they pertain to measurement. We will learn about distance and how it is represented by a parallel circle on a globe. Finally, we will learn about latitude and longitude and discuss how they are used to locate places on a map.	5-8
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	9
Key terms - Definitions	Reinforce the correct definition for each key term.	10-12
Opening Question(Random Pick a Student – "RPS")	This Opening Question is, "Based on your existing knowledge, describe latitude and longitude and why they are important in naval navigation." Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student's name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students' responses to the question on the slide, focusing on navigation.	13

Chapter 1 / Section 1: NS3-M3U4C1S1 – Knowledge of Navigation

Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students' level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	14
Introduction	<p>Explain that navigation is a fundamental nautical science. Like seamanship, knowledge of navigation is basic to operating on water. Navigation enables the mariner to locate his or her position and to get from one place to another.</p>	15
Video on Navigation	<p>Show video on navigation.</p>	16
The Terrestrial Sphere	<p>Explain that in order to discuss navigation and nautical charts, we must first understand the Earth. In navigation, the Earth is called the globe or terrestrial sphere (this latter term comes from the Latin word <i>terra</i>, which means "earth"). Our planet is spherical. Actually, our Earth is a little flattened at the poles instead of being perfectly spherical. However, in most cases concerning navigation, this can be disregarded.</p>	17
The Terrestrial Sphere	<p>Explain that there are several reference points for locating objects on the Earth. The north pole and south pole are located at the ends of the axis on which the Earth rotates. The imaginary lines running through the poles and around the Earth are called meridians. They divide the surface of the Earth into sections much as you might cut an orange for easy peeling.</p>	18
The Terrestrial Sphere	<p>Explain that the imaginary line that runs around the center of the Earth cutting every meridian in half and dividing the Earth into top and bottom halves, is called the equator. It is formed by passing an imaginary plane horizontally through the center of the Earth, perpendicular to its axis. The word "equator" implies "equal parts." It lies exactly halfway between the north and south poles. The top half of the globe is called the Northern Hemisphere (northern "half-sphere"), and the lower half is the Southern Hemisphere (southern "half-sphere").</p>	19-20
Great Circles	<p>Explain that meridians and the equator are called great circles because they each divide the globe into two halves. Any circle drawn around the Earth so as to divide the world into equal parts, or hemispheres, is called a great circle.</p>	21
Great Circles	<p>Explain that when looking at the globe you will note that all meridians are great circles. Of all the lines going around the globe from east to west, however, only the equator is a great circle. The other lines are called parallels, since they go around the globe parallel to, and north and south of, the equator. They are all smaller circles than that made by the equator. Of the parallels, only the equator cuts the globe into two hemispheres.</p>	22
Great Circles	<p>Explain that you can also see that a great circle does not have to be a meridian or the equatorial parallel. A great circle is any circle whose plane passes through the Earth's center, no matter what direction.</p>	23
Great Circles	<p>Ask, what is the significance of the great circle in navigation? Simply put, the shortest distance between two points on the Earth (or any sphere) lies along the path of a great circle passing through those two points. This path, or segment of a great circle, is an arc on the Earth's rounded surface. This must be an arc because a straight line between two points would go under the surface!</p>	24

Chapter 1 / Section 1: NS3-M3U4C1S1 – Knowledge of Navigation

Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	25
Circular Measurement	Explain that you already have learned in your math classes that a circle's circumference (the distance around) constitutes 360 degrees ($^{\circ}$). Regardless of the size of the circle, be it the size of a Ping-Pong ball or that of the globe, the circumference is 360 degrees. Each degree contains 60 minutes ($'$), and each minute contains 60 seconds ($''$). Measurement along a meridian or parallel is expressed in terms of degrees, minutes, and seconds of arc (the curve of the circle).	26-29
Meridians	Explain that there are an infinite number of meridians running from pole to pole, but rarely are they drawn more often than one for each degree around the Earth. On the average globe, map or chart, meridians are usually drawn every 5 or 10 degrees. More will sometimes be drawn on enlarged navigation charts. The starting point for numbering these meridians is the meridian on which the Royal Observatory at Greenwich, England, is located. The Greenwich meridian, therefore, is numbered 0, or 0° , and is called the prime meridian.	30
Meridians	Explain that halfway around the globe from the prime meridian is the 180th meridian. The 180th meridian is the other half of the 0 meridian. Together they make a great circle that divides the globe into the Eastern and Western Hemispheres. The Eastern Hemisphere is that portion of the globe between 0° and 180° east of the prime meridian, and the Western Hemisphere is that part between 0° and 180° west of the prime meridian. The 180th meridian is called the International Date Line, which will be discussed further in Chapter 4. Meridians between the prime meridian and the date line are numbered from 0° to 180° east (E) or west (W), depending on how far east or west they are from the prime meridian. For example, a location in the Western Hemisphere might be at 70° W, while one in the Eastern Hemisphere might be at 120° E. In navigation these meridians are called longitude lines.	31-34
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	35
Parallels	Explain that we learned earlier the equator is a great circle formed by bisecting the Earth on a horizontal plane. Since the Northern and Southern Hemispheres are equal halves of the globe, there must be 90 degrees in the arc from the equator to a pole. However, parallels drawn around the Earth get smaller and smaller as you get closer to the poles. But remember, no matter how small a circle it is, it still contains 360 degrees. What this means, then, is that the distance represented by a degree of longitude measured along the parallel circles becomes ever smaller as you get nearer the poles.	36-37
Parallels	Explain that the starting point for numbering the parallels is the equator, the 0° parallel. Parallels are numbered from 0° at the equator to 90° north (N) at the north pole, and from 0° to 90° south (S) at the south pole. A place in the Northern Hemisphere, for example, might be located at 35° N, while one in the Southern Hemisphere might be at 50° S. In navigation, the parallels are called latitude lines.	38
Latitude and Longitude	Explain that we have seen that there is a network of meridians and parallels all the way around the globe. Thus, every spot on Earth may be located at the intersection of a meridian and a parallel. The navigator describes every location on the Earth in terms of its latitude or longitude. Latitude is the distance of arc north (N) or south (S) of the equator. It is expressed in degrees, minutes, and seconds, measured along the meridian of the place. Longitude is the distance in degrees, minutes, and seconds of	39-42

Chapter 1 / Section 1: NS3-M3U4C1S1 – Knowledge of Navigation

	arc east (E) or west (W) of the prime meridian, measured along the parallel of latitude. Let's state it again: latitude is always measured north or south from 0° through 90°, and longitude is always measured east or west from 0° through 180°.	
Latitude and Longitude	Explain for example that the position of Washington, D.C., is 38°58'N latitude, 77°01'W longitude. This is spoken as thirty-eight degrees, fifty-eight minutes north; seventy-seven degrees, one minute west. Seconds are used only if very exact locations are required. Every spot on Earth can be located precisely by this method. You should become very familiar with locating places on the globe this way.	43-45
Review Question	The Review Question is, "Explain how latitude and longitude are used to locate specific places on a map." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	46
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	47
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	48

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Blank Sheets of Paper for in class activity; handout for take home activity

When: This activity will be done as a warm up to the lesson based upon prior knowledge

- In Class: Cadets are to take a piece of paper and draw a circle representing the Earth. They then will draw and label the following on the circle/Earth:
 - Prime Meridian
 - Equator
 - Lines of latitude
 - Lines of Longitude
 - North Pole
 - South Pole
 - Northern Hemisphere
 - Southern Hemisphere
 - Western Hemisphere
 - Eastern Hemisphere

B. Take Home Activity: Using the Handout "Latitude/Longitude Battleship", cadets will label the graph paper according to the instructions and hide their ships. They can practice playing the game at home with a parent or sibling in preparation to play at schools with a classmate.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 1: NS3-M3U4C1S1 – Knowledge of Navigation

Activity: Take Home Activity: Latitude/Longitude Battleship

Goals: To practice the proper way to speak aloud a specific location using latitude and longitude. To practice finding latitude and longitude quickly and naturally using a physical map.

What Each Player Needs:

- 2 Sheets of Graph Paper – one to record your moves (hits/misses) and one on which to hide your ships and record your opponent’s moves (hits/misses).
- A Latitude/Longitude Script Sheet (below)
- A Clipboard

Rules of the Game

- Attach the two game sheets to a clipboard – a portable “desk” that will keep your intel private.
- Each player must choose one game sheet to represent his/her stealth military invasion- we will call this sheet the “mission sheet”. The player will hide five ships along line intersections using a highlighter or a dark mark. The ships may NOT be placed diagonally and may not overlap each other. The player’s opponent’s moves will be recorded on this sheet.
 - Aircraft Carrier – 5 line intersections
 - Battleship - 4 line intersections
 - Submarine – 3 line intersections
 - Cruiser – 3 line intersections
 - Destroyer - 2 line intersections
- The second game sheet will be used to record the player’s own moves – we will call it the player’s “intelligence sheet”.
- Moves on both the mission and intelligence sheets will be represented by an X for a miss (a move that does not locate a hidden ship) or an O for a hit (a move that hits any part of a hidden ship).
- Each player takes a turn guessing a point using a verbal statement with the lines of latitude and longitude – including the words “degrees” and noting “direction”. Each player will have a script to follow until stating a point of latitude and longitude correctly becomes natural.
- The game is over when one player sinks all of the other player’s ships.

Chapter 1 / Section 1: NS3-M3U4C1S1 – Knowledge of Navigation

Latitude/Longitude Verbal Script

Directions: Use the following script to properly verbalize a location in terms of latitude and longitude. Fill in the blanks with the proper number and direction.

****Example: "Latitude 40° North and Longitude 110° West"****

The Script:

"Latitude ____° North/South and Longitude ____° East/West"

Labeling Graph Paper:

Instructions. Turn graph paper long ways or landscape. Along the right hand side label each row starting in the middle at 0 degrees moving down to 80 degrees South and moving upwards to 80 degrees North. Along the top, label each row starting in the middle at 0 degrees and moving to the right to 180 degrees East and to the left to 180 degrees West. All are in increments of ten.

Cadets "hide" their ships on one sheet of graph paper and the other sheet is used to chart their opponent's ships.

Chapter 1 / Section 2: NS3-M3U4C1S2 – Nautical Measurements

(Section 2 of 4)

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Describe how nautical measurements are made at sea
2. Describe true and relative bearing

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Nautical Measurements (A)	Check On Learning A	Nautical Measurements (B)
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Check on Learning B	Nautical Measurements (C)	Video Nautical Measurements	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 4, Chapter 1. Place a checkmark beside the NS3-M3U4C1S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U4C1S2 - Key Terms and NS3-M3U4C1S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 2: NS3-M3U4C1S2 – Nautical Measurements

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss how nautical measurements are made at sea. We will also discuss the true and relative bearing.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Based on your existing knowledge, describe tools or devices that are used to measure nautical direction.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on nautical measurements.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
Nautical Measurements	Explain that in talking earlier about degrees of arc, we were actually talking about nautical distance, or distances at sea. The nautical mile is used to measure nautical distance. It is equal to approximately 1 minute of arc measured along the equator, or any other great circle. That is about one and one-seventh statute or land miles. A nautical mile is about 6,076 feet; for most applications in the Navy, we consider this to be 2,000 yards. A land mile is 5,280 feet, or 1,760 yards.	10-11
Nautical Measurements	Explain that since meridians of longitude are great circles, they may be used as distance scales. Distance is measured along the meridian, using a tool called dividers. One minute of latitude along any meridian equals one nautical mile. (Distances are not measured on parallels of latitude, because one minute equals one nautical mile only along the equator.)	12-15
Nautical Measurements	Explain that the word ‘knot’ is a seagoing speed term meaning nautical miles per hour. It is incorrect to say “knots per hour,” except when referring to increases or decreases in speed. The term comes from old sailing days, when ships determined their speed through the water by running out a line knotted at fractions of one nautical mile. The line was attached to a flat piece of wood called a chip log. The amount of line (numbers of knots) run out in two or three minutes gave an estimate of the ship's speed, from which the number of nautical miles covered per hour could be figured.	16-17

Chapter 1 / Section 2: NS3-M3U4C1S2 – Nautical Measurements

Nautical Measurements	Explain that nowadays, ship speed through the water is determined by use of a speed log (like a speedometer), either mechanical or electronic. Mechanical speed logs have a small propeller that extends down beneath a vessel's hull. The water streaming past the hull rotates the propeller, and the vessel's speed is proportional to the speed of rotation. Others have a pitot tube that measures the speed of the water stream by pressure differences. Electronic speed logs measure vessel speed electronically by projecting sound beams down into the water.	18-19
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	20
Nautical Measurements	Explain that true nautical direction is measured from true north (North pole) as located on a globe. A Compass Card is a circular card which is marked on the rim of the face: points of the compass, degrees of arc clockwise from north, or both. Magnetic compass cards have magnets attached to the underside and are either floating or suspended from a pivot so as to rotate freely. The true bearings of the so-called cardinal points (the four primary cardinal directions of the compass) are North, 000°; East, 090°; South, 180°; and West, 270°.	21-23
Nautical Measurements	Explain that this was once to be given in olden days by points on the compass rose, such as north, north by east, north-northeast, and so on. Modern navigators use a system of circular measurement using 360 degrees of arc, which is more accurate and convenient.	24
Nautical Measurements	Explain that a direction is always expressed in three figures, regardless of whether three digits are necessary. In other words, it is not 45° (forty-five degrees), but 045° (spoken "zero four five degrees").	25
Nautical Measurements	Explain that the direction in which a ship is facing at any moment is called its heading. The direction that a ship is steered through the water is called its course. Because they are directions, headings and courses are always expressed in three digits. There is usually some difference between the two because of wind and wave and current action and the like.	26-27
Nautical Measurements	Explain that larger naval ships and aircraft are fitted with an instrument called a gyrocompass that always points toward true north. It is used as the basis for all true direction and course measurements. However, a gyrocompass is expensive and needs a power supply to operate. Therefore, most smaller vessels, boats, aircraft, and many ground vehicles use a relatively inexpensive magnetic compass as a directional reference, similar to those you may have used as a Boy or Girl Scout or in a science class. Directions referenced to the magnetic compass are called magnetic or compass directions.	28-31
Nautical Measurements	Explain that magnetic compasses point to the Earth's northernmost magnetic pole, presently positioned at about 80 degrees north latitude in northern Canada. Its location wanders as much as 80 kilometers each day, and it has been moving northerly at an average rate of about 10 kilometers per year. Because it is at a distance from the true north pole, there is usually an angle between magnetic and true north at all locations on Earth. This angle is called the variation angle. If the magnetic compass points east of true north, the variation angle is labeled east. If the magnetic compass points west of true north, the variation angle is labeled west. Remember, variation changes depending on your position relative to magnetic north.	32-33
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	34

Chapter 1 / Section 2: NS3-M3U4C1S2 – Nautical Measurements

Nautical Measurements	Explain that one type of direction can be converted into the other very simply. To convert from magnetic to true, just add or subtract the variation at your location to the magnetic bearing. Westerly variations are subtracted, and easterly variations are added. For example, if your ship were heading 090° magnetic in a region where the variation was 10° East, the true heading would be 090° + 10°, or 100° true. If you wanted to proceed on course 270° true in the same region, you would steer 270° -10° or 260° magnetic. The size and direction of the variation can easily be obtained from the nautical chart of the area in which you are operating.	35-37
Nautical Measurements	Explain that a bearing is the direction of an object from an observer, measured clockwise in one of three standard ways. A true bearing is the direction of an object measured clockwise from true north. A magnetic bearing is the direction of an object measured clockwise from magnetic north, and a relative bearing is the direction of an object measured clockwise from the ship's head (bow).	38-41
Nautical Measurements	Explain that bearings are given in three digits, as with nautical direction. When recording a bearing, it is assumed to be a true bearing unless followed by the letters M or R. For example 030°M means 30° to the right of magnetic north, spoken "030 degrees magnetic," while 030°R means 30° off the starboard bow, spoken "030 degrees relative." Objects seen by lookouts are reported in terms of relative bearing by degrees. Note the following relative bearings: dead ahead, or bow, 000°R; starboard beam, 090°R; dead astern, 180°R; and port beam, 270°.	42-44
Video on Nautical Measurements	Show video on nautical measurements	45
Review Question	The Review Question is, "Describe true bearing, magnetic bearing, and relative bearing." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	46
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	47
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	48

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handouts for in class and take out activities

When: This activity should take place at the end of the lesson

- The cadets should complete the hand out "True Bearing and Relative Bearing"

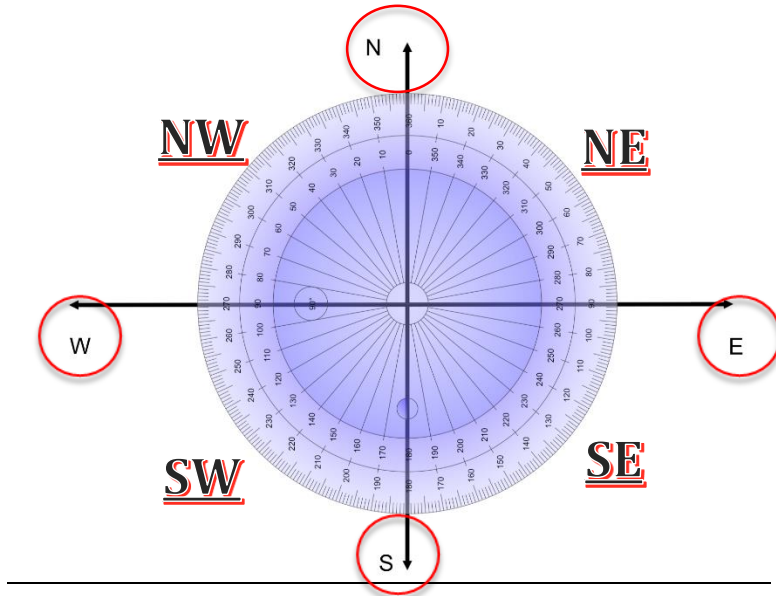
B. Take Home Activity: Cadets will write problems like the ones done in class to give to another student to solve where they convert true bearing to conventional bearing and vice versa. Each cadet should make five problems to share with a classmate.

IV. Evaluation - see CPS database for chapter test questions.

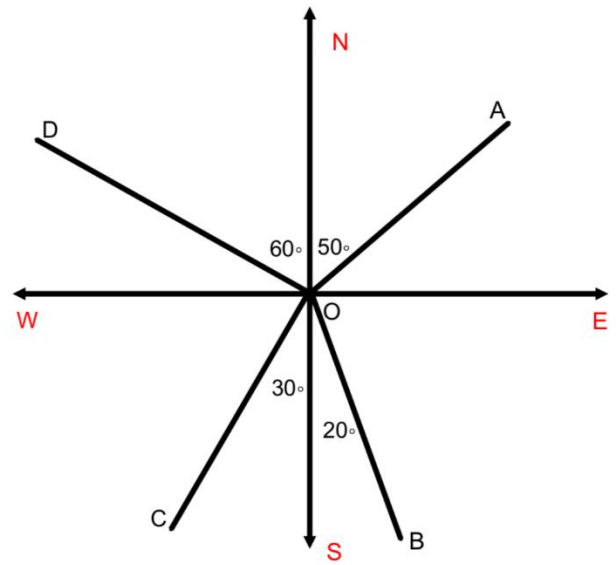
Chapter 1 / Section 2: NS3-M3U4C1S2 – Nautical Measurements

- Answer Key for In Class Activity “True Bearing and Relative Bearing”

(N,E,S AND W SHOULD BE CIRCLED.
ALSO, NE, SE, SW AND NW SHOULD BE WRITTEN IN THEIR APPROPRIATE SPOTS.



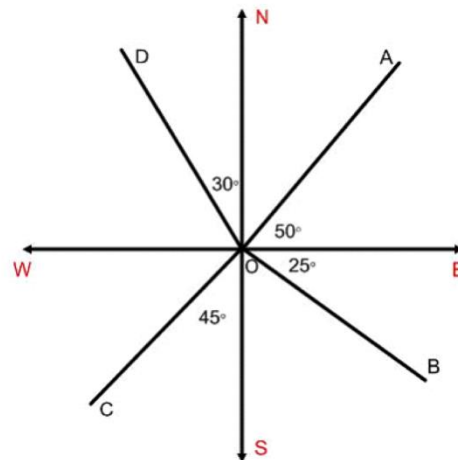
Answers: A=050, E=090, B=160, S=180.
C=210, W=270, D=300, N=000



For each of the following, write what the true bearing value is to its conventional bearing.

True Bearing	Conventional Bearing
0 to 90	N [Bearing Value]° E
90 to 180	S [180 – Bearing Value]° E
180 to 270	S [Bearing Value – 180]° W
270 to 360	N [360 – Bearing Value]° W

- N 10° W **350°**
- W **270°**
- S 45° W **225°**
- S 60° E **120°**
- S **180°**
- N 45° E **045°**
- N 60° W **300°**



- B? **115°**
- C? **225°**
- D? **330°**

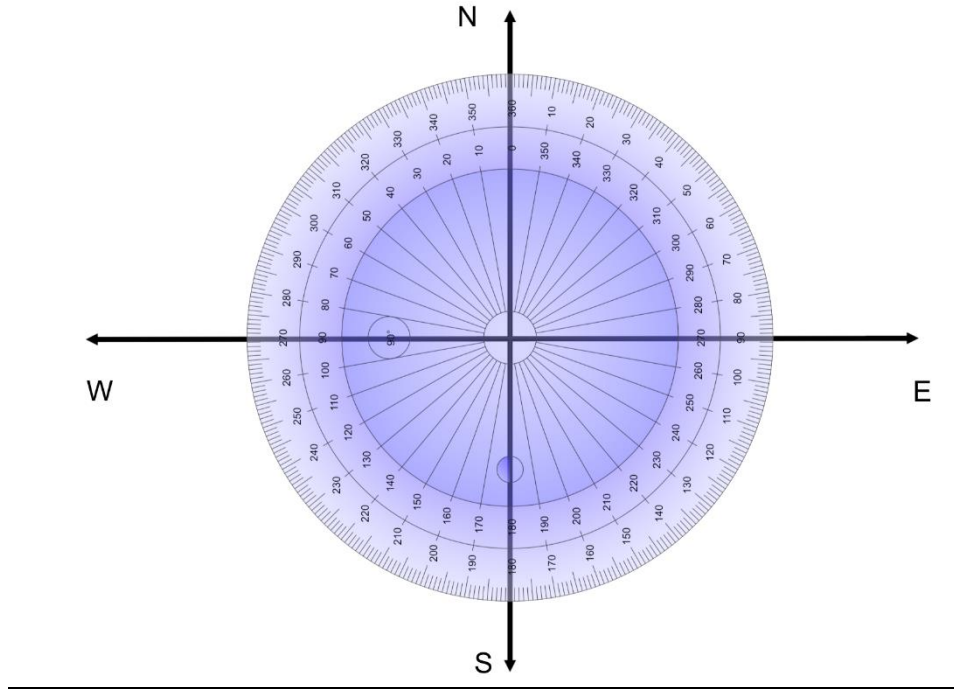
Chapter 1 / Section 2: NS3-M3U4C1S2 – Nautical Measurements

Activity 1: In Class Activity- True Bearing and Relative Bearing

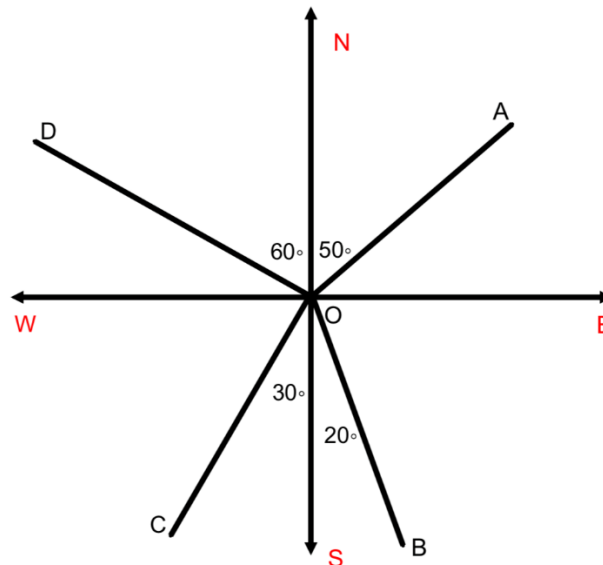
Name: _____ Date: _____ Class: _____

True bearing to a point is the measure of an angle between the north line and the line to the point from the origin, measure in clockwise direction.

In the picture below, circle the cardinal points and write in the cardinal half points in the correct spots.



In the picture below, write what the true bearing is to each of the lettered locations.



Chapter 1 / Section 2: NS3-M3U4C1S2 – Nautical Measurements

Relative Bearing of a point is calculated with respect to the North or South Cardinal points.

For each of the following, write what the true bearing value is to its conventional bearing.

1. N 10° W _____

2. W _____

3. S 45° W _____

4. N 60° E _____

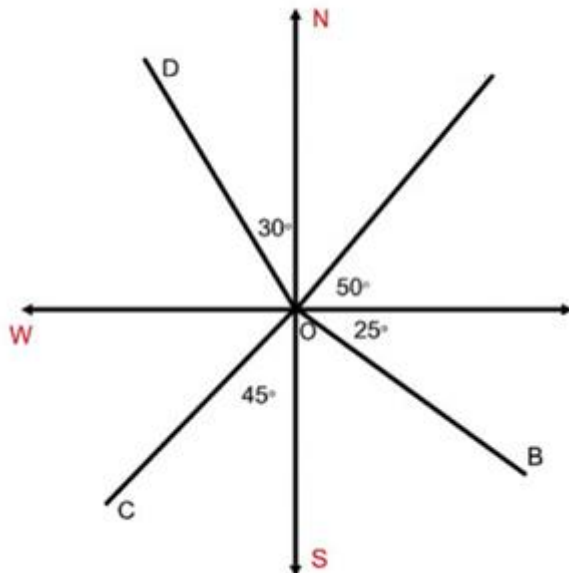
5. S _____

6. N 45° E _____

7. N 60° W _____

True Bearing	Conventional Bearing
0 to 90	N [Bearing Value] $^\circ$ E
90 to 180	S [180 – Bearing Value] $^\circ$ E
180 to 270	S [Bearing Value – 180] $^\circ$ W
270 to 360	N [360 – Bearing Value] $^\circ$ W

Using the picture below, answer the following questions:



1. What is the true bearing of point B?
2. What is the true bearing of point C?
3. What is the true bearing of point D?

Chapter 1 / Section 2: NS3-M3U4C1S2 – Nautical Measurements

Activity 1: Take Home Activity – Converting Problems

Name: _____ Date: _____ Class: _____

Directions: Write five problems (like the ones done in class) converting true bearing to conventional bearing and vice versa. Your problems will be given to another cadet to solve. And you will be solving a sheet of problems from an additional cadet.

Chapter 1 / Section 3: NS3-M3U4C1S3 – Nautical Charts

(Section 3 of 4)

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Explain the use of nautical charts
2. Describe how Mercator projection is used by navigators
3. Explain the purpose for the basic types of nautical charts
4. Describe how courses, bearings and lines of position are plotted on a nautical chart

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Nautical Charts (A)	Video Nautical Charts	Nautical Charts (B)
Check On Learning A	Plotting	Check on Learning B	Fixes and Lines of Position	Video Fixes and Lines of Position	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 4, Chapter 1. Place a checkmark beside the NS3-M3U4C1S3 PowerPoint presentation, and these two CPS question deck files: NS3-M3U4C1S3 - Key Terms and NS3-M3U4C1S3 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 3: NS3-M3U4C1S3 – Nautical Charts

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the use of nautical charts. We will learn how the Mercator projection is used by navigators. We will discuss the purpose for the basic types of nautical charts. Finally, we will learn how courses, bearings, and lines of position are plotted on a nautical chart.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Based on your existing knowledge, what types of tools or devices would be useful in plotting a course at sea?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on nautical charts.	9
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	10
Nautical Charts	Explain that a nautical chart is a standardized drawing representing part of the navigable waters of the Earth.	11
Video on Nautical Charts	Show video on nautical charts.	12
Nautical Charts	Explain that hydrography is the science of measurement, description, and mapping of the Earth’s surface waters, with special reference to their use for navigation. Charts display water features such as depth and overhead obstructions, and they have symbols representing navigational aids such as buoys, lights, and anchorages.	13-14
Nautical Charts	Explain that The globe is a spherical, three-dimensional (length, width, and height) object, but it is not practical to work navigation problems or chart courses on a round surface. It is necessary, therefore, to convert the round surface of the globe to one that is flat and two-dimensional (having only length and width) —in short, a flat piece of paper on which a chart is drawn.	15

Chapter 1 / Section 3: NS3-M3U4C1S3 – Nautical Charts

Nautical Charts	Explain that cartographers (map and chart makers) have used math to work out chart projection techniques. These techniques make it possible to create charts with a minimum of distortion from the actual spherical globe.	16
Nautical Charts	Explain that it is necessary to convert the round surface of the globe to one that is flat and two-dimensional (having only length and width) – to a flat piece of paper on which a chart is drawn. A chart projection is a flat surface representative of the Earth.	17-18
Nautical Charts	Explain that the best-known map or chart projection is called the Mercator projection. It is the one your teachers generally use to locate geographic place when they display maps in the classroom.	19
Nautical Charts	Explain that a conformal projection like the Mercator Projection, is a projection on which any rhumb line is shown as a straight line. A rhumb line is a line which cuts every meridian at the same angle. It is used chiefly in navigation, though the scale varies with latitude and aerial size and the shape of large areas are greatly distorted near the limits of the map	20
Nautical Charts	Explain that the mercator projection is commonly used for navigational charts. It was developed by a Dutch cartographer, Gerardus Mercator, in the 1500s. It is the most widely used of all chart projections for navigation. In this projection, the spherical globe is projected onto a cylinder-shaped piece of paper, wrapped around the globe at the equator. Then, the cylindrical paper is spread flat, after cutting it at convenient meridians. A Mercator projection of the world, for instance, is usually cut vertically near the International Date Line so the continental land areas are shown almost unbroken.	21
Nautical Charts	Explain that because of the method of projection, increasing distortion occurs the farther the area on the Mercator chart is from the equator. Distortion is the state of being twisted awry or out of shape; to be crooked or deformed.	22
Nautical Charts	Explain that the scale of a chart refers to a measurement of distance. It is a comparison of the actual distance or size of a feature with that shown on the chart. The scale of a chart or map is normally printed near the legend in the form of a ratio, such as 1:5,000 (meaning that the feature shown is actually 5,000 times larger than its size on the chart). Said in another way, an inch or centimeter or other measurement on the chart represents 5,000 identical units on the real Earth's surface. The smaller the ratio, the smaller the scale of the chart. A chart with a scale of 1:5,000 is on a much larger scale than one whose scale is 1:4,500,000, for example. Small scales are used to depict large areas on a chart, and large scales are used to depict small areas.	23-24
Nautical Charts	Explain that Another way of expressing scale, called the numerical scale, is in inches, miles, or kilometers to the nautical mile. This is shown near the legend as a bar scale (linear scale) with both compared measurements shown, one on either side of the bar. By using a pair of dividers, set to the linear scale desired, you can find distances by "walking" the dividers across the chart and using simple arithmetic. For example, if an inch on the chart represents 50 miles, 5 inches would represent 250 miles.	25
Nautical Charts	Explain to remember, the larger the scale, the smaller the area shown on a given chart or map. Large-scale charts show areas in greater detail. Features that appear on a large-scale chart may not show up at all on a small-scale chart of the same area. As an example, a large scale map of your city or town shows more detail than a small scale map of your state."	26

Chapter 1 / Section 3: NS3-M3U4C1S3 – Nautical Charts

Nautical Charts	Explain that nautical charts, as described above, are those with the necessary information for safe navigation. They have standard symbols, figures, and abbreviations that tell the depth of water, type of bottom, location of navigational aids, and so forth.	27-28
Nautical Charts	Explain that harbor charts are large-scale charts that show harbors and their approaches in detail. Coastal charts are intermediate-scale charts used to navigate a vessel whose position may be determined by landmarks and lights, buoys, or soundings offshore. For navigating inside outlying reefs or shoals, or well offshore in large bays of sizable inland waterways, a coastal or harbor chart may be used.	29-30
Nautical Charts	Explain that scattered all over water areas of any nautical chart are many tiny numerical figures called soundings, each representing the depth of water in that particular place.	31
Nautical Charts	Explain that general ocean sailing charts are small-scale charts showing the approaches to large areas of the coast. These charts show offshore soundings, principal lights and outer buoys, and any natural landmarks visible at a distance.	32
Nautical Charts	Explain that depths may be given in feet, fathoms (6 feet to 1 fathom), or meters. A notation under the title of the chart is the key; for example, "Soundings in feet at mean low water." Most charts also contain dotted lines called fathom curves, marking the limits of areas of certain depths. Most newer charts will give water depth, heights of lights, and land contours in meters as well as in feet.	33
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	34
Plotting	Explain that in order to use the nautical chart for navigating, you must know something about how courses, bearings, and lines of position are plotted on it. The basic instruments used in plotting are parallel rulers, some kind of protractor, and dividers. The parallel ruler consists of two straightedges connected by pivoted metal straps near each end. The straps allow the two straightedges to be opened and closed, while always remaining parallel to each other. By placing the edge of one straightedge across a compass rose (a graphic used as a reference for both true and magnetic directions on a chart) and "walking" the ruler carefully across the chart to a navigational aid, the true line of bearing to the object may be plotted. Dividers are a plotting instrument used for measuring chart distances along a suitable scale on a chart.	35-36
Plotting	Explain that a protractor does just about the same thing as parallel rulers. A simple protractor consists of a graduated arc on a piece of clear plastic. Another kind of protractor has a ruler that pivots on the center of the curvature of the arc. The protractor's arc is graduated like the upper half of a compass rose. Horizontal and vertical reference lines on the plastic can be lined up with the meridians or parallels, and any course or bearing can be easily plotted by swinging the ruler to the desired degree mark on the arc.	37-39
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	40
Fixes and Lines of Position	Explain that a fix (position) is an accurate position determined without use of any previous position, using visual, electronic, or celestial observation. A line of position (LOP) is a line indicating a series of possible positions of a ship as a result of observation or measurement.	41-42

Chapter 1 / Section 3: NS3-M3U4C1S3 – Nautical Charts

Fixes and Lines of Position	Explain that lines corresponding to the bearings are plotted on the chart. They are labeled with the 4-digit time of observation above the line. A visual range refers to two landmarks or navigation aids are observed in line, one behind the other. It is extensively used when navigating in narrow waters such as canals	43-46
Fixes and Lines of Position	Explain that a stadimeter is an optical distance-measuring device that measures angles to determine distance to an object. A sextant is an astronomical instrument used to determine latitude and longitude at sea by measuring angular distances, especially the altitudes of Sun, Moon, and stars.	47-48
Fixes and Lines of Position	Explain that when selecting objects from which to determine lines of position for fixes: <ul style="list-style-type: none"> • Consider the number to be used and the angle of intersection of their lines of position • The closer LOPs come to crossing at right angles, the less error there will be • Have at least three LOPs since each acts as a check on the other • The fix is reliable if all the LOPs cross at a pinpoint or form a very small triangle • If a larger triangle or geometric shape is formed, the fix position is assumed to be in the center 	49-50
Fixes and Lines of Position	Explain that the following are the most commonly used to obtain a fix with these combinations of lines of position: <ul style="list-style-type: none"> • Two or more lines of bearing • A distance arc and a line of bearing • Two or more distance arcs • A visual range and a distance arc • A visual range and a line of bearing • Two simultaneous visual ranges 	51-57
Video on Fixes and Lines of Position	Show video on fixes and lines of position.	58
Review Question	The Review Question is “Name and describe the three basic types of nautical charts.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	59
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	60
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	61

Chapter 1 / Section 3: NS3-M3U4C1S3 – Nautical Charts

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handout for take home activity; Grapefruit(s) sharp knife depending on how you want to do the in class activity

When: The In Class Activity should take place prior to the lesson

- Provide cadet with a grapefruit or have them work as groups by dividing them into a few teams, handout 1 grapefruit per group.
- Challenge the cadets to think of the grapefruit as Earth.
- Identify and mark on the grapefruit the locations of the North Pole and South Pole.
- Then locate the spot that is halfway between the two poles and use a marker to draw a line around the Earth at that point, which geographers refer to as the equator.
- Draw a few lines of longitude on the map.
- Then draw shapes to represent the continents on Earth.
- Use a knife to pierce the skin of the grapefruit, then using their fingers get under the skin and peel it off the grapefruit. Try to keep as much of the "globe" intact as possible.

*Clearly you may not want to provide each student with a grapefruit and knife due to cost or school safety policies, but the instructor could do this with the class and have it be an effective demonstration of why making flat maps to represent a round world has many challenges. This should lead to a discussion about map projections and the compromises of shape or size.

This activity comes from <http://www.csmonitor.com/2005/0802/p13s01-bogn.html>.

B. Take Home Activity: Using the handout “ Nautical Charts”, cadets will make a chart showing the 3 main types of nautical charts and characteristics of each using text and images.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 3: NS3-M3U4C1S3 – Nautical Charts

Activity 1: Take Home Activity – Nautical Charts

Name: _____ Date: _____ Class: _____

Directions: Make a chart showing the 3 main types of nautical charts and characteristics of each using text and images.

Chapter 1 / Section 4: NS3-M3U4C1S4 – Piloting

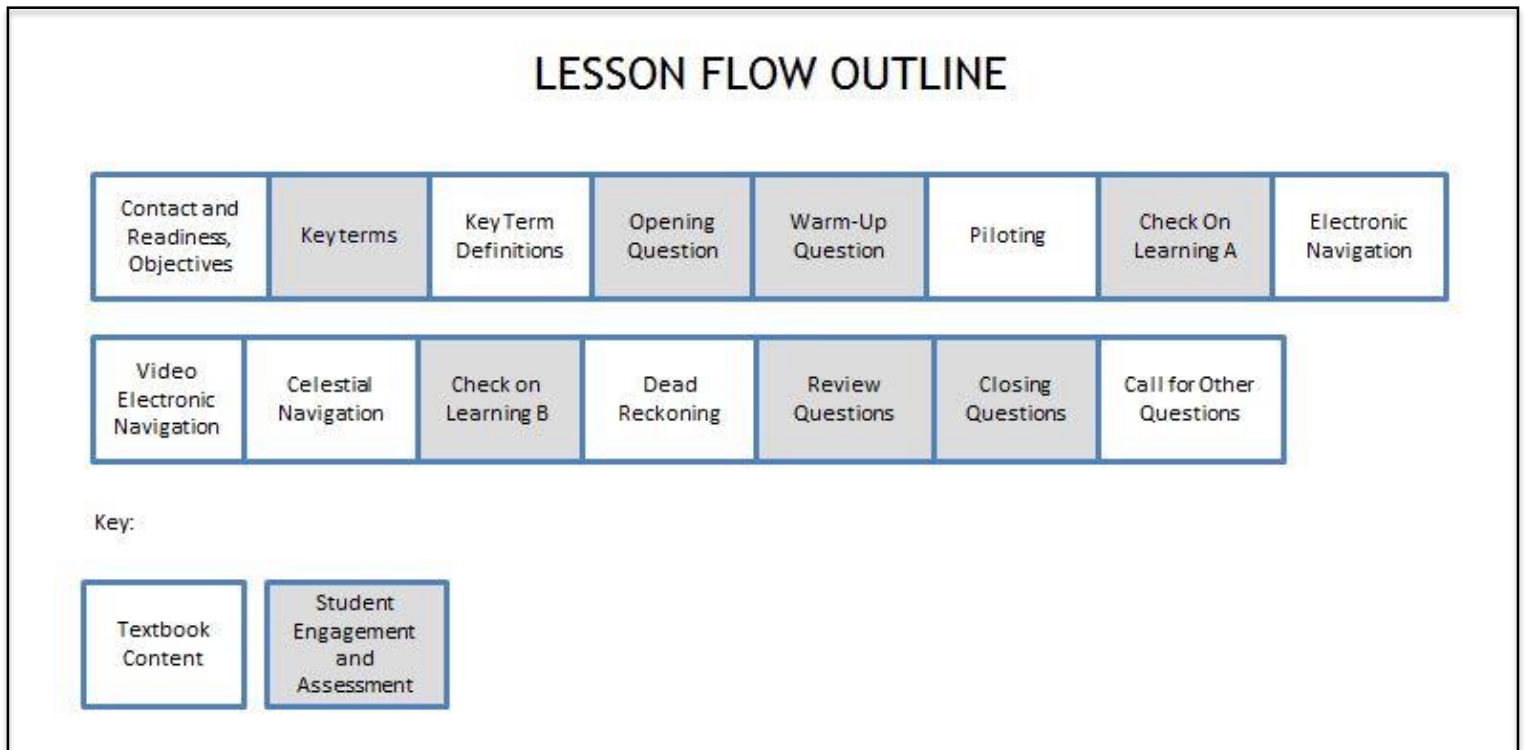
(Section 4 of 4)

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Describe the navigational equipment and other means used to pilot a ship



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 4, Chapter 1. Place a checkmark beside the NS3-M3U4C1S4 PowerPoint presentation, and these two CPS question deck files: NS3-M3U4C1S4 - Key Terms and NS3-M3U4C1S4 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 4: NS3-M3U4C1S4 – Piloting

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the different types of navigational equipment used to pilot a ship. This includes such tools as radar, fathometer, loran, etc.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Based on your existing knowledge, name or describe different types of navigation aids used by the U.S. Navy.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on piloting.	7
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	8
Piloting	Explain that piloting means determining position and directing the movements of a ship by using landmarks, constructed navigational aids, and water depth readings made by a fathometer, described below. Piloting is the primary means of navigation when entering or leaving port and in coastal navigation. In piloting, the navigator gives warnings of danger (rocks, shoal water, wrecks, etc.), fixes the ship's position frequently and accurately on the basis of sightings taken of aids and land features, and recommends what course to take to the commanding officer and conning officer.	9-10
Piloting	Explain that navigational equipment used in piloting includes the compass, to determine the ship's heading; a speed log, either mechanical or electronic, to indicate ship’s speed; the bearing circle, to determine the direction of land features, buoys, and so on; charts, which show the outlines of the shore, as well as the position of land and seamarks, aids to navigation and the depths of water; various electronic devices; and various plotting instruments like parallel rulers and dividers.	11
Piloting	Explain that also used is the fathometer, or echo sounder, which determines the depth of water under the ship's keel by measuring the time it takes a sound signal to reach the bottom and return to the ship. SONAR is a method for determining the distance between a point and the position of a sound source by measuring the time lapse between the origin of the sound and its arrival at the point. These operate on the basis	12-15

Chapter 1 / Section 4: NS3-M3U4C1S4 – Piloting

	of the fact that sound travels through water at about 4,800 feet per second. (This speed varies with temperature, salinity, and depth but is a good average figure.) A depth finder sends out a sound signal, which bounces off the ocean floor and returns to the ship much like an echo. Then, half the time in seconds required for the sound to make the round trip, multiplied by 4,800, is the distance in feet to the bottom. A fathometer may establish a fix when a navigator has a chart showing accurate bottom contours, but in practice it usually serves as a check.	
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	16
Electronic Navigation	Explain that electronic navigation is a form of piloting using lines of position obtained by the use of radio waves to determine a ship's position. The advantages of navigating by radio waves are several. A ship's position may be fixed electronically in fog or heavy weather when it is impossible to take visual bearings. It can get ranges and bearings from stations or points far beyond what people can see from on board ship. But as marvelous as modern electronics equipment is, it can still malfunction, or its power supplies may fail. It is subject to jamming or destruction in wartime. And even in today's environment of continually decreasing cost for most electronic gear, such equipment is more expensive than most traditional manual navigation equipment. Therefore, even with excellent electronic reception and equipment, the navigator must still be able to make visual and celestial observations to establish the ship's position if necessary.	17
Electronic Navigation	Explain that radar, an acronym derived from the first letter of each word in the phrase "radio detection and ranging," was developed originally as a means for detecting surface ships and aircraft. Later improvements and refinements led to its becoming a valuable electronic navigational device. Its operation is based on the fact that, like sound waves, radio waves are reflected from solid objects. Its great advantage over other means of electronic navigation is that it does not require external transmitting stations. Radar's chief disadvantage, however, is that its maximum range is currently limited to slightly more than line-of-sight. Extensive research has been under way for years to extend radar ranges to distances over the horizon, and some breakthroughs have been made.	18-19
Electronic Navigation	Explain that radar involves sending out a narrow beam of very high frequency radio waves. Upon striking any object in their path, they are reflected and return to the transmitter as "echoes." Exact measurement of the time of return of each yields the distance, or range, to the object. The bearing can be determined by the position of the antenna, which is indicated with a bright line called a sweep on a radarscope. Targets appear as bright spots of light, called pips. The form of scope most often used is the plan position indicator (PPI), which gives a bird's eye view of the area covered by the radar, with the transmitting ship in the center.	21-23
Electronic Navigation	Explain that radar has a number of important advantages as a navigational device. It can be used at night and during periods of low visibility. A fix can be obtained from a single object. It is very accurate and rapid. It can also be used to locate and track other vessels and storms, and thus is important for ship safety.	24-25
Electronic Navigation	Explain that loran is a term derived from the first letters in each word of the term "long range navigation." Loran is a system of radio signals broadcast by groups of transmitting stations of known position. A loran fix is determined by a loran receiver from the intersection of lines of position obtained from these signals.	26-27
Electronic	Explain that because of GPS, loran coverage is no longer available in much of the	28

Chapter 1 / Section 4: NS3-M3U4C1S4 – Piloting

Navigation	world. But in areas it does cover, mostly in and around North America, it is a highly reliable system still used by many, including first-responders to emergencies in places where the weaker GPS signals are not receivable. The Department of Homeland Security has proposed keeping an upgraded enhanced version of the system (eLoran) in operation in the United States as a back-up to GPS, and the British government has proposed the same for areas around the British Isles.	
Electronic Navigation	Explain that the newest electronic navigation system to have been developed is the Global Positioning System (GPS). It consists of a constellation of some twenty-four operational satellites circling the Earth in 10,900-mile-high circular orbits, and their supporting ground stations. The GPS system can provide continuous three-dimensional positioning data on land, sea, and air, accurate to within ± 10 meters everywhere on Earth.	29-30
Electronic Navigation	Explain that the GPS system can yield even better accuracy when corrections to its positioning information are determined by land-based receivers and transmitted to users in the surrounding area. This enhancement is called differential GPS, and it is capable of producing positions accurate to within ± 1 meter. Differential GPS signals are broadcast throughout the United States by transmitters operated by the Coast Guard, and by many foreign governments worldwide.	31
Electronic Navigation	Explain that GPS has revolutionized the practice of navigation. When it became fully operational in 1994, it was at first used for position-finding mainly by mariners and the military. But since then its use has exploded. GPS is now the basis of operation of a wide variety of electronic plotters and high-tech marine navigation systems. It has an amazing variety of civil and commercial applications, including navigation and tracking systems for boats, cars and trucks, aircraft navigation and landing systems, surveying, and much more. Many cell phones and laptop computers now come equipped with GPS-based navigational systems for personal use. In addition to position-finding, military applications now include hands-off control of aircraft and ground vehicles, and guidance systems for many of today's precision weapons, cruise missiles, and UAVs. Even more innovative uses of its capabilities are sure to be developed during the coming years.	32-34
Electronic Navigation	Explain that SINS is mainly a navigational aid for submarines and aircraft carriers, although modern more compact models are coming into use in smaller vessels, AUVs, land vehicles, and aircraft. In essence SINS uses highly precise gyroscopes along with a computer to track the platform's motion with great accuracy. It is a completely self-contained system, so it would be an especially valuable wartime navigation aid.	35
Electronic Navigation	Explain that SINS produces extremely accurate and continuous dead reckoning positions from the last good fix position. The DR positions can be displayed on an electronic chart, along with the desired track. Although most SINS systems are routinely updated every few hours using external systems such as GPS, they can maintain accurate positioning information without such updates for up to seven to ten days or more. This makes them ideal for use in submerged submarines when GPS signals cannot be received, such as when cruising under Arctic ice, or on extended submerged patrols.	36-37
Video on Electronic Navigation	Show video on electronic navigation.	38
Celestial Navigation	Explain that piloting, dead reckoning, and electronic navigation systems determine position by reference to objects or localities on the Earth or in near-Earth space. The remaining branch of navigation, in which position is determined by the aid of heavenly bodies such as the Sun, Moon, and selected stars and planets, is called celestial	39-40

Chapter 1 / Section 4: NS3-M3U4C1S4 – Piloting

	navigation. A precise altitude observation of any of these celestial bodies yields an accurate line of position. Navigation by such lines of position has been the key to navigating on the oceans for much of the past two hundred years. The widespread availability of GPS in recent years, however, is fast making celestial navigation at sea a vanishing art.	
Celestial Navigation	Explain that the instrument used in celestial navigation to measure the angle (altitude) between a heavenly body and the visible horizon is the sextant. After finding the altitude of several bodies, or of a single body like the Sun over an extended time period, the navigator can work out the ship's position using various almanacs, tables, and sight reduction forms or electronic calculator or computer.	41-42
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	43
Dead Reckoning	Explain that when a ship is out of sight of land, or electronic navigation is not available and bad weather prevents taking celestial observations, the ship must be navigated by dead reckoning. Dead reckoning means determining a position from the direction and distance theoretically traveled from a known starting point, normally the last good fix.	44-45
Dead Reckoning	Explain that in dead reckoning, a line called a course line is drawn on a nautical chart from every new fix in the direction in which the ship is proceeding. Set is the direction in which a ship is forced by wind and current. Drift is the speed of that force in knots. The direction, or course, is labeled above the line, and speed in knots below the line. To find the 1300 DR position, use dividers to measure 15 minutes of latitude on the vertical latitude scale printed on the side of the chart.	46-56
Dead Reckoning	Explain that plotting a ship's DR track from one fix to the next is a continuous process while under way. A constant check on approximate position helps the navigator to locate an assumed position for celestial observations reasonably close to the ship's actual position. At sea, navigators using celestial navigation will obtain and plot fixes at least every morning, noon, and evening. In piloting waters, the navigator and quartermasters will normally be on the bridge plotting numerous fixes as often as every three minutes whenever usable navigation aids come into sight.	57-59
Dead Reckoning	Explain that currently, electronic plotters incorporate continuous fix updates received from GPS, then project current ship's position and the DR track onto an electronic chart projection on a computer screen.	60
Review Question	The Review Question is "Describe some military applications and uses of GPS navigation systems." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	61
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	62
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	63

Chapter 1 / Section 4: NS3-M3U4C1S4 – Piloting

III. Supplemental Activities –

A. In Class Activity:

Supplies required: Whiteboard or Mobi Tablet for brainstorming; handout for take home activity

When: This activity will be done as a warm up activity

- In Class: Cadets will brainstorm ways they use navigational tools in their everyday lives. Examples: Compass, Maps apps on phone, atlas, road map, watches, GPS, weather radar, sun, moon, etc. (depending on where they live other items could be included such as buoys, lights, etc.)
- Now ask them to brainstorm what they think the Navy uses as navigational tools. Are any of these items the same?

B. Take Home Activity: Using the handout “GPS System”, cadets will design an application for a GPS system. They will draw a picture of what this application will look like. An explanation will be included describing how the GPS is used, how it works, where the GPS is located, other equipment that might be required, and how people interact with this application. (For example, a tractor that plows the fields by itself using a GPS system.)

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 4: NS3-M3U4C1S4 – Piloting

Activity 1: Take Home Activity – GPS System

Name: _____ Date: _____ Class: _____

Directions: You will design an application for a GPS system. Draw a picture of what this application will look like. An explanation will be included describing how the GPS is used, how it works, where the GPS is located, other equipment that might be required, and how people interact with this application. (For example, a tractor that plows the fields by itself using a GPS system)

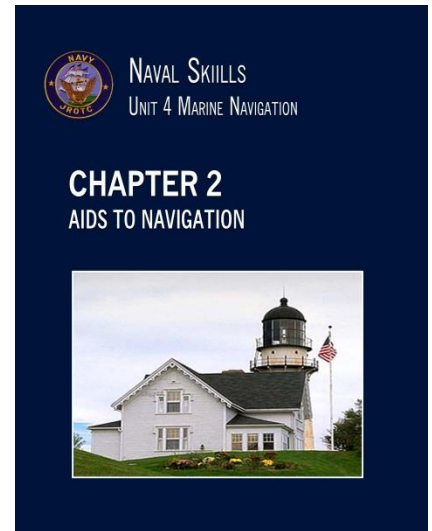
Module 3 Unit 4 Chapter 2: NS3-M3U4C2 – Aids to Navigation

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Specify three principal characteristics of navigational lights
2. Explain the purpose of lighthouses and light towers
3. Describe the types of buoys used along waterways
4. Describe how daybeacons and ranges are used as navigational aids
5. Define the U.S. Intracoastal Waterway
6. Describe the publication Nautical Chart Symbols, Abbreviations, and Terms, Chart No. 1



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.7. Conduct short as well as more sustained research projects to answer a question or solve a problem...
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.5. Make strategic use of digital media...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

Module 3 Unit 4 Chapter 2: NS3-M3U4C2 – Aids to Navigation

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 2 / Section 1: NS3-M3U4C2S1 –Navigational Lights

(Section 1 of 2)

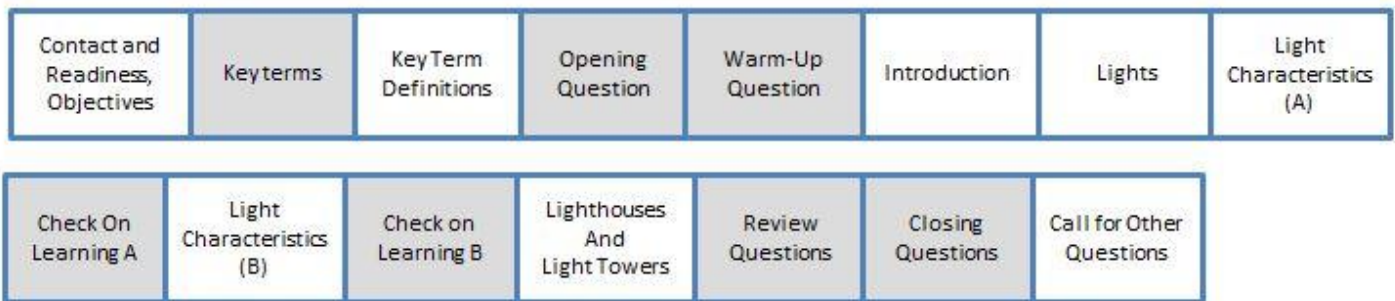
What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

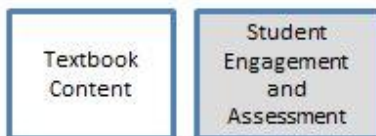
Skills and Knowledge to be Gained:

1. Specify three principal characteristics of navigational lights
2. Explain the purpose of lighthouses and light towers

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 4, Chapter 2. Place a checkmark beside the NS3-M3U4C2S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U4C2S1 - Key Terms and NS3-M3U4C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 1: NS3-M3U4C2S1 –Navigational Lights

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the principal characteristics of navigational lights. We will also learn about the purpose of lighthouses and light towers.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Explain the need for lighthouses along the shore of the U.S.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on navigational aids.	6
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	7
Introduction	Explain that ‘piloting’ is one branch of Marine navigation. In traditional piloting, a ship's position is mostly determined by bearings taken on visible objects whose exact locations are shown on a chart. Some of these objects may be natural landmarks, such as hills, rocks, islands, or cliffs. Others may be large buildings, smokestacks, television towers, church steeples, and so on, located close to shore where they can be easily spotted by navigators.	8
Introduction	Explain that most aids to navigation, though, are especially constructed to assist in the safe navigation of vessels. These include lighthouses, light towers, navigation lights, buoys, and daybeacons. Most harbors and high-traveled coasts are well marked with these aids to navigation. Elsewhere, these kinds of aids may or may not be present to assist the navigator. When specially constructed aids are not available or when they become inoperative or out of position, natural landmarks must be used.	9
Lights	Explain that vessels under way operate at night as well as by day. Therefore, navigation lights are important aids to night navigation. These lights are identified primarily by their color, pattern of flashes, and timing interval (period). Of these, the timing interval is considered the most valuable for identification purposes, since that is least likely to be confused if several navigational lights are present in a given area. These identifying attributes, together with height and nominal visibility, are usually printed in abbreviated form near the light symbol on the nautical chart. Other details	10-12

Chapter 2 / Section 1: NS3-M3U4C2S1 –Navigational Lights

	are set forth in publications called 'light lists' that are available for purchase in most nautical supply stores.	
Light Characteristics	Explain that there are three general patterns of flashes, called characteristics, of navigational lights. These patterns of flashes are called fixed, flashing, and occulting. Fixed lights burn steadily. Flashing lights show single flashes of light at regular intervals with the duration of light less than the duration of darkness. There are variations of these called fixed and flashing, with the fixed light intensifying at intervals with two or more bright flashes; and group flashing, in which two or more groups of flashes are shown at regular intervals.	13-15
Light Characteristics	Explain that occulting lights are completely off at regular intervals with the duration of light always being greater than the duration of darkness. Group occulting lights have two or more off periods at regular intervals.	16-17
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4 with follow-up discussion as appropriate.	18
Light Characteristics	Explain that variations of these principal light characteristics include equal intervals, in which the duration of light equals that of darkness; Morse code, where the light flashes represent a Morse code character (usually the letter A); and alternating, in which rhythmic lights show different colors during each sequence.	19-22
Light Characteristics	Explain that the visibility of a light is the distance in nautical miles a mariner can see the light at night. The distance at which a given navigation light may be seen depends on its intensity and height above sea level, the height of eye of the observer, and the existing meteorological visibility conditions (weather). This charted range is the distance a light will shine in clear weather and is about the distance a Mariner in a small boat can usually expect to see the light.	23-26
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6 with follow-up discussion as appropriate.	27
Lighthouses and Light Towers	Explain that there are many lighthouses along the coasts of the United States and the Great Lakes and along many interior waterways. They are placed wherever a powerful light, called a primary light, may be of assistance to navigators, or where very dangerous water requires a warning beacon of long-range visibility. Since the range of visibility of a light increases with its height, the main purpose of a lighthouse is to increase the height of a light above sea level.	28-30
Lighthouses and Light Towers	Explain that a lighthouse may have fog-signaling and radio-beacon equipment in addition to the light itself. At one time, most such lights were run by keepers who lived at the lighthouse. Now, however, the lights in lighthouses are mostly automatic, with no keepers required. The towers of lighthouses are usually painted distinctive colors and patterns to make them easier to identify in daylight. These may be solid colors, bands, stripes, or squares.	31
Lighthouses and Light Towers	Explain that at some locations, primary navigation lights are placed atop large structures of girders, painted similarly to lighthouses. Some powerful offshore primary lights are mounted either on large buoys or a tower on stilts embedded in the ocean bottom.	32
Lighthouses and Light Towers	Explain that some lights have sectors of red glass placed in their lanterns to show danger bearings. Danger bearings on a chart show a vessel when it is in danger of running aground on rocks, shoals, or some other hazard. Arcs over which the red light	33-34

Chapter 2 / Section 1: NS3-M3U4C2S1 –Navigational Lights

	shows are the danger sectors. The red color shows only within the danger zone; other light characteristics remain the same. Some lights also show a green sector, which indicates a turning point or the best water across a shoal. All sector bearings are true bearings to the light.	
Review Question	The Review Question is, “Describe the three principal characteristics of navigational lights.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement and to foster discussion.	35
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	36
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	37

III. Supplemental Activities -

A. In Class Activity:

Supplies required: handouts for in class and take home activities

When: The In Class Activity will take place before, during and after the lesson per the instructions below.

- Using the handout “ Lighthouses”, cadets will make a K-W-L chart about lighthouses prior to the lesson. They will record what they KNOW, what they WANT to know prior to the lesson. Cadets record what they LEARN about lighthouses throughout the lesson. When the lesson is complete, a class discussion should take place about what cadets still want to know about lighthouses after the lesson is over.

B. Take Home Activity: Distribute handout “ Lighthouse Brochure” with directions for this activity. Cadets will create an information brochure on lighthouses including an explanation of lighthouses and light towers as well as the characteristics of navigational lights. Outside research could also be done and included such as the Pharos light, Fresnel lenses and lighthouse preservations.

Other Resources Cadets may find to be of interest:

- There is a fabulous reading about lighthouses that includes lighthouse vocabulary at: <http://www.nps.gov/apis/forkids/upload/lightcurra.pdf>
- The US Coast Guard has many resources on lighthouses: http://www.uscg.mil/history/h_lhindex.asp
- There is a wonderful list of activities, videos and audio about lighthouses: http://news.bbc.co.uk/local/taysideandcentralscotland/hi/people_and_places/newsid_8677000/8677564.stm

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 1: NS3-M3U4C2S1 –Navigational Lights

Activity 1: In Class Activity- Lighthouses

Name: _____ Date: _____ Class: _____

Directions: They will record what they KNOW, what they WANT to know prior to the lesson.

Cadets record what they LEARN about lighthouses throughout the lesson

K WHAT I ALREADY KNOW	W WHAT I WANT TO KNOW	L WHAT I HAVE LEARNED

Chapter 2 / Section 1: NS3-M3U4C2S1 –Navigational Lights

Activity 1: Take Home Activity – Lighthouse Brochure

Directions: Create an information brochure on lighthouses including an explanation of lighthouses and light towers as well as the characteristics of navigational lights.

Outside research could also be done and included such as the Pharos light, Fresnel lenses and lighthouse preservations.

Resources you may find to be of interest:

- There is a fabulous reading about lighthouses that includes lighthouse vocabulary at:
<http://www.nps.gov/apis/forkids/upload/lightcurra.pdf>
- The US Coast Guard has many resources on lighthouses:
<http://www.uscg.mil/history/h lhindex.asp>
- There is a wonderful list of activities, videos and audio about lighthouses:
http://news.bbc.co.uk/local/taysideandcentralscotland/hi/people_and_places/newsid_867700/8677564.stm

Chapter 2 / Section 2: NS3-M3U4C2S2 – Buoys

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Describe the types of buoys used along waterways
2. Describe how daybeacons and ranges are used as navigational aids
3. Define the U.S. Intracoastal Waterway
4. Describe the publication Nautical Chart Symbols, Abbreviations, and Terms, Chart No. 1

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Warm-Up Question	Buoys	Types Of Buoys	Check On Learning A
Coloring Of Buoys	Check on Learning B	Buoy and Numbering and Lights	Daybeacons and Ranges	Intracoastal Waterway	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 4, Chapter 2. Place a checkmark beside the NS3-M3U4C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U4C2S2 - Key Terms and NS3-M3U4C2S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 2: NS3-M3U4C2S2 – Buoys

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the principal characteristics of navigational lights. We will also learn about the purpose of lighthouses and light towers.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What is the difference between a lighthouse and a light tower?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on navigational aids.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
Buoys	Explain that navigational buoys are moored, floating markers placed to guide ships and boats safely along channels and in and out of ports. Buoys on water are like street signs for motorists on land. They also warn vessels away from hidden dangers and lead them to anchorage areas. They may be of various sizes and shapes, but it is mainly their coloring that indicates their purpose. Buoy symbols are printed on harbor charts, so buoys can be used for determining positions in piloting.	10-14
Buoys	Explain that a system of buoyage called the IALA (International Association of Lighthouse Authorities) System B is used on all navigable waters of the United States. Under this system, the coloring, shape, and lighting of buoys all indicate the direction of danger. These characteristics and the numbering of buoys have been standardized on the basis of what their direction is when coming from seaward. In offshore channels, the lateral buoyage system considers the following directions as coming from seaward in U.S. waters: in a southerly direction along the Atlantic Coast; a northerly and westerly direction along the Gulf Coast; and a northerly direction along the Pacific Coast. All coastal buoys on the right are red, even-numbered buoys when proceeding in those directions. Left-hand buoys are green and are marked with odd numbers.	15-16

Chapter 2 / Section 2: NS3-M3U4C2S2 – Buoys

Buoys	<p>Explain that Intracoastal Waterway is:</p> <ul style="list-style-type: none"> • A mostly inland water route • Partly natural and partly artificial • Extending 1550 miles(2500 km) along the Atlantic coast from Boston to Florida Bay (Atlantic Intracoastal) • Extending 1116 miles (1800 km) along the Gulf coast from Carrabelle, FL to Brownsville TX 	17
Types of Buoys	<p>Explain that a buoy's type has no special navigational significance but can help identify it. There are eight main types of buoys used in U.S. inland waters, described as follows:</p> <ul style="list-style-type: none"> • Spar buoys are upright wooden poles, or tubes of steel, which are often used to mark obstructions. • A can buoy is shaped like a cylinder, much like an oil drum. If unlighted, green left-hand channel buoys must be can buoys. • A nun buoy has a conical shape. If unlighted, red right-hand channel buoys must be nun buoys. • A bell buoy has a framework supporting a bell. Older bell buoys are sounded by the motion of the sea. Newer types are operated automatically by compressed gas or electricity. • A whistle, or horn buoy is similar to a bell buoy in shape but it carries a whistle sounded by the sea's motion or horns that are sounded at regular intervals by mechanical or electrical means. • A gong buoy is also similar to a bell buoy in shape but it has a series of gongs, each with a different tone, with hammers that are moved by the motion of the sea. • A lighted buoy carries batteries or gas tanks and has a framework that supports a light. • A combination buoy is one in which a light and sound signal are combined, such as a lighted bell, gong, or whistle buoy. 	18-26
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	27
Coloring of Buoys	<p>Explain that as stated previously, in the inland waters of the United States, red buoys mark the right side of a channel, and green buoys the left side, coming from seaward. Of great help in remembering this placement of buoys is the jingle "red-right-returning." Unlighted red channel buoys are always cone-shaped nun buoys. Unlighted green channel buoys are always can buoys.</p>	28-29
Coloring of Buoys	<p>Explain that green and red horizontally banded buoys, called preferred-channel buoys, mark obstructions or channel junctions. They may be passed on either side, but it is wise to give them a wide berth. If the top band on a preferred-channel buoy is red, the best channel is to the left of the buoy, coming from seaward. If the top band is green, the preferred channel is to the right.</p>	30
Coloring of Buoys	<p>Explain that red and white vertically striped buoys, called safe-water buoys, mark the middle of a channel or fairway.</p>	31
Coloring of Buoys	<p>Explain that some special buoys are not meant to be used for navigation. White-painted buoys, for instance, mark anchorage areas. Buoys with black and white horizontal stripes are sometimes used to mark fish trap areas. A white buoy with a green top usually designates a dredging area. A yellow buoy signifies a quarantine</p>	32-34

Chapter 2 / Section 2: NS3-M3U4C2S2 – Buoys

	anchorage, where ships go to await customs clearance. Cylindrical white buoys with orange markings are informational buoys marking restricted areas, speed limits, and the like. Solid green and solid red buoys are usually found in pairs	
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	35
Buoy and Numbering and Lights	Explain that red buoys marking the right side of a channel bear even numbers, starting with the first buoy from seaward. Green channel buoys, to the left of the channel coming from seaward, have odd numbers. Banded or striped buoys are not numbered but some have letters identifying the name of the buoy, such as Governors Island West End Shoal Bell Buoy (GI) and East Rockaway Inlet Bell Buoy (ER). Red lights are used only on red channel buoys. Green lights are only for green channel buoys. White lights are the only lights used on preferred-channel (junction) or safe-water (mid-channel) buoys.	36-37
Buoy and Numbering and Lights	Explain that the characteristics of lights on lighted buoys are as follows: <ol style="list-style-type: none"> 1. A fixed light may be on either a green or a red channel buoy. 2. A flashing light, at regular intervals, not more than thirty flashes per minute, may also be on either a green or red buoy. 3. A quick-flashing light, no fewer than sixty flashes per minute, may be on either a green or red buoy at a turning point or junction where special caution is required. 4. An interrupted quick-flashing light (repeated series of quick flashes, separated by four-second dark intervals) may be on a red and green horizontally banded preferred-channel buoy. 5. A Morse A flashing light (short and a long flash, recurring at the rate of about eight per minute) may be on a red and white vertically striped safe-water buoy. 	38-39
Daybeacons and Ranges	Explain that unlighted structural aids to navigation are called daybeacons. A daybeacon may consist of a single wooden pile, or dolphin, with a square or triangular daymark shape on top of it, a metal or concrete tower supporting a daymark, or other similar structures. They are colored to distinguish them from their surroundings. Daymarks on beacons marking channels are colored and numbered like channel buoys. Those on the right coming from seaward are triangular, and those on the left are square. Many have reflectors that show the same colors as lighted buoys would at night.	40
Daybeacons and Ranges	Explain that two daybeacons, located some distance apart on a specific true bearing, make up a daybeacon range. When a ship reaches a position where the two beacons are seen exactly in line, the ship is "on the range." Ranges are valuable for pilots and conning officers who must guide ships along narrow channels. For example, much steering through the Panama Canal is done on ranges. Similarly, ranges are used often on the Columbia River in the Pacific Northwest.	41
Intercoastal Waterway	Explain that the U.S. Intracoastal Waterway is an inland channel in which a light-draft vessel can navigate along the U.S. East Coast from the Chesapeake Bay almost to the Mexican border without going into the ocean. The ship can remain inside natural or artificial breakwaters for almost the entire length of the trip.	42
Intercoastal Waterway	Explain that every buoy, daymark, or light structure along the Intracoastal Waterway has part of its surface painted yellow. Buoys have a yellow band at the top. Daybeacons and other structures have a band or border of yellow. Red buoys and daybeacons are to the right, and green to the left, as one proceeds from the	43-44

Chapter 2 / Section 2: NS3-M3U4C2S2 – Buoys

	Chesapeake Bay toward Mexico. Standard colors, numbers, and lights are used with buoys in the waterway. Because the numbers would become large in such a long line of buoys, they are numbered in groups of about two hundred, starting again at "1" at natural dividing points.	
Review Question	The Review Question is, "List the attributes of an ideal night navigation aid." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	45
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	46
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	47

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handout for in class activity

When: This activity can be done before, during or after the lesson.

- In Class: Cadets will take the buoy quiz as either an anticipatory set to the lesson or as an assessment of the lesson. If done as a pre-assessment, cadets should go through quiz as the lesson progresses and make any necessary changes to wrong answers as they go.
- Answer Key:

T/F	Matching	Short Answer
1. F	1. D	1. Dredging
2. T	2. A	2. Quarantine Anchorage
3. F	3. G	3. Danger
4. T	4. B	4. Diver Below
5. T	5. E	5. Boats Keep Out
6. F	6. F	
7. F	7. H	
8. T	8. C	
9. F		
10. F		
11. T		
12. F		

B. Take Home Activity: Cadets will create an informational brochure on buoys detailing what a variety of buoys mean to boaters.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 2: NS3-M3U4C2S2 – Buoys

Activity 1: In Class Activity- Buoy Quiz

Name: _____ Date: _____ Class: _____

True/False: Decide if the statement is true or false. Circle the T if you believe that the statement is true, and F if you think that the statement is false.

1. **T or F** All buoys look alike and mean the same thing.
2. **T or F** A nun buoy has the shape of a cone.
3. **T or F** A buoy's shape is more meaningful than their color.
4. **T or F** It is important to know a buoy's symbol.
5. **T or F** Port refers to the left side of a vessel.
6. **T or F** The right side of a vessel is called stargazing.
7. **T or F** If a ship is returning to port, buoys on the left will be red.
8. **T or F** It is possible to travel from the East Coast of the United States to Mexico by boat without ever going into the ocean.
9. **T or F** Daybeacons are lit up navigational aids use for visibility during the day on the water.
10. **T or F** Yellow lights are used for safe-water buoys.
11. **T or F** Typically, solid green and solid red buoys are found in pairs.
12. **T or F** Safe-water buoys mark the end of a channel or airway.

Matching: Match the items in the right hand column with the best answer from the left hand column

- | | |
|-----------------------|---|
| _____ 1. Spar | A. Unlit green, left hand channel buoys |
| _____ 2. Can | B. Gas or electricity are used to make a sound |
| _____ 3. Nun | C. May have a light and a sound |
| _____ 4. Bell | D. Used to mark obstructions |
| _____ 5. Whistle/horn | E. Sounded at regular intervals |
| _____ 6. Gong | F. Uses different tones set in motion by the rocking of the sea |
| _____ 7. Lighted | G. Unlit, red, right handed channel buoy |
| _____ 8. Combo | H. Carries batteries or gas tank |

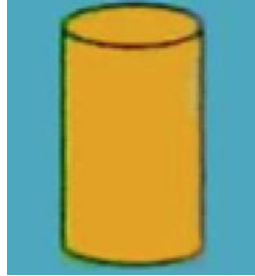
Chapter 2 / Section 2: NS3-M3U4C2S2 – Buoys

Short Answer: Next to picture, write what you think is the meaning of that buoy.

1.



2.



3.



4.



5.



Module 3 Unit 4 Chapter 3: NS3-M3U4C3 – Time and Navigation

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Describe the basic timekeeping instruments used in the U.S. Navy
2. Explain how time is indicated in the military services
3. Describe the purpose of the ship's bell system on board a Navy vessel
4. Describe the arc theory in relation to measuring time
5. Describe the various kinds of time
6. Describe the aspects of the date/time group

Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text..
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- W.11-12.5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach...

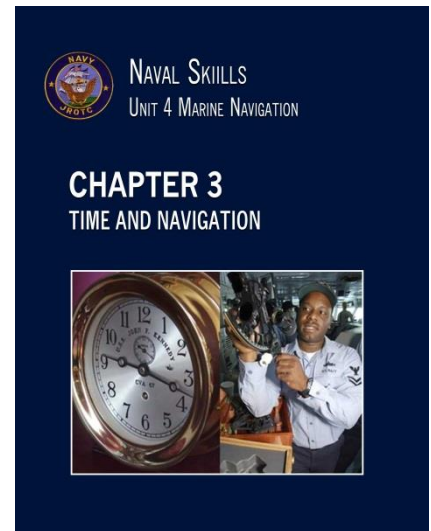
Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor's Guide.



Chapter 3 / Section 1: NS3-M3U4C3S1 – Time and Time Pieces

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Describe the basic timekeeping instruments used in the U.S. Navy
2. Explain how time is indicated in the military services
3. Describe the purpose of the ship's bell system on board a Navy vessel
4. Describe the arc theory in relation to measuring time

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	KeyTerm Definitions	Opening Question	Warm-Up Question	Introduction	Time And Timepieces	Check On Learning A
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Military Time	Ship's Bell Time (A)	Video Ship's Bell Time	Ship's Bell Time (B)	Time And Arc	Check on Learning B	Lighthouses And Light Towers	Review Questions
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Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 4, Chapter 3. Place a checkmark beside the NS3-M3U4C3S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U4C3S1 - Key Terms and NS3-M3U4C3S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 3 / Section 1: NS3-M3U4C3S1 – Time and Time Pieces

II. Instructional Flow:

Flow Item	Textbook Content / Student Engagement and Assessment	Slides
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the basic instruments used by the U.S. Navy in timekeeping. We will learn how time is indicated in the military service. We will learn about the purpose of the ship’s bell system on board a Navy vessel. Lastly, we will learn about the arc theory and its relationship to measuring time.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “In what ways can the accuracy of time be important to a ship’s crew?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on navigational aids.	7
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	8
Introduction	Explain that you probably have not given much thought to the study of time. The navigator of a ship, however, needs to know the exact time in order to determine the ship's position at sea.	9
Introduction	Explain that if you have ever taken a long plane trip across the country or to Hawaii or Europe, you have felt the effects of time-zone changes. It often takes a day or two to get one's body adjusted to the new time schedule—when to get up, when to eat, when to go to bed. This condition is called jet lag. The term is used to describe the effect of rapid time zone changes on the body, for example, when you take a long east-west plane flight. It occurs because your body is used to reckoning time based on the relationship of the Earth and the sun. As we will see later in this chapter, this means that your day becomes considerably longer if you are traveling in a westerly direction, and shorter if you are traveling easterly.	10-13
Introduction	Explain that in this chapter we will discuss how time is reckoned, the instruments the Navy uses for timekeeping, and how to deal with time-zone changes around the world.	14
Time and Timepieces	Explain that everyone is familiar with watches and clocks. In the Navy, time and timekeeping are of great importance, both because the routine of shipboard life is	15-16

Chapter 3 / Section 1: NS3-M3U4C3S1 – Time and Time Pieces

	often fast-paced, and because time is essential in navigation and operation of the ship. As part of their duties in most Navy ships, every couple of days the Quartermasters check and reset as necessary all ship's clocks to the correct time, so that everyone can be sure they are using an accurate time in their log entries, tactical plots, messages, and all other phases of their daily routine.	
Time and Timepieces	Explain that in addition to the usual types of watches and clocks, there are more specialized timepieces found on board ship. These are called chronometers. A chronometer is an extremely accurate timepiece used in navigation. One device to prevent tilting the clock is a gimbal, which suspends the clock so it will remain horizontal even when its support is tipped.	17-19
Time and Timepieces	Explain that a chronometer is made to withstand shock, vibration, and temperature variation. Years ago ship chronometers were mechanical clocks, but nowadays they are electronic quartz clocks. They are set to Greenwich Mean Time (GMT), the basic time used in fixing position by celestial navigation, and the time used as a reference in all message traffic and many other things aboard ship.	20-21
Time and Timepieces	Explain that Radio stations in Colorado and Hawaii broadcast time signals every five minutes, twenty-four hours per day. Time signals are also obtainable from GPS and Loran. The ship's chronometer is periodically checked against these time signals by the quartermasters. Any error is recorded and the navigator must take the error into consideration during celestial navigation.	22-25
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	26
Military Time	Explain that we all know how to tell time by watches and clocks. We know that the new day begins a fraction of one second after midnight, and concludes twenty-four hours later at midnight. The time between midnight and noon is labeled "A.M."; these letters mean ante meridiem, or before the middle of the day (noon). The time between noon and midnight is labeled "P.M.," meaning post meridiem, or after the middle of the day. We are comfortable with this system of timekeeping in civilian life, because we can simply look out the window, so to speak, to see if it is morning or afternoon. We do not confuse 5:00 in the evening with 5:00 in the morning, to say nothing of 1:00 in the morning and 1:00 in the afternoon.	27-28
Military Time	Explain that it has long been a custom in the Navy and other military services to tell time by the twenty-four-hour clock. There are several reasons for this. It is done to avoid confusion in message communications, all of which are identified by the date and Greenwich Mean Time of transmission. Also, this is a common way to tell time in many European countries, including England, where many of our military customs began. It is also another way to avoid the confusion that might happen if the A.M. or P.M. were accidentally left out of directions or orders.	29-31
Military Time	Explain that so the Navy, and other military services, uses the twenty-four-hour clock. In this way of keeping time, the day begins with a fraction of a second after midnight, 0000 (zero hour), and continues past 0100 (1:00 A.M.) and 0200 (2:00 A.M.) toward noon, 1200. The time after noon continues with 1300 (1:00 P.M.), 1400 (2:00 P.M.), and so forth until 2400, midnight. The terms "o'clock," A.M., or P.M., are not used, nor is a colon used to separate hours from minutes. Rather, we speak in terms of "hundred." For example, 0100 is "zero one hundred," 1000 is "ten hundred," 1800 is "eighteen hundred," and 2130 is "twenty-one thirty." Naval practice does NOT use the term "hours" after the time, as in: "twenty-two hundred hours", although that practice is common in the Army and Air Force. We simply say: "twenty-two hundred.	32-33

Chapter 3 / Section 1: NS3-M3U4C3S1 – Time and Time Pieces

Military Time	<p>Explain that All NJROTC cadets should learn to use the twenty-four-hour clock. Mathematically, it is very easy to figure out; simply add all P.M. time numbers to 1200 (noon). For example, 2:25 P.M. becomes 1425, and 10:30 P.M. is 2230. You should memorize the twenty-four-hour clock so it becomes second nature when telling time:</p> <p>A. 7:00 a.m. 0700 B. 12:30 p.m. 1230 C. 6:50 p.m. 1850 D. 9:15 p.m. 2115 E. 12:01 a.m. 0001</p>	34-35
Ship's Bell Time	<p>Explain that another custom on board ship is to mark the passage of time by bells. Before timepieces such as watches or chronometers were common, time on board ship was reckoned by a so-called hourglass, which ran out its sand from one end to the other every thirty minutes. The glass would then be turned over to start measuring another thirty minutes and a bell would be struck so all hands would know a half hour had passed. It was struck once at the end of the first half-hour of each four-hour watch, twice at the end of the second, and so on, until eight bells were struck at the end of the fourth hour. After eight bells were struck, the series started over again.</p>	36-37
Ship's Bell Time	<p>Explain that the practice still continues on board some Navy ships, in spite of the use of clocks and watches. The bells are rung in pairs, that is, if there are two or more bells to be rung, they are rung closer together than the odd bell. For example, five bells would sound like "ding-ding, ding-ding, ding." An odd number of bells marks half past the hour, and an even number marks an hour.</p>	38
Video on Ship's Bell Time	<p>Show video on ship's bell time.</p>	39
Ship's Bell Time	<p>Explain that when used, bells are rung only from reveille to taps, but not during divine services or when fog requires that the bell be used as a fog signal. The first and second dog watches straddle the time when the evening meal is traditionally served.</p>	40-45
Check on Learning Questions B (Lesson questions 5-6)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.</p>	46
Time and Arc	<p>Explain that based on observation alone, the sun appears to circle the Earth. From ancient times to the present, people have reckoned time according to the travel of the sun once around the Earth each day. Of course, since the time of the medieval astronomer Copernicus in the sixteenth century, we have known that it is really the Earth's rotation that makes the sun seem to move. But for navigation, and to make it easier for us to understand how time works, it is often helpful to imagine the Earth as standing still at the center of the universe, with the sun, as well as all the other celestial bodies, moving around the Earth.</p>	47-49
Time and Arc	<p>Explain that the Sun thus appears to make one complete 360-degree revolution around the Earth during each twenty-four-hour day. Actually, as we will see below, on any specific day during the year it will usually take a few minutes more or less than twenty-four hours for the Sun to complete its journey. But on the average over a year, we can say that it takes exactly twenty-four hours.</p>	50
Time and Arc	<p>Explain that because the sun goes 360 degrees around the Earth in twenty-four hours on the average, we can say that there is a definite relationship between arc as measured in an east-west direction on the surface of the Earth (which we saw in the first chapter in this unit is longitude) and time. If we divide 360 degrees of arc around</p>	51-54

Chapter 3 / Section 1: NS3-M3U4C3S1 – Time and Time Pieces

	the Earth, or longitude, by twenty-four hours, we see that it takes the sun one hour to go 15 degrees of arc, or longitude. And, since it travels 15 degrees in one hour, the sun must go 1 degree (60 minutes of arc) in 4 minutes ($1/15 \times 60 \text{ minutes} = 4 \text{ minutes}$). Thus, 1 degree of longitude can be thought of as being equivalent to four minutes of time. This relationship is of basic importance both in navigation and in keeping time.	
Review Question	The Review Question is, “In time-arc relationships, how many degrees equal 4 minutes, 1 hour, and a day?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	55
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson with follow-up reinforcement and discussion as appropriate.	56
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	57

III. Supplemental Activities -

A. In Class Activity:

Supplies required: TIMEO Handout

When: The In Class activity can take place at any time during the lesson.

- Cadets will fill out the Timeo Card according to the instructions. The class will then play various games of Timeo while Cadets practice converting civilian time to military time.
- Project these times on the board and have cadets put them into their TIMEO card in any of the squares.

0100	0200	0300	0400
0500	0600	0700	0800
0900	1000	1100	1200
1300	1400	1500	1600
1700	1800	1900	2000
2100	2200	2300	2400

- Instructor reads off the civilian time at random and Cadets must cover up the corresponding military time. Games can be won by getting a TIMEO!

1:00 am	2:00 am	3:00 am	4:00 am
5:00 am	6:00 am	7:00 am	8:00 am
9:00 am	10:00 am	11:00 am	12:00 Noon
1:00 pm	2:00 pm	3:00 pm	4:00 pm
5:00 pm	6:00 pm	7:00 pm	8:00 pm
9:00 pm	10:00 pm	11:00 pm	12:00 Midnight

B. Take Home Activity: Using the handout “Journal Entry”, have the cadets write a journal of their activities for a 24 hour period. Include the time at which they do them using military time rather than civilian time

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 1: NS3-M3U4C3S1 – Time and Time Pieces

Activity 1: In Class Activity- TIMEO

Name: _____ Date: _____ Class: _____

T	I	M	E	O
		FREE		

Chapter 3 / Section 1: NS3-M3U4C3S1 – Time and Time Pieces

Activity 1: Take Home Activity – Journal Entry

Name: _____ Date: _____ Class: _____

Directions: Write a journal of your activities for a twenty four hour period. Include the time at which you do them using military time rather than civilian time.

Chapter 3 / Section 2: NS3-M3U4C3S2 – Kinds of Time

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate a basic understanding of navigation and the significant instruments used in this science

Skills and Knowledge to be Gained:

1. Describe the various kinds of time
2. Describe the aspects of the date/time group

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	KeyTerm Definitions	Opening Question	Warm-Up Question	Kinds Of Time (A)	Check On Learning A	Kinds Of Time (B)
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Check on Learning B	Kinds Of Time (C)	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 4, Chapter 3. Place a checkmark beside the NS3-M3U4C3S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U4C3S2 - Key Terms and NS3-M3U4C3S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 3 / Section 2: NS3-M3U4C3S2 – Kinds of Time

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the various types of time. We will also discuss the aspects of the date and time group.	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-9
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “In what ways is timekeeping in the Navy different from timekeeping in civilian life?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on kinds of time.	10
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	11
Kinds of Time	Explain that the sun is the most convenient reference for reckoning time. Time measured by the sun is solar time. Solar time, or sun time, is based on the apparent motion of the sun around the earth. Time based on the apparent position of the sun from our position is called apparent time. If the sun is directly over the meridian we are on, we say that it is noon, local apparent time. When it is directly over the meridian 180 degrees away from ours, it is midnight local apparent time.	12-14
Kinds of Time	Explain that if the earth stood still in space, and the sun orbited in a circle around it, all the days reckoned by apparent time would be exactly the same length. But the earth travels around the sun in an elliptical orbit (like a race track); the earth's axis is inclined with respect to the plane of its orbit around the sun; and the earth's speed along its orbit varies. Therefore, the time required for a complete rotation of the earth on its axis relative to the sun—or in other words, the length of a solar day— varies continually according to the position of the earth in its orbit.	15-17
Kinds of Time	Explain that it would be confusing if some days had more minutes and some fewer minutes because of the earth's revolution. To eliminate this confusion, an average solar time is used; this is called mean solar time. Mean solar time is calculated from the motion around the earth of an imaginary or mean sun, which always makes the 360-degree circuit in exactly twenty-four hours. So, if your watch says it is 1200 local mean time (LMT), the mean sun is over your meridian, not the actual sun.	18-20

Chapter 3 / Section 2: NS3-M3U4C3S2 – Kinds of Time

Kinds of Time	Explain that in November of each year the actual sun is about 16 ½ minutes ahead of the mean sun, and by February it has fallen behind by some 14 minutes. The difference between apparent time and mean solar time at any moment is called the equation of time. It is tabulated in navigational publications called almanacs, and must be taken into account for certain tasks in celestial navigation at sea.	21
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	22
Kinds of Time	Explain that besides the above kinds of time that are based on the relationship of the earth and the sun, there is one other more modern base for time that is coming into ever wider use because of its extreme accuracy. This is atomic time, called universal coordinated time, abbreviated as UTC. This time is based on the frequency of vibrations of the radioactive cesium atom. Because cesium is a fairly common element, it is readily available to be used in atomic clocks as a time standard everywhere on earth.	23-24
Kinds of Time	Explain that Since GMT is based on the changing relative motion of the earth and the sun, and UTC is based on the unchanging cesium frequency, GMT and UTC can differ at certain times by as much as nine-tenths of a second. But the difference is usually smaller, and can be disregarded for most navigational purposes. For more precise needs, the amount of difference at any time is readily available; so the user can easily correct UTC to GMT, or vice versa. Greenwich mean time (GMT) is time based on the relationship of the mean sun to the prime meridian.	25-26
Kinds of Time	Explain that since local mean time is based on the relationship between one's own meridian and the mean sun, a slight difference in longitude between two places would result in a slight difference in time kept. Though not very significant in days of old, this difference would be very impractical in our modern world. For example, if we set our watches to local mean time (LMT), we would have to reset them every few blocks along an east-west street. In New York City, for instance, a difference of about nine seconds LMT occurs between one end of 42d Street and the other end.	27
Kinds of Time	Explain that to eliminate this problem, standard time zones have been established around the world. All clocks and watches within a standard time zone are set to the same time, and there is a difference of one hour between one time zone and the next. Because there are 24 hours in a complete day, and 360° of longitude around the Earth, each standard time zone is 15 degrees of longitude wide ($360 \div 24 = 15$). The standard time-zone system is fixed by international agreement and by law in each country.	28
Kinds of Time	Explain that the standard time zones begin at the Greenwich meridian (0°). Since the earth rotates toward the east, time zones to the west of Greenwich are earlier; to the east, the zones are later. Every meridian east and west of Greenwich that is a multiple of 15 degrees (15°, 30°, 45°, 60°, and so on) is a standard time meridian. Each standard time meridian is at the center of its time zone, and the zone extends 7 ½ degrees (half of 15 degrees) on either side of the meridian. Some standard time zones ashore vary somewhat from this, to make life easier for the people living there.	29
Kinds of Time	Explain that local mean time along each standard time meridian is zone time, or standard time for that entire time zone. Zone time in navigation is abbreviated ZT. Each time zone is identified by an alphabetical letter and by a negative or positive number from 1 to 12, east or west of the prime meridian. The number is called the zone description (ZD) of the zone, and the letter is called the suffix. Time zones to the east of Greenwich have negative zone descriptions, and time zones to the west have positive ones.	30

Chapter 3 / Section 2: NS3-M3U4C3S2 – Kinds of Time

Kinds of Time	Explain that to separate one day from the next, the 180th meridian in the mid-Pacific Ocean has been designated the International Date Line. On both sides of the line, the time of day is the same, but west of the line it is one day later than it is to the east. Time zone perimeters fall between longitude lines.	31-32
Kinds of Time	Explain that the result is that the zone descriptions -12 and +12 each extend $7\frac{1}{2}^{\circ}$ (half of 15°) over a longitudinal line, to the international date line.	33
Kinds of Time	Explain that the continental United States has four standard time zones. The East Coast keeps +5 Romeo (R) time, called Eastern Standard Time (EST). Central Standard Time is +6 Sierra (S), Mountain Standard Time is +7 Tango (T), and Pacific Standard Time is +8 Uniform (U). All of Alaska keeps +9 Victor (V), and Hawaii keeps +10 Whiskey (W).	34-39
Kinds of Time	Explain that Daylight Savings Time is simply zone time set ahead one hour to extend the time of daylight in the evening, usually in summer. This is done strictly for convenience ashore in some localities. Daylight savings time is not used in navigation.	40
Kinds of Time	Explain that Daylight savings time is zone time set ahead one hour. The practice varies, but when used, it extends summer evening daylight. For the northern hemisphere: <ul style="list-style-type: none"> • “Spring” forward an hour to begin DST • “Fall” back an hour to end DST <p>In the southern hemisphere, summer is December to March, so DST, if used, begins in the latter part of the year.</p>	41
Check on Learning Questions B (Lesson questions 5-6)	Check in on students’ understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	42
Kinds of Time	Explain that Greenwich mean time (GMT) is the ZT at the Greenwich meridian. The Greenwich meridian is the standard time meridian for the time zone numbered 0. It has the zone description suffix letter Zulu (Z). Most information in navigational tables and naval communications uses GMT, so you must know how to convert the time in any zone to GMT, and vice versa.	43-44
Kinds of Time	Explain to remember that the solar day has twenty-four hours and each time zone represents one hour. Beginning with the 0 zone (Greenwich), time zones run east and west from zone 1 to zone 12, with zones east of Greenwich being minus, and those west of Greenwich being plus. (Note that the +12 and -12 zones each extend over only $7\frac{1}{2}$ degrees of longitude.) The zone description (ZD) tells you the difference in hours between your zone time and GMT. To convert the time in any time zone to Greenwich mean time, you must add the zone description number algebraically to the zone time. To convert from GMT to zone time, you must subtract the zone description. This procedure can be represented by the following simple algebraic formulas: <ul style="list-style-type: none"> • $GMT = ZT + ZD$ and $ZT = GMT - ZD$ 	45-46
Kinds of Time	Explain that when using the formulas, you must be careful to remember to use the rule of algebra that two minuses together make a plus. For example, if we were at a position in a time zone east of Greenwich where the zone description was -5, and we wanted to convert a GMT of 0600 to our standard zone time, we would set up the formula like this: <ul style="list-style-type: none"> • $ZT = GMT - ZD$ • $ZT = 0600 - (-5) = 1100$ 	47

Chapter 3 / Section 2: NS3-M3U4C3S2 – Kinds of Time

<p>Kinds of Time</p>	<p>Explain that the zone time alphabetical suffixes are:</p> <p><u>Westerly</u></p> <ul style="list-style-type: none"> • N November • O Oscar • P Papa • Q Quebec • R Romeo • S Sierra • T Tango • U Uniform • V Victor • W Whiskey • X X-ray • Y Yankee <p><u>Greenwich</u></p> <ul style="list-style-type: none"> • Z Zulu <p><u>Easterly</u></p> <ul style="list-style-type: none"> • A Alpha • B Bravo • C Charlie • D Delta • E Echo • F Foxtrot • G Golf • H Hotel • I India • K Kilo • L Lima • M Mike 	<p>48</p>
<p>Kinds of Time</p>	<p>Explain that in writing Naval time, it is generally required that a time zone's suffix letter be placed after the numbers. For instance, eleven o'clock in the morning in Norfolk, Virginia zone time would be written 1100R. In San Diego, 3:30 P.M. would be written 1530U. This avoids confusion for the person reading the time.</p>	<p>49</p>
<p>Kinds of Time</p>	<p>Explain that another aspect of Naval time should also be covered here. This involves the date, the month, and the year in naval communications. Messages and other data keep coming twenty-four hours a day, every day of the month, and every month of the year. Therefore, there must be some way to identify exactly when a communication was originated or received. To do so, the Navy uses what is called the date/time group (DTG).</p>	<p>50</p>
<p>Kinds of Time</p>	<p>Explain that the DTG is placed in the message heading. It identifies when a communication originated. It is also used for filing. The DTG consists of six digits. The first two digits represent the date, the second two digits represent the hour, and the third two digits represent the minutes. For example: 151635Z APR 10 means the 15th day of April plus the time in Greenwich mean time (GMT).</p>	<p>51-52</p>

Chapter 3 / Section 2: NS3-M3U4C3S2 – Kinds of Time

Review Question	The Review Question is, “Describe the components of a date/time group number?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	53
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	54
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	55

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Download the video:

<http://www.teachertube.com/video/nasa-time-zones-243476>

When: This activity will take place prior to the lesson.

- Cadets will view this video regarding time. As they view the video, cadets should make note of the following items:
 1. 3 things that they learned from the video
 2. 1 thing that caught their attention in the video
 3. 1 thing that they don’t understand
- After the video, time will be given to discuss the items above.
- Next, cadets will be given a problem such as: Maddie lives in New York City, New York and her cousin, Pam, lives in London, England. Maddie wants to call Pam at 10:00 a.m. her time. What time would it be in London?

B. Take Home Activity: using the handout “Time Zone Questions”, cadets need to write 3 time zone questions, such as the one above, to give to a classmate to solve. In class, ask cadets to swap problems with a classmate and solve each other’s scenarios. They should then reconvene and discuss if the solutions are correct or not and fix any incorrect answers together.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 2: NS3-M3U4C3S2 – Kinds of Time

Activity 1: Take Home Activity – Time Zone Questions

Name: _____ Date: _____ Class: _____

Directions: Write 3 time zone questions, like the one done in class and written below. These will be swapped with a classmate to solve each other's scenarios. Once solved, you should discuss if the solutions are correct or not and fix any incorrect answers together.

Example: Maddie lives in New York City, New York and her cousin, Pam, lives in London, England. Maddie wants to call Pam at 10:00 a.m. her time. What time would it be in London?

1.

2.

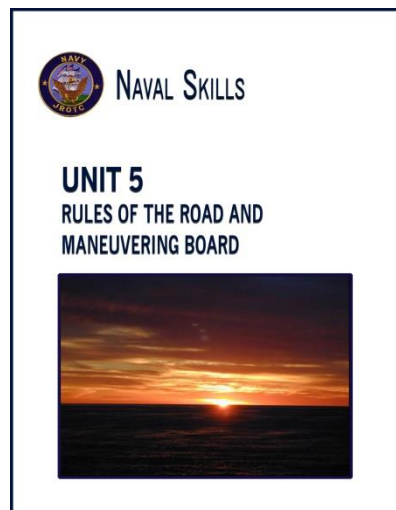
3.

MODULE 3; UNIT 5: Rules of the Road and Maneuvering Board

Unit Overview

Unit Objective:

In this unit you learn the basic concepts of maneuvering a small boat under classroom conditions through the use of the maneuvering board.



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Nautical Rules of the Road	NS3-M3U5C1S1 – Rules, Lights and Day Shapes
		NS3-M3U5C1S2 – Special Rules of Naval Vessels
2	Maneuvering Board	NS3-M3U5C2S1 – The Maneuvering Board Plot
		NS3-M3U5C2S2 – The CPA Problem

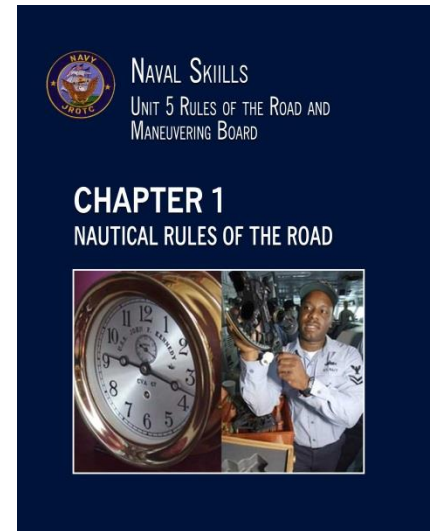
Module 3 Unit 5 Chapter 1: NS3-M3U5C1 – Nautical Rules of the Road

What Students Will Learn to Do:

Demonstrate the basic concepts of maneuvering a small boat under classroom conditions through the use of the maneuvering board

Skills and Knowledge to be Gained:

1. Describe the two main sets of nautical rules
2. Explain the importance and purpose of nautical rules
3. Describe the rules for shipboard lights and day shapes in inland and international waters
4. Describe whistle, fog and distress signals used on marine vessels
5. Describe the inland and international rules for steering and sailing vessels to avoid risk of collisions



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately...

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor's Guide.

Chapter 1 / Section 1: NS3-M3U5C1S1 – Rules, Lights and Day Shapes

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate the basic concepts of maneuvering a small boat under classroom conditions through the use of the maneuvering board

Skills and Knowledge to be Gained:

1. Describe the two main sets of nautical rules
2. Explain the importance and purpose of nautical rules
3. Describe the rules for shipboard lights and day shapes in inland and international waters

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	Where Rules Apply
Purpose of the Rules (A)	Video Purpose of the Rules	Purpose of the Rules (B)	Check On Learning A	Rules for Lights	Running Lights	Video Running Lights	Check on Learning B
Other Lights and Day Shapes (A)	Video 1 Other Lights and Day Shapes	Other Lights and Day Shapes (B)	Video 2 Other Lights and Day Shapes	Other Lights and Day Shapes (C)	Video 3 Other Lights and Day Shapes	Other Lights and Day Shapes (D)	Video 4 Other Lights and Day Shapes
Other Lights and Day Shapes (E)	Video 5 Other Lights and Day Shapes	Other Lights and Day Shapes (F)	Video 6 Other Lights and Day Shapes	Review Questions	Closing Questions	Call for Other Questions	

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 1 / Section 1: NS3-M3U5C1S1 – Rules, Lights and Day Shapes

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 5, Chapter 1. Place a checkmark beside the NS3-M3U5C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U5C1S1 - Key Terms and NS3-M3U5C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that the ship and boat "driver" must know the buoyage systems, lights and signals, and nautical rules of the road governing traffic afloat on the waters of the world.	1-2
Unit Overview	Explain that when maneuvering a ship or boat either to comply with the rules of the road or for other purposes, there are two primary safety objectives: (1) do not hit anything (such as another vessel or other object), and (2) do not run aground (i.e., hit bottom or shore).	3
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the two main sets of nautical rules. We will learn about the importance of the purpose of these rules. We will also discuss the rules for shipboard lights and day shapes in inland and international waters.	4-6
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	7
Key terms - Definitions	Reinforce the correct definition for each key term.	8-12
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Explain the importance and purpose of having nautical rules that govern ships at sea.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on nautical rules of the road.	13

Chapter 1 / Section 1: NS3-M3U5C1S1 – Rules, Lights and Day Shapes

Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	14
Introduction	<p>Explain that the nautical traffic laws are contained in several sets of rules. These are commonly known as the nautical rules of the road. There are two main sets of rules: the international rules, and the U.S. inland rules</p>	15
Where Rules Apply	<p>Explain that the international rules must be obeyed by all vessels of all nations that travel on the high seas. These rules were first established in 1897 by all the maritime nations of the world. There have been several major revisions since then, the latest of these being in 1972. The full official name for the international rules of the road is The International Regulations for Preventing Collisions at Sea, 1972, often abbreviated to "the COLREGS." These rules were drawn up by the Inter-Governmental Maritime Consultative Organization of the United Nations, now known simply as the International Maritime Organization (IMO). They became law in the United States with their ratification by Congress in 1977.</p>	16-18
Where Rules Apply	<p>Explain that the U.S. inland rules must be obeyed by all vessels of all nations that navigate the bays, harbors, and rivers of the United States. These rules were established by Congress under the Inland Navigational Rules Act of 1980. They are also known as the unified rules because they combine three sets of rules formerly in effect in U.S. waters.</p>	19
Purpose of the Rules	<p>Explain that the purpose of the rules of the road is to prevent ship collisions. Ship collisions can result in the loss of millions of dollars through damage or sinking. Also, lives may be lost in such collisions.</p>	20
Purpose of the Rules	<p>Explain that the rules govern all waterborne traffic. As defined in the rules, a power-driven vessel means any vessel propelled by machinery, even though she may also have sails up. Any vessel under sail alone is considered a sailing vessel whether propulsion machinery is aboard or not. Because they are more easily maneuvered, power-driven vessels must usually give way to sailing vessels. On the other hand, in harbors and narrow channels, small craft and sailboats must avoid collisions by standing clear, since larger vessels do not have as much freedom of movement.</p>	21-22
Video on Purpose of the Rules	<p>Show Video on Purpose of the Rules</p>	23
Purpose of the Rules	<p>Explain that a vessel is "under way" when not at anchor, when not moored to a dock or buoy, or when not aground. So a ship stopped dead in the water can still be under way. In such a situation, the phrase used is "under way but with no way on."</p>	24
Purpose of the Rules	<p>Explain that both international and inland rules cover vessel lights and day shapes, sound signals, steering and sailing rules, and distress signals.</p>	25
Purpose of the Rules	<p>Explain that in the event of a collision on water, the applicable international and inland rules are used by the courts to decide who will pay for the damages. Unless the vessels are equally at fault or there was nothing more that either one could have done, the courts must split the damages according to degree of fault (one vessel 30 percent at fault, the other 70 percent at fault, etc.).</p>	26

Chapter 1 / Section 1: NS3-M3U5C1S1 – Rules, Lights and Day Shapes

Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	27
Rules for Lights	Explain that proper lights must be shown by all vessels from sunset to sunrise and during times of reduced visibility due to fog, smoke, storms, or other causes. Lights that could be mistaken for required lights must not be shown. The word "visible" when applied to lights means visible on a dark night with a clear atmosphere.	28
Running Lights	Explain that white, red, and green lights shown by all vessels under way at night or in poor visibility conditions are called running lights. The white light in the fore part of a ship is called the masthead light. It is required for all oceangoing vessels. The white light on an aftermast is called the range light. It is required only on vessels 50 meters or more in length. The port sidelight is red, and the starboard sidelight is green. A vessel under way must also display a white stern light.	29-35
Running Lights	Explain that the purpose of these lights is to warn vessels of the presence or approach of other vessels and to show in which direction they are going. On a dark night, it is nearly impossible to see anything of a ship or boat except the running lights. The sidelights are arranged so that when both the red and green sidelights are seen, you are looking at the bow, and the vessel is heading directly toward you. When only the green sidelight is seen, you are looking at the starboard side, somewhere from the bow to slightly behind the starboard beam. When only the red sidelight is seen, you are looking at the port side, somewhere from the bow to abaft the port beam. The masthead and range lights have the same arcs of visibility as the sidelights, and reinforce the ability to determine what aspect of the vessel you are seeing. (See the diagram of the arcs of visibility.)	36-40
Running Lights	Explain that the pattern of the white masthead and range lights, together with the sidelights, indicate the course of a sighted ship or boat. The white stern light warns overtaking vessels that another vessel is ahead. On oceangoing vessels 50 meters or more in length, the upper white lights must be visible from a distance of at least 6 miles. The port and starboard sidelights and the stern light must be visible at least 3 miles away. Running lights on smaller vessels have somewhat lower range requirements.	41-44
Running Lights	Explain that the international rules and the inland rules agree in the arcs of visibility required of the lights shown. Power-driven motorboats require similar lights, but the range light is optional.	45-46
Video on Running Lights	Show Video on Running Lights	47
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	48
Other Lights and Day Shapes	Explain that in addition to the normal underway lights described above, there are several other special combinations of lights and day shapes (geometric shapes like balls, cones, and diamonds, made from canvas stretched over metal ribbing) for vessels engaged in certain activities or in a special status. Most harbors require large ships to take aboard a pilot who is thoroughly familiar with the harbor, berthing instructions, and the handling of local tugboats, to take the ship into port. When entering port at night, an OOD or conning officer of a ship will want to know the instant the pilot boat is sighted so it may be signaled alongside. "White over red, pilot ahead" is the little memory aid to use when looking for the special identifying lights of	49-50

Chapter 1 / Section 1: NS3-M3U5C1S1 – Rules, Lights and Day Shapes

	a power-driven pilot boat at night.	
Video 1 on Other Lights and Day Shapes	Show Video 1 on Other Lights and Day Shapes.	51
Other Lights and Day Shapes	Explain that, according to the rules, all vessels over 7 meters long at anchor must show anchor lights. Vessels less than 50 meters in length at anchor show an all-around white light forward. If more than 50 meters, a similar light aft must be shown also. The forward light should be higher than the one aft, usually on the top of the jackstaff at the bow of a ship. Powerboats and sailboats typically display their anchor light from their mast-top.	52
Other Lights and Day Shapes	Explain that in the daytime, all vessels over 7 meters long at anchor must display a black ball day shape.	53-54
Show Video 2 on Other Lights and Day Shapes	Show Video 2 on Other Lights and Day Shapes.	55
Other Lights and Day Shapes	Explain that the black ball is displayed in the forward part of the vessel, usually from a crosstree of the mast where it is clearly visible from all directions.	56
Other Lights and Day Shapes	Explain that vessels towing must display two masthead lights in a vertical line. If the tow extends beyond 200 meters astern of the towing vessel, a third light must be displayed below the second light. By day, if the length of the tow exceeds 200 meters, a black diamond shape is hoisted on both the towing vessel and the tow where best seen.	57
Show Video 3 on Other Lights and Day Shapes	Show Video 3 on Other Lights and Day Shapes.	58
Other Lights and Day Shapes	Explain that in both sets of rules, the term "not under command" refers to ships and craft that are disabled and cannot operate in accordance with the rules. A vessel not under command at night must show two red lights, one over the other. If a power-driven vessel with headway, she must show the not-under-command lights instead of the masthead light, as well as her sidelights and stern light. During daylight, a merchant ship hoists two black balls. A naval vessel hoists the "5" flag if she is not under command and will also hoist two black balls as a warning to any merchant vessels if in international waters.	59-62
Video 4 on Other Lights and Day Shapes	Show Video 4 on Other Lights and Day Shapes.	63
Other Lights and Day Shapes	Explain that other lights and day shapes are prescribed for various specialized operations such as commercial fishing, cable laying, underwater or diving operations, and dredging. The interested student may find all these rules in books covering the	64-66

Chapter 1 / Section 1: NS3-M3U5C1S1 – Rules, Lights and Day Shapes

	complete rules, published by both private publishers and the Coast Guard, available at most nautical supply stores and large libraries and bookstores.	
Video 5 Other Lights and Day Shapes	Show Video 5 on Other Lights and Day Shapes.	67
Other Lights and Day Shapes	Show these examples of day shapes.	68-76
Video 6 Other Lights and Day Shapes	Show Video 6 on Other Lights and Day Shapes.	77
Review Question	The Review Question is, “Describe some rules related to running lights on U.S. Navy ships.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	78
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	79
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	80

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handouts for in class and take home activities

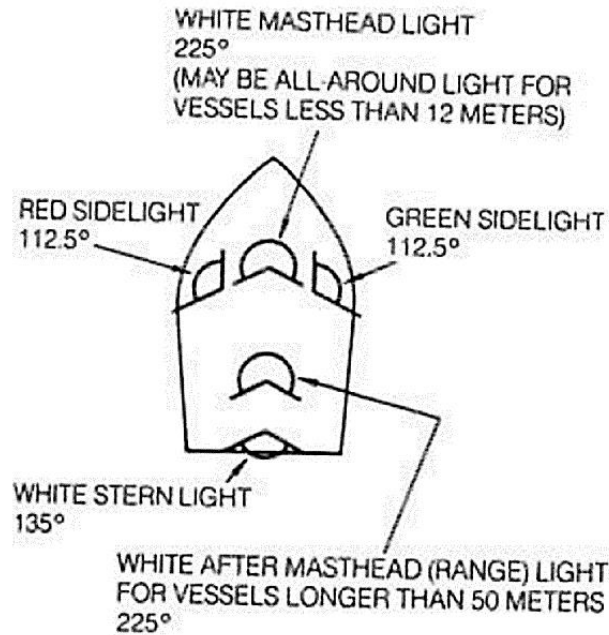
When: after the part of the lesson about Day Shapes.

- Match the day shape with its correct label as a group activity. Show the shapes on the next page through your projector, and ask cadets to identify them. CPS Random Pick a Student is a good way to select cadets to respond.
- Correct responses:
 - A: Vessel at Anchor
 - B: Sailing Vessel under Power
 - C: Vessel Engaged in Fishing
 - D: Vessel Restricted in Ability to Maneuver

B. Take Home Activity: Have the Cadets use the handout, “Rules of the Road” and complete at home and review the next class period. *See Key on the following page.

Chapter 1 / Section 1: NS3-M3U5C1S1 – Rules, Lights and Day Shapes

Key for Take Home Activity



INCORRECT SECTION IS HIGHLIGHTED IN BOLD BELOW, CORRECT ANSWER IN RED:

- A. The observed pattern of the masthead and range lights together with sidelights indicate the course of a sighted ship or boat, **except for boats without motors.** *(Take off the exception)*
- B. In the daytime, all vessels over **50** meters long at anchor must display a black ball day shape. *(Should be 7 meters)*
- C. COLREGS is an abbreviated term for the official name of the international rules of the road, and the official name is "The International **Rules** for Preventing **Crashes** at Sea." *(Should be Regulations and Collisions)*
- D. Responsibility for damages that result in ship collisions are **always split 50/50** between the vessels involved. *(Depends on the circumstances and who was at fault)*
- IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 1: NS3-M3U5C1S1 – Rules, Lights and Day Shapes

Activity 1: In Class Activity - Day Shapes

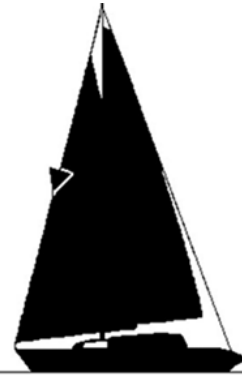
Name: _____ Date: _____ Class: _____

Directions: Identify these day shapes...

A.



B.



C.



D.

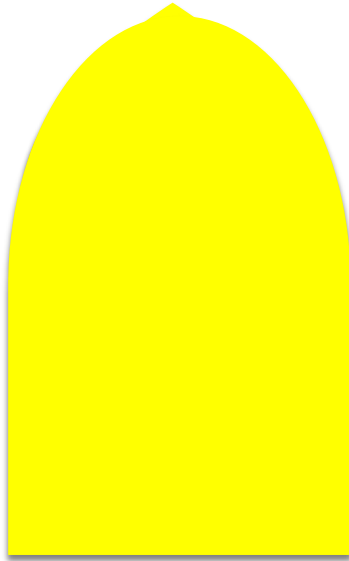


Chapter 1 / Section 1: NS3-M3U5C1S1 – Rules, Lights and Day Shapes

Activity 1: Take Home Activity – Rules of the Road

Name: _____ Date: _____ Class: _____

1. Identify the name and the color of the required running lights on the ship outline diagram below.



2. These sentences contain incorrect information. Modify each one to make it a true statement.
 - A. The observed pattern of the masthead and range lights together with sidelights indicate the course of a sighted ship or boat, except for boats without motors.
 - B. In the daytime, all vessels over 50 meters long at anchor must display a black ball day shape.
 - C. COLREGS is an abbreviated term for the official name of the international rules of the road, and the official name is, "The International Rules for Preventing Crashes at Sea."
 - D. Responsibility for damages that result in ship collisions are always split 50/50 between the vessels involved.

Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate the basic concepts of maneuvering a small boat under classroom conditions through the use of the maneuvering board

Skills and Knowledge to be Gained:

1. Describe whistle, fog and distress signals used on marine vessels
2. Describe the inland and international rules for steering and sailing vessels to avoid risk of collisions

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Warm-Up Question	Special Rules for Naval Vessels	Whistle Signals	Check On Learning A
Risk of Collision (A)	Video Risk of Collision	Risk of Collision (B)	Check on Learning B	Meeting Situation	Meeting Situation	Crossing Situation	Overtaking Situation
Channels, Bends, and Leaving a Berth	Avoiding Collisions	Fog Signals (A)	Video 1 Risk of Collision	Fog Signals (B)	Video 2 Risk of Collision	Distress Signals	Review Questions
Closing Questions	Call for Other Questions						

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 5, Chapter 1. Place a checkmark beside the NS3-M3U5C1S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U5C1S2 - Key Terms and NS3-M3U5C1S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson, we will discuss whistle, fog and distress signals used on marine vessels. We will also discuss the inland and international rules for steering and sailing vessels to avoid risk of collisions.	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-6
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Explain the purpose of establishing common whistle, fog, and distress signals.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on special rules for naval vessels.	7
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	8

Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

<p>Special Rules for Naval Vessels</p>	<p>Explain that many naval vessels, because of their special construction, cannot comply exactly with the rules for running lights. In such cases, the vessels must meet the requirements of the rules as nearly as possible. Any departures from the rules of the road for naval vessels are provided for by U.S. law.</p> <p>Some examples of these variations are the following:</p> <ul style="list-style-type: none"> • The horizontal separation of the white lights on destroyers and smaller ships is often less than that required by the rules. • The white lights on aircraft carriers are usually on the superstructure and off the centerline. • Special lights such as speed lights, carrier landing lights, and colored recognition lights may be shown on naval vessels during certain operations. • During certain exercises, naval vessels may show no lights at all. In peacetime, however, the officer in tactical command will usually order navigation lights turned on if a merchant ship approaches the formation. Departure from the rules of the road for exercises is not a good idea if it could result in a collision with a merchantman. • Special lights and day shapes are required for minesweepers when they are engaged in sweeping operations. • U.S. submarines are specially authorized to display an amber-colored intermittent flashing beacon—three seconds on, three seconds off—when running surfaced, in addition to other required lights 	<p>9-13</p>
<p>Whistle Signals</p>	<p>Explain that whistle signals are required by both sets of rules for vessels maneuvering within sight of one another. Under inland rules, a whistle is a signal of intent, sounded before any maneuvers are made. The vessel that sounds a signal in inland waters does not execute a maneuver until the other vessel makes the same signal in reply, meaning that she understands and agrees. If the other vessel does not understand the signal, or considers the proposed maneuver dangerous, she replies with the danger signal, a signal consisting of not less than five short, rapid blasts.</p>	<p>14</p>
<p>Whistle Signals</p>	<p>Explain that whistle signals in international waters are signals of execution, sounded when a vessel is starting a maneuver. No replies are necessary. Since international waters are not as crowded as inland waters, international rules for whistle signals are not as demanding as inland rules. Whistle signals are absolutely essential to safe navigation. The principal international whistle signals are the following:</p> <ul style="list-style-type: none"> • One short blast: I am altering my course to starboard. • Two short blasts: I am altering my course to port. • Three short blasts: My engines are going astern. • Five or more short blasts: Danger signal. 	<p>15-21</p>
<p>Whistle Signals</p>	<p>Explain that confusion over whistle signals is probably responsible for more collisions than any other part of the rules of the waters. Though all the rules are important, the steering and sailing rules are the ones most essential to avoiding collision. The rules are designed to keep vessels clear of one another.</p>	<p>22</p>
<p>Check on Learning Questions A (Lesson questions 3-4)</p>	<p>Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	<p>23</p>
<p>Risk of Collision</p>	<p>Explain that both international and inland rules govern situations in which two vessels are approaching each other with the risk of collision. There are three basic approach situations: meeting, overtaking, and crossing. The situation depends upon the relative position of the two vessels when they first sight each other.</p>	<p>24</p>

Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

Risk of Collision	Explain that vessels do not need to maneuver if they will pass clear by simply maintaining their courses and speeds. But when two ships or boats approach each other and there is a risk of collision, at least one must keep out of the way of the other. This may be done by altering course or by slowing, stopping or backing engines. The vessel that must keep out of the way of the other is called the <i>give-way vessel</i> . The other ship is required to maintain course and speed, and is called the <i>stand-on vessel</i> .	25
Risk of Collision	Explain that the rules say that risk of collision can be determined by carefully watching the compass bearing of an approaching vessel. If the bearing does not appreciably change as the range decreases, such risk should be considered to exist. Therefore, when in a constant bearing decreasing range (CBDR) situation, the vessel is said to be on a "collision course." There is a saying among Mariners: "A collision at sea can ruin your whole day." There is no Mariner who does not take the possibility of collision very seriously.	26
Video on Risk of Collision	Show Video on Risk of Collision	27
Risk of Collision	Explain that the general rules to avoid collision are: <ol style="list-style-type: none"> 1. Take action in ample time 2. Make the passing agreement signals 3. Make obvious changes 4. Check and recheck your actions until clear of other vessels 5. If necessary, stop or reverse your engines 	28
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	29
Meeting Situation	Explain that in a meeting situation, both vessels are give-way. In all waters, power vessels meeting head-to-head or nearly so are required to pass port to port. To do so, both vessels must alter course to starboard. Explain that in a port-to-port meeting situation in inland waters, one vessel gives one short blast on her whistle, telling the other vessel that she intends to come right to make the passage. After the other vessel has answered with a single short blast, indicating understanding and agreement, both vessels turn smartly to the right. The turn should be large enough to clearly show the action to the oncoming vessel (normally from five to ten degrees in a channel, and about fifteen degrees in open waters). Under inland rules, after agreement has been reached and the turns have been executed, no further sound signals are required during maneuvering to make a safe passage, or to return to the original courses.	30
Meeting Situation	Explain that International rules authorize only a port-to-port passing and are silent on a starboard-to-starboard passing. Therefore, it is implied that a starboard-to-starboard passing is proper under international rules only when there is no risk of collision, and no maneuvering is required. Explain that in international waters, each ship sounds one short blast as they are executing the right turn. The vessels may choose to sound the appropriate action signals when maneuvering back onto their original courses, but these signals are commonly omitted since the danger of collision has passed.	31

Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

Meeting Situation	Explain that in a meeting situation in international waters in which the vessels are not head-on and where no course change is necessary for safe passage, no whistle signals are made. Both ships will maintain course and speed and pass clear.	32
Meeting Situation	<p>Explain that the inland rules for the same situation that was just discussed require that if vessels are to pass port-to-port, regardless of whether or not a course change is required, the one-short-blast signal must be exchanged. If they are going to pass starboard to starboard, whether or not change of course is required, the two-short-blast signal must be exchanged.</p> <p>Explain that under both sets of rules, starboard-to-starboard passages are discouraged, since misunderstandings can easily lead to a collision. There is another old nautical saying that warns: "Two short blasts are the first two notes of the collision waltz."</p>	33
Meeting Situation	Explain that in U.S. inland waters, starboard-to-starboard passing is authorized only if the vessels are not meeting head-to-head and safe passage is assured without any maneuvering.	34
Crossing Situation	Explain that a crossing situation on the water is analogous to a 4-way stop situation on land. In both sets of rules, the power vessel having the other to starboard is the give-way vessel. The vessel to starboard is the stand-on vessel and must maintain course and speed. The give-way vessel is required to maneuver if necessary to avoid crossing ahead of the stand-on vessel. This may mean reducing speed, stopping, altering course to starboard, or backing down. Vessels are prohibited from turning left in order to cross ahead of the stand-on vessel.	35-36
Crossing Situation	Explain that in international rules, the give-way vessel must sound one short blast for a turn to starboard, two for a turn to port. Signals are not sounded unless course changes are made. In inland waters, the give-way vessel must sound a short blast to indicate her intent to leave the stand-on vessel to port. The signal is answered with a short blast to indicate agreement. The give-way vessel then maneuvers if necessary to pass astern of the stand-on vessel.	37-38
Overtaking Situation	Explain that in an <i>overtaking situation</i> , in both sets of rules the overtaking vessel is the give-way vessel. The overtaking vessel must keep clear of the overtaken vessel. In international waters, a ship that can pass another without a change of course may do so without a signal. If she must change course to pass, she sounds one short blast if turning to the right, or two short blasts if turning to the left, and does not have to wait for an answer. If the overtaken vessel considers the maneuver to be dangerous, she sounds the danger signal of five or more short blasts, warning that the action is too dangerous and may involve risk of collision.	39-41
Overtaking Situation	Explain that in inland waters, an overtaking vessel cannot pass another until signaling on which side she intends to pass. The overtaking vessel sounds one short blast if proposing to pass the other vessel on her starboard side, and two if proposing to pass on her port side. The overtaking vessel must give a signal whether or not she must change course to pass, and she may not pass until she hears the agreeing signal from the vessel ahead.	42-43
Overtaking Situation	Explain that if the ship being overtaken considers the proposed maneuver risky, she sounds the danger signal of five or more short blasts, followed by a signal for what she considers the safer procedure. The overtaking vessel then may answer this signal, and pass on the recommended side.	44-45

Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

Channels, Bends, and Leaving a Berth	Explain that both inland and international rules say that powered vessels must keep to the starboard side of a narrow channel. Inland rules provide that a powered vessel approaching a bend in a channel, if unable to see for at least half a mile ahead (defined as a blind bend), must sound a prolonged blast of four to six seconds duration on the whistle. This must be answered with <i>a prolonged blast</i> from any approaching vessel that hears it. International rules are the same, requiring that a prolonged blast be sounded. If no answer is received, the first vessel may consider the channel ahead clear and may proceed with customary caution. After vessels are in sight, the usual signals for meeting and passing should be given.	46
Channels, Bends, and Leaving a Berth	Explain that a vessel leaving her dock or berth (change of status) also sounds a prolonged blast in inland waters. This is sounded whether or not vision is obscured beyond the slip or berth. If the ship is backing from her berth, she will sound three short blasts, indicating that the ship has sternway. The backing signal follows the prolonged blast for change of status.	47
Avoiding Collisions	Explain that the stand-on vessel normally has the right-of-way, that is, the legal responsibility to maintain course and speed in crossing and overtaking situations. In unusual instances, however, this might not be the thing to do if a collision is to be avoided. Both inland and international rules of the road require a vessel's captain to take action to avoid collision even if this might violate the rules. International and inland rule number 8 says, "Any action taken to avoid collision shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship." Therefore, a vessel may depart from the requirements of the rules of the road when there is imminent danger of collision. Such a danger of collision is called "in extremis."	48
Fog Signals	Explain that under both sets of rules, audible <i>fog signals</i> are sounded in any condition that reduces visibility to under the range of a sidelight in any direction around a vessel under way or at anchor. Such reduced visibility conditions may be caused by a number of things, including fog, falling snow, mist, or heavy rain. Signals are sounded both day and night in such weather. In addition, running lights are turned on if under way, and anchor lights are turned on if anchored or moored.	49
Fog Signals	Explain that a power-driven vessel sounds a prolonged blast of from four to six seconds duration on the whistle at least every two minutes when she has way on in a fog. If stopped but under way (not anchored, moored, or aground), she sounds two prolonged blasts, two seconds apart, at least once every two minutes. If anchored, a bell is rung for about five seconds at intervals of not more than one minute. If the ship is over 100 meters in length, the bell is sounded in the forward part of the ship, followed by the sounding of a five-second gong in the after part of the ship. If the anchored ship believes there is possibility of collision, she may sound three blasts (one short, one prolonged, and one short) to warn each approaching vessel of her position.	50-51
Video 1 on Fog Signals	Show Video 1 on Fog Signals	52
Fog Signals	Explain that if at any time a vessel hears a fog signal forward of her beam and cannot tell from where the signal is coming, she must reduce her speed to bare steerageway (the minimum speed at which the rudder is effective). If necessary, she must take all her way off.	53
Video 2 on Fog Signals	Show Video 2 on Fog Signals	54

Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

Distress Signals	<p>Explain that distress signals specified under inland rules are as follows:</p> <ul style="list-style-type: none"> In the daytime, a continuous sounding with any fog signal apparatus, or firing a gun. At night (a) flames from a burning tar or oil barrel; (b) a continuous sounding of any fog signal, or firing of a gun. 	55
Distress Signals	<p>Explain that international rules provide for the following distress signals:</p> <ul style="list-style-type: none"> A gun or other explosive signal fired at intervals of about one minute A continuous sounding with any fog signal Rockets or shells, throwing red stars, fired one at a time at short intervals The signal group (SOS) in Morse code Radiotelephone (voice) signal "Mayday" A flaghoist flying the flags November Charlie (NC) A flaghoist flying a square flag with a ball or anything resembling a ball either above or below it Flames, as from a burning tar or oil barrel A rocket parachute flare or a hand flare showing a red light A smoke signal giving off orange-colored smoke Slowly and repeatedly raising and lowering arms outstretched to each side 	56-59
Review Question	<p>The Review Question is, "Describe some distress signals that are used on marine vessels." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.</p>	60
Closing Questions(Lesson Questions 7 - 8)	<p>Have students respond to questions 7 and 8 covering the final segment of the lesson with follow-up reinforcement and discussion as appropriate.</p>	61
Call for Other Questions	<p>Provide the opportunity for students to ask final questions regarding the content covered.</p>	62

III. Supplemental Activities -

A. In Class Activity:

Supplies required: whiteboard & projector, in class printed message and handout for take home activity

When: any time during the lesson after safe crossing has been discussed.

- Project the printed message on the board. A copy to project is found in the handouts for printing.

In a pair-share discussion with a partner, cadets should discuss how a safe crossing situation should work with two ships.

Which is the stand-on vessel? Which is the give-way vessel?

What is the safe procedure for the two to pass?

Draw a simple diagram to explain this scenario.

What do international rules say about horn signals in this situation?

Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

B. Take Home Activity: Have the cadets complete the handout “Naval Vessel Rules” and review the next class period.

Answer Key on following page:

Naval Vessel Rules Activity KEY: (correct responses shown in bold)

1- Which is NOT a distress signal for International Rules:

- A. Signal “MAYDAY” on radio
- B. Flaghoist with November Charlie
- C. Gun fired at intervals of three minutes**
- D. Parachute Flare
- E. Waving Arms

2- T/F Under NO circumstances should a vessel depart from the requirements of the rules of the road. **FALSE**

3- T/F Fog signals are used both day and night when there is foggy weather. **TRUE**

4- Why can some U.S. naval vessels not comply exactly with the rules of the road? Give some examples. **(Any of the following are acceptable)**

- **The horizontal separation of the whitelights on destroyers and smaller ships is often less than that required by the rules**
- **The white lights on aircraft carriers are usually on the superstructure and off the centerline**
- **Special lights such as speed lights, carrier landing lights and colored recognition lights may be shown on naval vessels during certain operations**
- **During certain exercises, naval vessels may show no light at all. In peacetime, however, the officer in tactical command will usually order navigation lights turned on if a merchant ship approaches the formation. Departure from the rules of the road for exercises is not a good idea if it could result in a collision with a merchant vessel.**
- **Special lights and dayshapes are required for minesweepers when they are engaged in sweeping operations**
- **U.S. submarines are specially authorized to display an amber-colored intermittent flashing beacon – three seconds on; three seconds off – when running surfaced, in addition to other required lights.**

5- Describe a situation where starboard-to-starboard passing of ships would be acceptable and safe.

If the ships are not meeting end-on, and safe passage is assured without any maneuvering. (Or other acceptable situations)

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

Activity 1: In Class Activity – Question Sheet

In a pair-share discussion with a partner, cadets should discuss how a safe crossing situation should work with two ships.

Which is the stand-on vessel? Which is the give-way vessel?

What is the safe procedure for the two to pass?

Draw a simple diagram to explain this scenario.

What do international rules say about horn signals in this situation?

Chapter 1 / Section 2: NS3-M3U5C1S2 – Special Rules for Naval Vessels

Activity 1: Take Home Activity – Naval Vessel Rules

Name: _____ Date: _____ Class: _____

Answer the following:

1. Which is NOT a distress signal for International Rules:
 - A. Signal "MAYDAY" on radio
 - B. Flaghoist with November Charlie
 - C. Gun fired at intervals of three minutes
 - D. Parachute Flare
 - E. Waving Arms

2. T/F Under NO circumstances should a vessel depart from the requirements of the rules of the road.

3. T/F Fog signals are used both day and night when there is foggy weather.

4. Why can some U.S. naval vessels not comply exactly with the rules of the road? Give some examples.

5. Describe a situation where starboard-to-starboard passing of ships would be acceptable and safe.

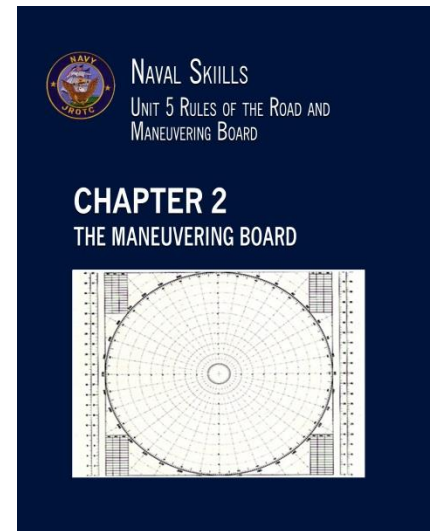
Module 3 Unit 5 Chapter 2: NS3-M3U5C2 – The Maneuvering Board

What Students Will Learn to Do:

Demonstrate the basic concepts of maneuvering a small boat under classroom conditions through the use of the maneuvering board

Skills and Knowledge to be Gained:

1. Describe the purpose and use of the maneuvering board
2. Explain the relationship between relative motion and reference point
3. Describe the major steps for plotting directions with the use of a maneuvering board
4. Given a set of problems related to the Closest Point of Approach(CPA), apply the major concepts to maneuver a ship
5. Describe the wind effect on maneuvering a ship



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor's Guide.

Chapter 2 / Section 1: NS3-M3U5C2S1 – The Maneuvering Board Plot

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate the basic concepts of maneuvering a small boat under classroom conditions through the use of the maneuvering board

Skills and Knowledge to be Gained:

1. Describe the purpose and use of the maneuvering board
2. Explain the relationship between relative motion and reference point
3. Describe the major steps for plotting directions with the use of a maneuvering board

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	Relative Motion	Check On Learning A
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The Maneuvering Board Plot (A)	Check on Learning B	The Maneuvering Board Plot (B)	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 5, Chapter 2. Place a checkmark beside the NS3-M3U5C2S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U5C2S1 - Key Terms and NS3-M3U5C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 1: NS3-M3U5C2S1 – The Maneuvering Board Plot

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the purpose and use of the maneuvering board. We will also learn about the relationship between relative motion and reference point. Finally, we will discuss the major steps for plotting directions with the use of a maneuvering board.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Based on your existing knowledge, describe what is meant by relative motion.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the maneuvering board.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
Introduction	Explain that during your years as an NJROTC cadet, you have occasion to be concerned with maneuvering boats and ships. On training cruises or visits to naval bases, you may find yourself on board either a boat or a ship for training purposes. It is to be hoped that you will have a chance to participate in maneuvers, either as an observer or possibly as a junior watchstander.	10-11
Video on the Maneuvering Board	Show Video on the Maneuvering Board	12
Introduction	Explain that in this chapter we will introduce you to the basic concepts of the maneuvering board and how to use it to construct a relative motion plot to solve problems involving wind and the maneuvering of ships and boats. The specific problems with which we will be concerned are finding the closest point of approach (the CPA) of other vessels to yours, finding their courses and speeds, and determining the speed and direction of the true wind. Such information is needed to assist in avoiding collisions in various approach situations, and to put the ship on the proper course and speed for flight operations with aircraft or UAVs. There are also many more advanced types of problems that can be solved using the maneuvering board. As part	13-14

Chapter 2 / Section 1: NS3-M3U5C2S1 – The Maneuvering Board Plot

	of their formal training, enlisted operations specialists and line officers who stand deck watches spend many hours learning to solve all kinds of maneuvering problems with the maneuvering board.	
Relative Motion	Explain that you know both from observations of the world around you and from math and physics courses you may have taken that there is no such thing as absolute rest or absolute motion. Rather, all states of rest or motion are said to be relative to some reference point in space or location on Earth. In driving a car, for example, the reference for how fast the car is going is the road on Earth's surface (or sometimes the police officer's radar or laser gun). In a passing situation, the reference for how fast another car passing you is your car. And the reference for parallel parking is the car in front and the car behind the empty space you want.	15-16
Relative Motion	Explain that at sea, the reference for what other vessels and the wind are doing relative to your vessel is your boat or ship. To determine these things, it is helpful to construct a relative motion diagram on a standard plotting sheet called a maneuvering board. For those who have taken math courses or physics, you may recognize the relative motion diagram drawn on the maneuvering board as being a kind of vector diagram.	17-22
Relative Motion	Explain that a vector is a plotted line used to represent any quantity that has both magnitude (size) and direction. Since vessels have courses (direction) and speeds (magnitude) of travel; and winds have directions and speeds at which they blow, vessel courses, vessel speeds, and winds can be conveniently represented by vectors drawn on the maneuvering board.	23-26
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	27
The Maneuvering Board Plot	Explain that the maneuvering board is a type of plot called in mathematics a polar plot, wherein all quantities are plotted using their magnitudes and directions, as opposed to their x- and y-coordinates as would be the case on a standard x-y rectangular type plot.	28-30
The Maneuvering Board Plot	Explain that the maneuvering board features a reference position in the center called the pole, a series of concentric circles drawn around the pole at uniform intervals, and a 360-degree "bearing circle" printed around the outside circle. On the left and right margins are scales that can be used to represent lengths of vectors or distances between the concentric circles, and on the bottom is a logarithmic speed-time-distance device called a nomogram.	31-32
The Maneuvering Board Plot	Explain that there are two sets of bearings. The outside numbers represent true bearings, while the inner numbers represent reciprocal bearings. Margin scales can be used to represent the distances or lengths between the concentric circles. A nomogram is a logarithmic device used to determine speed-time-distance.	33-36
The Maneuvering Board Plot	Explain that the polar plot on the maneuvering board can be used to plot both vectors, representing vessel courses, speeds, and tracks, or wind speeds and directions, and points, representing locations of your own and other vessels.	37
The Maneuvering Board Plot	Explain that to use the maneuvering board, you will need the following plotting instruments: a pencil to draw vectors and plot points; a parallel ruler and a triangle to assist in drawing vectors and to pick off directions; and navigator's dividers or a compass to pick off distances between two points.	38-41

Chapter 2 / Section 1: NS3-M3U5C2S1 – The Maneuvering Board Plot

The Maneuvering Board Plot	Explain that in order to construct a maneuvering board plot, it is first necessary to decide the frame of reference for the plot you are going to construct. For most purposes, this will be your own vessel. So the first step is to plot a point on the pole to represent your boat or ship; it is labeled with a capital R, for reference vessel. From there draw a line from your pole indicating your ship's course of 125 degrees.	42-43
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	44
The Maneuvering Board Plot	Explain that next, your vessel's course and speed need to be represented by a vector drawn on the diagram. To do this, first choose a suitable scale to represent the magnitude of the speed from among those in the left and right margins; usually either the 3:1 or the 4:1 scale is a good choice, as this will produce a nice-sized vector to work with on the plot.	45
The Maneuvering Board Plot	Have the students to take their dividers and place one point at 0 at the bottom of the 3:1 scale and the other point at 15 on the scale. Now, using a straight-edge or parallel ruler, a line is drawn from the pole toward the 125-degree mark on the perimeter of the outer circle. One point of the divider is placed at the pole, and the other pricks a small point on the line in order to lay off the scaled 15-knot distance. To complete the plot, an arrowhead is drawn at the head of the vector, and labeled with a lowercase r. The foot or tail of the vector at the pole is labeled with a lowercase e.	46-49
The Maneuvering Board Plot	Explain that the R represents your ship in the center of the maneuvering board; the vector line labeled er represents your ships course and speed.	50-51
The Maneuvering Board Plot	Ask students if true north is represented by a bearing reading of 000-degrees, what are east, west, and south? Using the coordinates on slide 53, answer on slide 54.	52-54
Review Question	The Review Question is, "Describe the purpose and use of the maneuvering board." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	55
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson with follow-up reinforcement and discussion as appropriate.	56
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	57

Chapter 2 / Section 1: NS3-M3U5C2S1 – The Maneuvering Board Plot

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Whiteboard and/or Mobi for class discussion; Handout for take home activity

When: At the end of the lesson

- In a pair-share discussion with a partner, cadets should discuss the question below:
 - What are some of the factors that can affect a vessel's course?
- Then have them share their thoughts with the class. Factors that should be brought forward and listed on the board should include:
 - Course (direction)
 - Speed(magnitude) of travel
 - Winds
 - Sea conditions
 - Vigilance and skill of the navigators

B. Take Home Activity: Have the cadets complete the handout "Lesson Definitions" using the directions on the sheet. Review the next class period.

Answer Key:

1. F
2. J
3. I
4. C
5. B
6. G
7. A
8. H
9. E
10. D

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 1: NS3-M3U5C2S1 – The Maneuvering Board Plot

Activity 1: Take Home Activity – Lesson Definitions

Name: _____ Date: _____ Class: _____

Match the term on the left to its correct definition on the right by placing the letter of the definition beside the term.

1. Nomogram _____	A. A plot where all quantities are plotted using their magnitudes and directions
2. True bearings _____	B. The direction and speed of movement of the maneuvering ship relative to the reference ship
3. Maneuvering Board _____	C. Diagram that depicts the direction and relative magnitude of a vector quantity by a vector arrow
4. Vector diagram _____	D. A tool for assisting in drawing vectors and to pick off directions
5. Relative motion _____	E. The central reference point of a maneuvering board
6. Vector _____	F. A graph containing three parallel scales graduated for different variables
7. Polar plot _____	G. A quantity having both magnitude (speed) and direction, represented graphically by an arrow
8. Reciprocal bearings _____	H. On a maneuvering board circle, the numbers on the inner scale
9. Pole _____	I. A drawing to scale used to display the position of one object relative to other moving objects
10. Parallel ruler _____	J. On a maneuvering board circle, the numbers on the outside scale

Chapter 2 / Section 2: NS3-M3U5C2S2 – The CPA Problem

(Section 2 of 2)

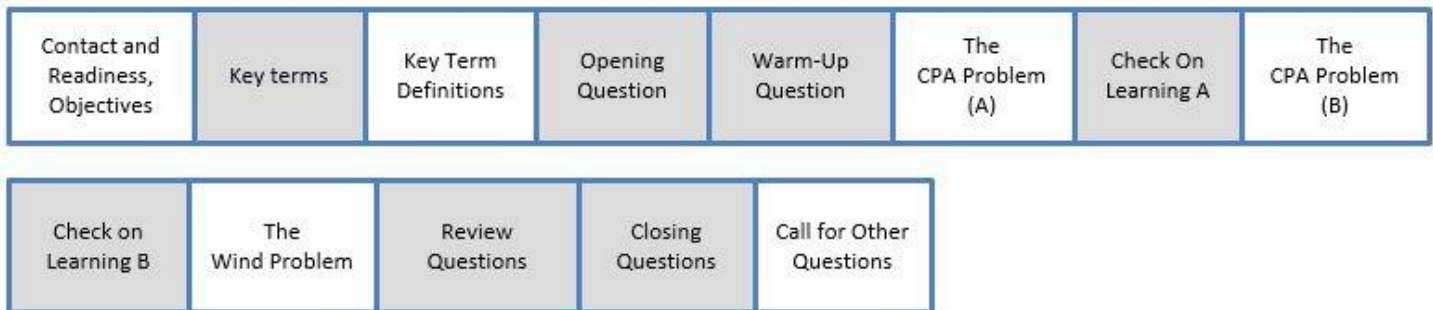
What Students Will Learn to Do:

Demonstrate the basic concepts of maneuvering a small boat under classroom conditions through the use of the maneuvering board

Skills and Knowledge to be Gained:

1. Given a set of problems related to the Closest Point of Approach(CPA), apply the major concepts to maneuver a ship
2. Describe the wind effect on maneuvering a ship

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 5, Chapter 2. Place a checkmark beside the NS3-M3U5C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U5C2S2 - Key Terms and NS3-M3U5C2S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 2: NS3-M3U5C2S2 – The CPA Problem

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will learn about the problems related to the Closest Point of Approach (CPA). We will learn about the major concepts to maneuver a ship. Lastly, we will discuss the wind effect on maneuvering a ship.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Based on your existing knowledge, describe how wind would affect the course of a ship.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the CPA problem.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
The CPA Problem	Explain that as stated in the beginning of this unit, a major concern of those in charge of a vessel is to avoid hitting other vessels or objects in the water. To assist in this challenge, it is very helpful to be able to determine their projected closest points of approach (CPAs) and their true courses and speeds. The closest point of approach (CPA) is the position of a contact when it reaches its minimum range to your ship. Once this information has been determined, appropriate required actions can be taken if necessary, to prevent a hazardous situation from developing or to comply with the rules of the road. The maneuvering board can be used both to find the other vessels' CPAs and courses and speeds and, if required, to determine the course and speed changes that could be made by your own vessel to open the CPAs to suitable safe distances.	10-11
The CPA Problem	Explain that to find the CPA of a vessel approaching your own vessel, it is necessary to construct its relative track on the maneuvering board. To do this, several ranges and bearings to it, usually taken three minutes apart over a period of several minutes, are plotted on the maneuvering board and labeled M1, M2, and so on (for maneuvering vessel). The resulting points, when connected with an extended line, define the relative motion line (RML) of the approaching vessel relative to your own.	12-15

Chapter 2 / Section 2: NS3-M3U5C2S2 – The CPA Problem

<p>The CPA Problem</p>	<p>Explain that the CPA to your vessel will be the smallest distance from the pole where your vessel is, to the extended RML line. Since by geometry we know that the smallest distance between a point and a line is the perpendicular distance between them, it is only necessary to pick off the perpendicular distance on the plot with the triangle and the dividers and then move the dividers to the distance scale in use to determine the distance of CPA. In the example shown, the 2:1 scale was used for distance, so the CPA distance is about 6,000 yards. To determine the bearing at CPA, just extend the perpendicular distance line to the outer bearing circle. Here, the bearing at CPA will be 259 degrees. By convention, CPAs are normally given in terms of bearing and distance from one's own vessel to the maneuvering vessel. The CPA is 6,000 yards at 259 degrees true.</p>	<p>16-20</p>
<p>The CPA Problem</p>	<p>Explain that to determine the other vessel's true course and speed, we need to complete the construction of a vector diagram that will allow us to solve for the other vessel's true course and speed, given our own vessel's true course and speed vector (which we've already plotted) and the other vessel's relative course and speed vector. To determine the other vessel's relative course and speed vector, we make use of the RML we plotted to find the CPA. The relative speed is the rate at which the other vessel is proceeding along its RML; the relative course is the direction of the RML.</p>	<p>21</p>
<p>Check on Learning Questions A (Lesson questions 3-4)</p>	<p>Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	<p>22</p>
<p>The CPA Problem</p>	<p>Explain that to find the relative speed, we use the speed-time-distance nomogram at the bottom of the maneuvering board, which can be thought of as a sort of paper computer. To use the nomogram, place a mark on the central distance scale of the nomogram, corresponding with the distance traveled along the RML between any two points, say, M1 and M3. Note this scale is graduated in either yards along the top, or corresponding nautical miles along the bottom.</p>	<p>23-24</p>
<p>The CPA Problem</p>	<p>Explain that in our example, the other vessel traveled 4,000 yards between M1 and M3, so we put a mark at 4,000 on the distance scale. Next, put a mark over the elapsed time between M1 and M3 on the upper time scale of the nomogram, which is graduated in minutes. Here, since six minutes elapsed between the range and bearings obtained for points M1 and M3, we put a mark at 6 on the time scale. Finally, draw a straight line through the two marks using a straight-edge, and extend it down onto the lower speed scale. The point on the speed scale thus defined is the relative speed—20 knots, in this case.</p>	<p>25-28</p>
<p>The CPA Problem</p>	<p>Explain that alternatively, if you have an electronic calculator, you could find the relative speed by solving the formula $\text{speed} = \text{distance} \div \text{time}$, making sure you use distances in miles and time in fractions of an hour. Or you could use either the three- or six-minute rules:</p> <ul style="list-style-type: none"> • Three-minute rule: distance traveled in yards in three minutes $\div 100$ equals speed in knots. • Six-minute rule: distance traveled in miles in six minutes $\times 10$ equals speed in knots. 	<p>29-30</p>
<p>The CPA Problem</p>	<p>Explain that having determined the magnitude of the relative speed, we can now plot the relative course and speed vector from the head of our own ship's true course and speed vector, and then determine the resultant other vessel's true course and speed vector. To do this, lay one side of the parallel ruler along the RML, and position the other side at the tip of our own ship's vector.</p>	<p>31-32</p>

Chapter 2 / Section 2: NS3-M3U5C2S2 – The CPA Problem

The CPA Problem	Explain to now draw a line from <i>r</i> in the same direction as the RML. Lay off the relative speed along this line with the dividers, being sure to use the same speed scale as was used earlier to plot our own ship's vector, the 3:1 scale in this case (if different scales were used, the resulting vector diagram would not be usable). Place an arrowhead at the end of the relative speed vector, and label it with a lowercase <i>m</i> . Vector <i>rm</i> now represents the relative movement speed vector.	33-34
The CPA Problem	Explain that to complete the problem, the <i>em</i> vector representing the maneuvering (other) vessel's true course and speed is formed by drawing a line from the pole <i>e</i> to the end of the relative speed vector.	35-36
The CPA Problem	Explain that the bearing of the vector <i>em</i> is the true course—040° in this case—and its length, measured by the dividers along the 3:1 scale, is the speed—14.5 knots.	37-38
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6 with follow-up discussion as appropriate.	39
The Wind Problem	Explain that since the relative wind that a person feels across a vessel's deck is the result of the wind created by the motion of the vessel plus the actual or true wind, which can both be represented by vectors on a vector diagram, the maneuvering board can be used both to determine the true wind, given the ship's true course and speed and the relative wind, or relative wind, given the ship's true course and speed and the true wind.	40
The Wind Problem	Explain that in a vector diagram for a wing problem, vectors are labeled as follows: <ul style="list-style-type: none"> • <i>er</i> - own ship's course and speed • <i>ew</i> - true wind direction and speed • <i>rw</i> - relative wind direction and speed 	41-42
The Wind Problem	Explain that to determine true wind on the maneuvering board, a vector representing the direction toward which the relative wind is blowing and its speed (determined by a vessel's anemometer) is plotted from the head of the ship's true course and speed vector. Again, for consistency the same speed scale is used throughout; the head of the relative wind vector is labeled with a lower case <i>w</i> , so that vector <i>rw</i> is the relative wind.	43
The Wind Problem	Explain that the following is an example for determining true wind: <p>The relative wind is coming from 040°R at 25 knots and the ship's true course and speed are 125° at 16 knots.</p> <ul style="list-style-type: none"> • $040^\circ + 125^\circ = 165^\circ$ at 25 knots <i>rw</i> <p>Place a parallel ruler at pole and out to 165 degrees on the bearing circle. Then walk the ruler over to head of <i>er</i> line and draw the relative wind line. To mark the distance on the line, use the 3:1 scale and obtain 25- knot distance with dividers. Next measure the distance along the relative wind line and label it <i>rw</i>.</p>	44-49
The Wind Problem	Explain that the true wind vector <i>ew</i> is then formed by drawing a line from <i>e</i> at the pole to the head of the relative wind vector <i>r</i> . Since winds are defined according to the direction from which they are blowing, the reciprocal (opposite) of the bearing of vector <i>ew</i> is read using the small numbers inside the perimeter of the maneuvering board.	50-53

Chapter 2 / Section 2: NS3-M3U5C2S2 – The CPA Problem

The Wind Problem	Explain that to solve for relative wind given the ship's course and speed and true wind, a reverse procedure to that described above is followed. First, the ship's and true wind vectors are plotted. The resulting vector r_w then defines the relative wind. Its direction is specified relative to vector e_r , and its velocity is obtained by measuring its length along the speed scale being used for the problem.	54
Review Question	The Review Question is, "Describe the purpose and use of the maneuvering board." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	55
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	56
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	57

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Projection for in class activity and handout for take home activity

When: This activity can be done any time during the lesson or at the end.

- Copy the examples from the following page to the board or you can project the provided page on the board through your computer. Have class work on each example, then share answers. If there are various answers, you could use CPS in Chalkboard mode to write the choices and vote on how many think each one is correct.

- Answer Key:

Distance = 1.5 Nautical miles

Time = .25 hour

ANS: 6 kts

Distance = 3 Nautical miles

Time = .3 hour

ANS: 10 kts

Distance = 2 Nautical miles

Time = 6 minutes (.1 hour)

ANS: 20 kts

B. Take Home Activity: Use the handout "The CPA Problem" and have cadets complete at home and review the next class period. Note: These questions are from the Study Guide Questions 7 – 12 from the textbook, so correct answers would be in the Instructor's version of the textbook.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 2: NS3-M3U5C2S2 – The CPA Problem

Activity 1: In Class Activity- Speed = distance/time

Using a calculator or figuring manually, find relative speed using the formula: Speed = distance/time

Distance = 1.5 Nautical miles

Time = .25 hour

Distance = 3 Nautical miles

Time = .3 hour

Distance = 2 Nautical miles

Time = 6 minutes (.1 hour)

Chapter 2 / Section 2: NS3-M3U5C2S2 – The CPA Problem

Activity 1: Take Home Activity – The CPA Problem

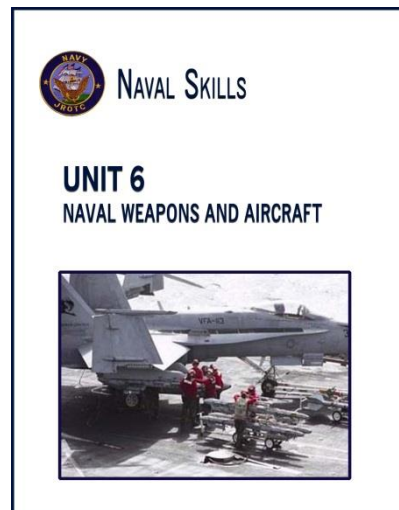
Name: _____ Date: _____ Class: _____

1. Your own ship is on course 090° , speed 10 knots. You sight a ship M on course 270° , speed 15 knots. What are the magnitudes and directions of the following vectors:
 - A. The r_e vector
 - B. The r_m vector
 - C. The r_{em} vector
2. Your own ship is on course 025° , speed 12 knots. You sight a ship M on course 000° , speed 15 knots. What are the magnitudes and directions of the following vectors?
 - A. The r_e vector
 - B. The r_m vector
 - C. The r_{em} vector
3. Your own ship is on course 122° , speed 15 knots. At 0400 a target ship, Skunk M, bears 144° , 27,000 yards. Skunk M's course is 020° , 30 knots. What will be the bearing and range of Skunk M at CPA?
4. Your own ship is on course 285° , speed 18 knots. At 0800 a target ship M bears 310° , 9,000 yards. Ship M's course is 215° , speed 15 knots. What will be the bearing and range of M at CPA?
5. You are aboard a boat heading 060° , speed 25 knots. Your anemometer indicates the relative wind to be from $330^\circ R$ at 35 knots. What are the direction and speed of the true wind?
6. You are on a boat heading 350° , speed 15 knots. The true wind is 10 knots from 240° . What are the direction and speed of the relative wind?

MODULE 3; UNIT 6: Naval Weapons and Aircraft
Unit Overview

Unit Objective:

In this lesson you will learn an understanding of naval weapons.



Unit Organization:

Chapter Number	Chapter Name	Instructional Section / PowerPoint
1	Navy Weapons	NS3-M3U6C1S1 – Weapons and Terminology
		NS3-M3U6C1S2 – Range of Weapons
2	Naval Guns	NS3-M3U6C2S1 – Gun Nomenclature
		NS3-M3U6C2S2 – Gun Projectiles
3	Naval Aircraft and Missiles	NS3-M3U6C3S1 – Naval Aircraft Weapon Systems
		NS3-M3U6C3S2 – Uses of Guided Missiles
		NS3-M3U6C3S3 – Navy Air-to-Air Missiles
4	Mine Warfare	NS3-M3U6C4S1 – Evolution of Mine Warfare
		NS3-M3U6C4S2 – Mine Countermeasures
5	Chemical, Biological & Nuclear Warfare	NS3-M3U6C5S1 – Chemical Warfare
		NS3-M3U6C5S2 – Biological Warfare

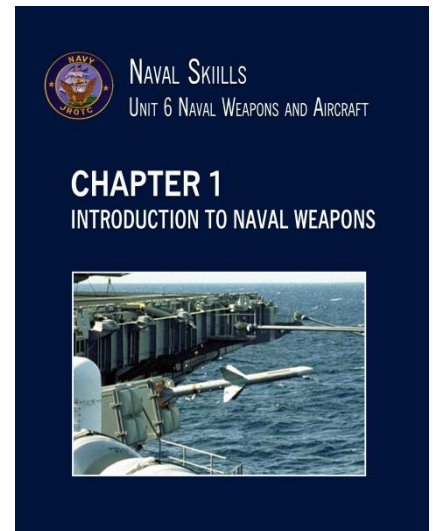
Module 3 Unit 6 Chapter 1: NS3-M3U6C1 – Introduction to Naval Weapons

What Students Will Learn to Do:

Demonstrate an understanding of naval weapons

Skills and Knowledge to be Gained:

1. Describe the evolution of naval weapons from 1453 to present
2. Discuss basic weapons terminology as it applies to the Navy
3. Describe the Navy weapons organization
4. Discuss the range of weapons used by the Navy
5. Describe the major considerations used to select ship's weapons systems
6. Describe weapons systems elements and requirements
7. Describe the shipboard weapons control systems used by the Navy



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...

Writing

- W.11-12.8. Gather relevant information from multiple authoritative print and digital sources...
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.5. Make strategic use of digital media...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor's Guide.

Chapter 1 / Section 1: NS3-M3U6C1S1 –Weapons and Terminology

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of naval weapons

Skills and Knowledge to be Gained:

1. Describe the evolution of naval weapons from 1453 to present
2. Discuss basic weapons terminology as it applies to the Navy
3. Describe the Navy weapons organization

LESSON FLOW OUTLINE

Unit Overview	Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction (A)	Video1 Naval Weapons
Introduction (B)	Check On Learning A	Introduction (C)	Videos 3 & 4 Naval Weapons	Introduction (D)	Video5 Navy Weapons	Check on Learning B	Basic Weapons Terminology (A)
Video Basic Weapons Terminology	Basic Weapons Terminology (B)	Naval Weapons Organization	Review Questions	Closing Questions	Call for Other Questions		

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 1. Place a checkmark beside the NS3-M3U6C1S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C1S1 - Key Terms and NS3-M3U6C1S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 1: NS3-M3U6C1S1 –Weapons and Terminology

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Unit Overview	Explain that sea power is that portion of a nation's overall power that enables it to use the sea in the furtherance of its interests, objectives, and policies. A major part of this is sea control, that is, the ability to use the sea for oneself and one's allies and to deny that use to an enemy. Naval weapons play an important role in achieving victory in battle, both on land and sea. Another major aspect is the ability to project naval power to inland areas of conflict far from our shores whenever necessary.	1-5
Unit Overview	Explain that before the invention of gunpowder, Naval battles were fought with oar-powered galleys. The principal tactic was to outmaneuver enemies and attempt to ram them, overturn them, or set them on fire. Other alternatives were to board enemy vessels after securing them with grappling hooks, or to shave off oars with a close run alongside. Fighting was basically hand-to-hand combat with the same weapons used on land: swords, bows and arrows, and spears. Gradually, crossbows, catapults, and spring- or torsion-powered artillery did allow some battle action before actual ship contact.	6-9
Unit Overview	Show video on Naval weapons.	10
Unit Overview	Explain that speed and maneuverability remained the best offense and defense.	11
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss Naval weapons. We will learn about the evolution of Naval weapons from 1453 until present day. We will talk about the basic weapons terminology as it is used in the U.S. Navy. Finally, we will discuss the Navy weapons organization.	12-14
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	15
Key terms - Definitions	Reinforce the correct definition for each key term.	16-18
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is. “Explain the concept of sea control and why it is important both in wartime and peacetime.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on Navy weapons.	19

Chapter 1 / Section 1: NS3-M3U6C1S1 –Weapons and Terminology

Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	20
Introduction	<p>Explain that the first recorded use of Naval gunfire occurred when the Spanish fired on a Turkish fleet in 1453. This action showed that an adversary could be destroyed at a distance.</p>	21
Video 1 on Naval Weapons	<p>Show video 1 on Naval weapons.</p>	22
Introduction	<p>Explain that eventually, pistols, muskets, cannon, and rudimentary rockets arrived on the scene. Early smooth-bore Naval guns went to rifled bore. There was no fire control in the modern sense until the late nineteenth century. Early Naval guns with their solid and grape shot depended for effectiveness on close range and skillful seamanship.</p>	23-24
Introduction	<p>Explain that The United States Navy defeated the Spanish at Manila Bay and Santiago de Cuba in 1898 in classic naval battles, with battle cruisers and battleships outfitted with large-caliber guns. By the early twentieth century, rifled barrels and detailed studies of projectile motion increased gun ranges to 9 miles, at which ranges the famous British-German naval battle off Jutland was fought in World War I.</p>	25-29
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on students’ understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	30
Introduction	<p>Explain that during World Wars I and II, destroyers assumed the primary role in the deadly business of antisubmarine warfare (ASW), or undersea warfare (USW) as it is called today. Depth charges were used in both wars, and forward-thrown projectiles called hedgehogs were launched in circular patterns against U-boats in the latter war.</p>	31-32
Videos 3 and 4 on Navy Weapons	<p>Show videos 3 and 4 on Navy Weapons.</p>	33-34
Introduction	<p>Explain that since World War II, naval weapons development has concentrated on improved light-weight rapid-fire guns, a whole arsenal of subsurface, surface and air-launched missiles, and extremely sophisticated electronic fire-control radars, weapons control systems, sonars, and guidance systems.</p>	35-39
Video 5 on Navy Weapons	<p>Show video 5 on Navy weapons.</p>	40
Check on Learning Questions B (Lesson questions 5-6)	<p>Check in on students’ understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.</p>	41
Basic Weapons Terminology	<p>Explain that ordnance is a general term for weapons and related physical equipment. This can be further broken down into explosive ordnance, which includes gun ammunition, missiles, torpedoes, mines, bombs, and rockets, and inert ordnance, which includes projecting devices such as guns and launchers and all equipment needed to operate and control weapons.</p>	42-45

Chapter 1 / Section 1: NS3-M3U6C1S1 –Weapons and Terminology

Video on Basic Weapons Terminology	Show video on basic weapons terminology.	46
Basic Weapons Terminology	Examples of inert ordinance are missile launchers, rocket launchers, and a fire control director. A battery of weapons on a ship consists of all armaments of a similar size and type, for example all 5-inch guns or all surface-to-air missile launchers.	47-49
Basic Weapons Terminology	Explain that traditionally, gunnery is the art and science of using guns, while weaponry is concerned with the practical use of all ordnance. Ballistics is the science of projectile motion and is normally used in relation to the motion of projectiles fired from guns. Internal ballistics relates to the motion of a projectile within the bore or barrel of a gun, and external ballistics concerns the action of the projectile in flight along its trajectory, the curved path traveled by the projectile.	50-51
Naval Weapons Organization	Explain that any military organization must make provisions for the procurement of weapons and their ammunition, as well as their installation on vessels, vehicles, or aircraft, and their maintenance. These responsibilities are handled at three levels in the U.S. defense establishment: the Department of Defense for all military services, the Department of the Navy for its fleet and shore facilities, and the individual activity's weapons department.	52
Naval Weapons Organization	Explain that aboard warships, the weapons department has responsibility for all matters pertaining to ordnance. The department head is called the weapons officer. Depending on the ship type, that officer will have a number of assistants, among which are the fire-control officer, missile officer, gunnery assistant, and USW officer.	53
Naval Weapons Organization	Explain that on ships whose tactical characteristics are not primarily related to ordnance or aircraft, deck responsibilities take precedence over weapons. These are the auxiliary ships in the amphibious and mobile replenishment forces. In such ships, the first lieutenant is assigned as head of the deck department, and one of the assistants may be the gunnery officer. Enlisted personnel assigned to the weapons or gunnery department/ divisions are the gunner's mates, fire-control technicians, torpedomen, and missile technicians, again depending on the ship's armament.	54-55
Review Question	The Review Question is, "What factors increased naval gun range to nine miles by the time of WWI?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	56
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson with follow-up reinforcement and discussion as appropriate.	57
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	58

Chapter 1 / Section 1: NS3-M3U6C1S1 –Weapons and Terminology

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handouts for in class and take out activities

When: This activity can be done at the end of the lesson

- Have cadets complete the Handout “Weaponry”. See if they can do this *WITHOUT* looking at their textbook.
- Answer Key:
 - 4 - Battle of Jutland
 - 5 - British built their first aircraft carrier
 - 2 - First recorded use of naval gunfire when Spanish fired on Turkish fleet
 - 1 - Hand-to-hand combat including spears, swords, bows and arrows
 - 6 - Japanese attacked Pearl Harbor with carrier-based air attacks
 - 7 - Development of atomic bomb
 - 3 - United States Navy defeated Spanish at Manila Bay and Santiago deCuba using large caliber guns

B. Take Home Activity: Have cadets complete the handout “Weapons Questions” at home and review the next class period.

- Answer Key:
 - 1. Explosive Ordnance Inert Ordnance
 - Gun Ammunition Rocket Launcher
 - Missile Fire Control Director
 - Torpedo Missile Launcher
 - Mine Gun Mount
 - Bomb
 - Rocket
 - 2. GUNNERY
 - 3. WEAPONRY
 - 4. INTERNAL BALLISTICS
 - 5. EXTERNAL BALLISTICS
 - 6. Fire Control Officer • Missile Officer • Gunnery Assistant • USW Officer

IV. Evaluation - see CPS database for chapter test questions.

Chapter 1 / Section 1: NS3-M3U6C1S1 –Weapons and Terminology

Activity 1: In Class Activity- Weaponry

Name: _____ Date: _____ Class: _____

Directions: The following events illustrate use of weaponry during different wars. Working with a partner, place them in the correct chronological order by placing a number to its left.

_____ **Battle of Jutland**

_____ **British built their first aircraft carrier**

_____ **First recorded use of naval gunfire when Spanish fired on Turkish fleet**

_____ **Hand-to-hand combat including spears, swords, bows and arrows**

_____ **Japanese attacked Pearl Harbor with carrier-based air attacks**

_____ **Development of atomic bomb**

_____ **United States Navy defeated Spanish at Manila Bay and Santiago deCuba using large caliber guns**

Chapter 1 / Section 1: NS3-M3U6C1S1 –Weapons and Terminology

Activity 1: Take Home Activity- Weapons Questions

Name: _____ Date: _____ Class: _____

1. Place each of these weapons in its correct category below:

Rocket Launcher	Torpedo
Fire Control Director	Mine
Gun Ammunition	Gun Mount
Bomb	Rocket
Missile Launcher	Missile

Explosive Ordnance

Inert Ordnance

- _____ is the art and science of using guns.
- _____ is the practical use of all ordnance.
- _____ is the motion of the projectile within the bore or barrel of the gun.
- _____ is the action of the projectile in flight along its trajectory.
- In a ship's weapons department (combatants), list at least three officers that are under the supervision of the Weapons Officer.

Chapter 1 / Section 2: NS3-M3U6C1S2 – Range of Weapons

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of Naval weapons

Skills and Knowledge to be Gained:

1. Discuss the range of weapons used by the Navy
2. Describe the major considerations used to select ship's weapons systems
3. Describe weapons systems elements and requirements
4. Describe the shipboard weapons control systems used by the Navy

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Range Of Weapons (A)	Video Range Of Weapons	Range Of Weapons (B)
Ship Weapons And Selection (A)	Video Ship Weapons And Selection	Ship Weapons And Selection (B)	Check On Learning A	Weapons Systems (A)	Video Weapons Systems	Weapons Systems (B)	Check on Learning B
Weapon Control System (A)	Video Weapon Control System	Weapon Control System (B)	Review Questions	Closing Questions	Call for Other Questions		

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 1. Place a checkmark beside the NS3-M3U6C1S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C1S2 - Key Terms and NS3-M3U6C1S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 1 / Section 2: NS3-M3U6C1S2 – Range of Weapons

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the range of the weapons used by the Navy. We will learn about the major considerations used when selecting ship’s weapons systems. We will also learn about the weapons systems elements and their requirements. Finally, we will learn about the shipboard weapons control system used by the U.S. Navy.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	<p>This Opening Question is, “What would you think would be the purpose of a weapon control system?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the range of weapons.</p>	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
Range of Weapons	Explain that from the earliest guns, which had ranges of only a few hundred feet, the range of naval guns increased to more than 40,000 yards (20 miles) by the end of World War II. Since then, rocket propelled projectiles, aircraft and guided missiles have increased weapon ranges greatly beyond this. Greater weapon ranges have increased the importance of naval firepower in land warfare.	10-12
Video on Range of Weapons	Show video on range of weapons.	13
Range of Weapons	Explain that the increased lethal range of nuclear weapons has required the introduction of the tactic of dispersion of military forces to minimize combat damage. Also, improvements in aircraft, undersea craft, and missiles have forced the development and use of early warning systems involving both ships and aircraft on patrol far from the main area of operations.	14-15
Ship Weapons and Selection	Explain that the primary consideration that governs what type of weapons a ship will have is her combat missions. A guided missile cruiser (CG) employed in escorting and protecting aircraft carrier strike groups (CSGs) will carry a balanced armament of anti-air warfare, anti-surface warfare, and undersea warfare weapons. A dock landing	16-19

Chapter 1 / Section 2: NS3-M3U6C1S2 – Range of Weapons

	<p>ship (LSD) will carry only such self-defense weapons as the Phalanx close-in weapons system and machine guns, because the ship is not designed to be a weapons platform but a carrier of troops and vehicles. Small patrol vessels, destroyers, and cruisers may carry surface-to-surface missiles for attacks against surface ships.</p>	
Ship Weapons and Selection	<p>Explain that they may also carry anti-aircraft guns and missiles to protect against the air threat, and machine guns for defense against small craft including CIWS and Sea Sparrow. Destroyers, frigates, and cruisers carry antisubmarine torpedoes for use against submarines.</p>	20-22
Ship Weapons and Selection	<p>Explain that two tactical concepts are of major importance in the design of gun and missile systems:</p> <ul style="list-style-type: none"> • Area defense • Point defense 	23
Ship Weapons and Selection	<p>Explain that if a ship's primary mission is to provide defense as far distant from a formation of ships as possible, her radars and weapons will be designed to cover an area extending some distance from her. The weapons of ships of this kind provide protection for the entire formation, and the weapons are therefore called area defense weapons. Guided missile destroyers and cruisers are ships of this type. They can cover a large area with their air and surface search and fire-control radars, and they have weapons capable of engaging any target that enters this defensive envelope. Likewise, destroyers and frigates provide area defense against enemy submarines.</p>	24-25
Video on Ship Weapons Selection	<p>Show video on ship weapons selection</p>	26
Ship Weapons and Selection	<p>Explain that point defense weapons are on:</p> <ul style="list-style-type: none"> • Carriers • Auxiliary ships • Amphibious ships • Frigates 	27
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	28
Weapons Systems	<p>Explain that a weapon system is the combination of a weapon, or weapons, and the equipment used to bring it to bear against the enemy. The weapon system, taken as a whole, must include the following:</p> <ul style="list-style-type: none"> • Elements that detect, locate, and identify the target (for example, radar and sonar equipment) • Elements that deliver or initiate delivery of the destructive payload of the weapon to the target (for example, a gun delivers a projectile to the target and a mine itself explodes when a passing ship detonates it) • Elements of fire control that guide a weapon, set the fuse of its explosive payload, or "program" it to reach the target (for example, a torpedo or surface-to-air guided missile) • A destructive payload capable of destroying the target when exploded on contact with it, or in close proximity to it 	29-32

Chapter 1 / Section 2: NS3-M3U6C1S2 – Range of Weapons

Video on Weapons Systems	Show video on weapons systems.	33
Weapons Systems	<p>Explain that any weapon system or component designed today must effectively address two basic questions:</p> <ul style="list-style-type: none"> • What is the system or component unit supposed to do? • How well is the system or component supposed to do it? 	34
Weapons Systems	<p>Explain that the answer to the first question is called the military requirement. It is a statement of the nature of the equipment and its capabilities. Some examples of this might be the range and rate of fire of a gun, the range, accuracy, and sensitivity of radar, or the speed, accuracy, and limits of operation of a missile control computer.</p>	35
Weapons Systems	<p>Explain that the answer to the second question concerns general requirements that are applicable to all weapon systems, regardless of the nature of the system or its components. Some of the current general requirements are:</p> <ul style="list-style-type: none"> • Reliability and Flexibility. The system must be able to function satisfactorily in spite of some failures in its power supply, or with certain components disabled and others substituted. • Safety. The system should reduce hazardous conditions by interlocks or other means; it must not endanger friendly ships and aircraft, or its own ship's structure or personnel. • Simplicity of Operation. Even though modern weapon systems are complex, they should be designed for uncomplicated operation by average, trained human beings. • Maintainability. This requires not only the use of long-life components, but also convenient or nearly automatic testing and trouble-diagnostic capability, integrated into the system if possible. Failed parts should be able to be replaced quickly with spares, so that the equipment will not be out of commission for an extended period of time. 	36-39
Weapons Systems	<p>Explain that before a weapon system is accepted for the fleet, it must go through many tests and tactical evaluations to ensure that all of the military and general requirements are met.</p>	40
Check on Learning Questions B (Lesson questions 5-6)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.</p>	41
Weapon Control System	<p>Explain that the need for rapid handling and evaluation of target data from detection to destruction has brought into being a system concept more sophisticated than the traditional fire-control system, which was designed to control only one particular battery. Naval Tactical Data System (NTDS) is made up of data processing display and transmitting and receiving communication modules. Through these, it's possible to exchange target information instantaneously with all ships in the force. Each ship's weapons become part of the total array of weapons available to the task force commander.</p>	42-45
Weapon Control System	<p>Explain that modern computer equipment has changed this concept to that of a total weapon control system (WCS). The WCS integrates all ship's batteries and can operate them in close coordination with those of other ships in company. The weapon control system is composed of a weapon direction system, a tactical data system, and one or more fire-control systems. The WCS concept has, in most cases, relocated the</p>	46

Chapter 1 / Section 2: NS3-M3U6C1S2 – Range of Weapons

	commanding officer from the bridge to the ship's combat information center (CIC) in an interior compartment as the location from which that officer is best able to direct the batteries and "fight" the ship.	
Video on Weapon Control System	Show video on weapon control system.	47
Weapon Control System	Explain that the WCS acts as a clearinghouse for target information, to provide early acquisition and designation of a target. The NTDS is closely related to the ship's weapon direction system, but it receives input from other ships and aircraft as well. It is made up of data processing, display, and transmitting and receiving communication modules. The NTDS makes it possible to exchange target information instantaneously with all ships in the force, so each ship's weapons become part of the total array of weapons available to the task force commander. He or she can designate the ship or ships best equipped and positioned to engage the target.	48-49
Weapon Control System	Explain that for example, if an incoming cruise missile were detected by one ship, she would automatically pass all target information obtained by her sensors to the other ships via the tactical data links. Every ship's weapon direction system would then be able to feed the target data to its own fire control system, for dissemination to each missile and gun battery. The batteries then would have the necessary preliminary information to acquire and track the incoming missile. Orders to fire can be given by the task force air warfare commander or by an individual ship's commanding officer, as the tactical situation requires. The ship best equipped and positioned would be directed to fire.	50-52
Weapon Control System	Explain that Aegis cruisers and Arleigh Burke-class destroyers are equipped with the most sophisticated shipboard combat system developed to date. The Aegis WCS is designed to provide area air defense in a high density, high threat, antiship missile environment. The major capabilities of the system include long detection range, automatic detection and tracking of multiple targets, automatic special threat alert, and high resistance to electronic countermeasures.	53-55
Review Question	The Review Question is, "Discuss how a modern battle force might be dispersed if there was a threat posed by nuclear weapons?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	56
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson with follow-up reinforcement and discussion as appropriate.	57
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	58

Chapter 1 / Section 2: NS3-M3U6C1S2 – Range of Weapons

III. Supplemental Activities -

A. In Class Activity:

Supplies required: handout for take home activity

When: Any time during the lesson.

- With a partner, and without looking at textbooks, have cadets discuss the following:
 - Discuss the difference between a weapon system/component’s military requirements and its general requirements.
 - With regard to its general requirements, explain completely but in simple terms with examples, what is meant by each of the following:
 - Reliability and flexibility
 - Safety
 - Simplicity of Operation
 - Maintainability

B. Take Home Activity: have cadets complete the handout “Range of Weapons” at home and review the next class period.

Answer Key:

1. Which of the following is NOT a capability of AEGIS?

- a. **Very limited storage capability**
- b. Immunity to current ECM
- c. Automatic threat alert
- d. Long detection range

2. T/F? WCS stands for War Control System. **(False - Weapons Control System)**

3. T/F? NTDS stands for Naval Tactical Data System, and includes data processing display and transmitting and receiving communication modules. **(True)**

4. The defense of a portion of a perimeter surrounding a ship or outpost by a weapon system capable of interdicting any threat that might materialize at that location is called **point** defense.

5. The WCS concept has in most cases relocated the commanding officer’s location from the bridge to the ship’s **Combat Information Center (CIC)**.

6. Consider how a modern battle force consisting of an aircraft carrier and its screening cruisers and destroyers might be dispersed because of the threat posed by nuclear weapons. List some factors to be considered based on the capabilities of systems you have learned about in this chapter.

Responses will vary, but should include evidence of cadet doing research and applying insightful thoughts indicating understanding and thoughtful consideration.

IV. Evaluation - see CPS database for chapter test questions.

Module 3 Unit 6 Chapter 2: NS3-M3U6C2 – Naval Guns

What Students Will Learn to Do:

Demonstrate an understanding of naval weapons

Skills and Knowledge to be Gained:

1. Describe the major characteristics and nomenclature of naval guns
2. Describe the principal components of gun ammunition
3. Describe the principles of gun projectiles
4. Describe the techniques used by the Navy to provide gunfire support

Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- W.11-12.8. Gather relevant information from multiple authoritative print and digital sources...
- RI.11-12.9. Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance ...

Writing

- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

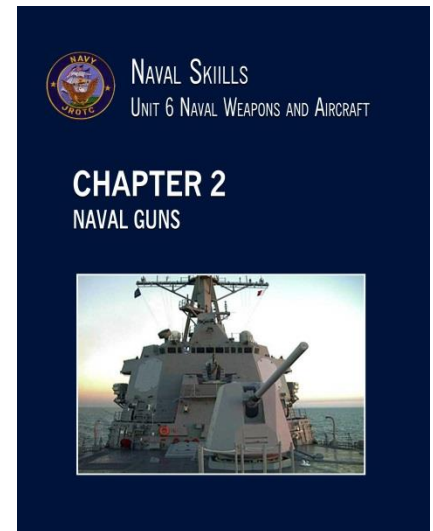
Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor's Guide.



Chapter 2 / Section 1: NS3-M3U6C2S1 – Gun Nomenclature

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of Naval weapons

Skills and Knowledge to be Gained:

1. Describe the major characteristics and nomenclature of Naval guns
2. Describe the principal components of gun ammunition

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Video Naval Guns	Introduction	Gun Nomenclature (A)
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Check On Learning A	Gun Nomenclature (B)	Check on Learning B	Gun Nomenclature (C)	Review Questions	Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 2. Place a checkmark beside the NS3-M3U6C2S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C2S1 - Key Terms and NS3-M3U6C2S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 1: NS3-M3U6C2S1 – Gun Nomenclature

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the major characteristics and nomenclature of Naval guns. We will also learn about the principal components of gun ammunition.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-10
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Name some reasons the Navy needs different kinds of guns and projectiles.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on Naval guns.	11
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	12
Video on Naval Guns	Show video on Naval guns.	13
Introduction	Explain that almost all Naval ships and many kinds of Naval aircraft are fitted with various kinds of guns. Guns may be used against surface, shore, and air targets. Ship guns designed for engaging both air and surface targets are termed dual-purpose systems. Most guns in use today are automatic, that is, the recoil of the gun ejects the fired powder case and reloads the gun.	14-17
Gun Nomenclature	Explain that a gun is basically a tube or barrel closed at one end, from which a projectile is ejected at a high speed by gases produced by a burning propellant. The inside or bore of the barrel is rifled with grooves having a right-hand twist of uniform diameter from one end to the other. Rifling causes the projectile to spin in flight, which keeps the projectile from tumbling after it leaves the barrel, thus providing greater accuracy.	18-20
Gun Nomenclature	Explain that the size of Naval guns is expressed in one of several ways. Inside or bore diameter, measured from the tops of the rifling lands (high side of the rifling grooves), may be specified in millimeters or, for older guns, in inches. For guns less than 3 inches in bore diameter, their barrel width is often referred to as their caliber, expressed in millimeters or decimal fractions of an inch. A 20-caliber machine gun, for instance, is a	21-23

Chapter 2 / Section 1: NS3-M3U6C2S1 – Gun Nomenclature

	<p>machine gun whose bore diameter is 20 millimeters. A 32-caliber revolver is a handgun whose bore diameter is .32 inches. For guns larger than 3 inches in bore diameter, however, the diameter is specified in either millimeters or inches, and the length in calibers. Caliber for these guns is defined as a number equal to the length of the gun in inches divided by the diameter of the gun in inches. For example, a gun having a bore diameter of 3 inches and a barrel 150 inches long is designated 3-inch, 50-caliber. Similarly, a 5-inch-diameter gun 270 inches in length is called a 5-inch, 54-caliber gun.</p>	
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	24
Gun Nomenclature	<p>Explain that the arc of elevation is the total vertical arc through which a gun barrel can be raised and lowered. The arc of train is the total horizontal arc through which a gun mount may be rotated. If a gun were mounted well forward on the bow, it could have a clear field of fire up to about 320 degrees, but a gun mounted aft might have only a 180-degree arc astern. Electrical and mechanical cutout cams are incorporated in gun circuits and on mounts, which prevent guns from being fired when they are pointed at a part of a ship or aircraft's structure.</p>	25-28
Gun Nomenclature	<p>Explain that the mount, or gun mount, is the entire structure between the gun and the ship or aircraft's structure. It supports and secures the gun, and provides for the gun's elevation, train, and recoil.</p>	29
Gun Nomenclature	<p>Explain that a battery of guns is a group of gun mounts of the same size, normally controlled from the same point. The main battery of a ship consists of the largest size guns on board. The secondary battery consists of dual-purpose guns, or guns of the next smaller size. On ships having both guns and missiles, the most capable system may be designated the main battery, and the other the secondary.</p>	30-31
Gun Nomenclature	<p>Explain that the range at which a gun is effective against surface and air targets (the effective range) is an important characteristic of a gun system. It is dependent on the initial velocity imparted to the projectile by the propellant, the weight of the projectile, the caliber of the gun, and the ability of the sensors and fire-control systems to detect and track the target. The ranges of larger caliber naval gun projectiles have been extended somewhat by the addition of rocket assistance. These rocket-assisted projectiles (RAP) have a solid-propellant rocket motor incorporated in the shell casing.</p>	32-34
Gun Nomenclature	<p>Explain that Naval guns are categorized as major (8 inches or larger), intermediate (less than 8 inches and larger than 4 inches), and minor (less than 4 inches in diameter).</p>	35
Gun Nomenclature	<p>Explain that the biggest Naval guns available today are the 127mm (5-inch)/54-caliber automatic, dual-purpose, single-mount guns fitted on Burke- and Spruance-class destroyers and Ticonderoga-class cruisers. The Mark 45 model with which these ships are equipped is completely automatic. It is loaded, controlled, and fired from remote positions without any need for a gun crew to enter the mount. The gun can fire forty rounds per minute to a maximum range of 24,500 yards (23,700 meters). The shell weighs 72 pounds.</p>	36-38
Gun Nomenclature	<p>Explain that the Oto Melara 76 mm (3-inch) /62-caliber rapid-fire, dual-purpose mount was developed in Italy for NATO use in the late 1960s to combat high-speed aircraft and the cruise missile. Because of its light weight, it is suitable for installation on guided missile frigates. It is a water-cooled single mount, with a rate of fire of eighty-five rounds per minute and a maximum range of 17,800 yards (19,200 meters). The mount is not manned and requires only three ammunition handlers to reload the magazine.</p>	39-40

Chapter 2 / Section 1: NS3-M3U6C2S1 – Gun Nomenclature

Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6 with follow-up discussion as appropriate.	41
Gun Nomenclature	Explain that The Phalanx close-in weapon system (CIWS) is a 20mm gun system designed to be a ship's last-ditch weapon against an antiship cruise missile. The system is a complete unit containing search and tracking radar, a fire-control system, and a magazine. The Phalanx system is capable of automatically detecting and engaging any missiles that penetrate the other task force defenses. The gun is a six-barrel Vulcan Gatling gun capable of firing 3,000 rounds per minute to a range of about 1 mile. The Phalanx search radar input is fed directly into a computer which will identify the target, lock the gun on, and fire it until the target is destroyed. The system will automatically cease firing and begin searching for another target.	42-45
Gun Nomenclature	Explain that the Sea-Ram, a newer CIWS, uses a magazine of 11 rolling airframe missiles (RAM) with a Gatling gun to engage close-in target.	46
Gun Nomenclature	Explain that the principal components of a full round of gun ammunition are a propelling charge (propellant) and a projectile. The propelling charge provides the thrust that ejects the projectile at the desired velocity from the muzzle of the gun. The propelling charge assembly includes an ignition system, the propellant, and the container. The payload or projectile assembly includes the detonating fuse, the booster and the burster charge.	47-49
Gun Nomenclature	Explain that in a Naval gun, the propellant charge is packed behind the projectile, either in bags or in metal cartridge cases. If the propellant is packed in bags, the ammunition is called bag ammunition; if it is packed in a case, it is called case ammunition. The huge 16-inch guns of the old retired battleships used bag ammunition, but all modern naval guns on active ships today use either semifixed or fixed case ammunition. Semifixed ammunition refers to a round that consists of a projectile and a separate case charge loaded one after the other. This type of round is used in most 5-inch guns. Fixed ammunition refers to a round in which the projectile and powder case are permanently attached, as with a rifle cartridge. Such ammunition is used in 3-inch and smaller guns.	50-52
Gun Nomenclature	Explain that propellants are chemical compounds that burn at a rapid rate rather than detonate or explode. The initiating stage in a propellant train or series is called a primer or detonator. It produces a hot flame that sets off the next stage, called the igniter or booster. The igniter, in turn, sets off the main burster charge.	53-54
Review Question	The Review Question is, "Where, and in what, are propellant charges packed in projectiles?" Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	55
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	56
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	57

Chapter 2 / Section 1: NS3-M3U6C2S1 – Gun Nomenclature

III. Supplemental Activities -

A. In Class Activity:

Supplies required: projected discussion questions for in class activity; handout for take home activity

When: At the end of the lesson

- Separate the class into pairs. With their partner, have cadets discuss the following review questions:

1. What does it mean when gun is “completely automatic?”
2. Why would a gun mounted well forward on the bow have a clear field of fire up to about 320° arc, but a gun mounted aft might have only a 180° arc astern?
3. Why would a rocket assisted projectile (RAP) be able to travel further than one that is not rocket assisted?
4. What is a close-in weapon (CIWS) designed to do?

B. Take Home Activity: Have the cadets complete the handout “Naval Guns” and review the next class period.

Take Home Activity KEY

1. A- Gun barrel B- Breech block C- Breech housing
2. A- Rifling land B- Rifling groove C- Liner D- Tube
3. caliber.
4. barrel length
5. raised, lowered.
6. Cutout cams
7. Discussion should include projectile assembly, fuze, booster, burster charge, propellant charge, and how they all work together.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 1: NS3-M3U6C2S1 – Gun Nomenclature

Activity 1: In Class Activity – Discussion Questions

1. What does it mean when gun is “completely automatic?”
2. Why would a gun mounted well forward on the bow have a clear field of fire up to about 320° arc, but a gun mounted aft might have only a 180° arc astern?
3. Why would a rocket assisted projectile (RAP) be able to travel further than one that is not rocket assisted?
4. What is a close-in weapon (CIWS) designed to do?

Chapter 2 / Section 1: NS3-M3U6C2S1 – Gun Nomenclature

Activity 1: Take Home Activity – Naval Guns

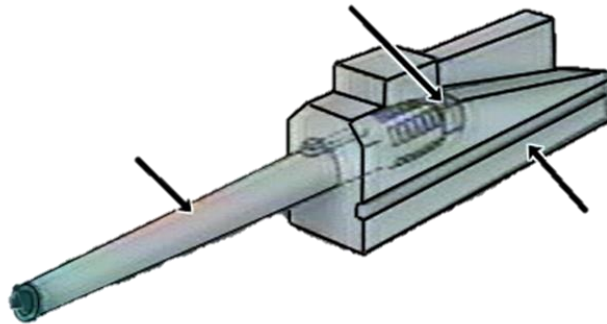
Name: _____ Date: _____ Class: _____

1. Label these parts of this gun, placing a letter by each arrow on the drawing, then writing the word by the letter below:

A.

B.

C.



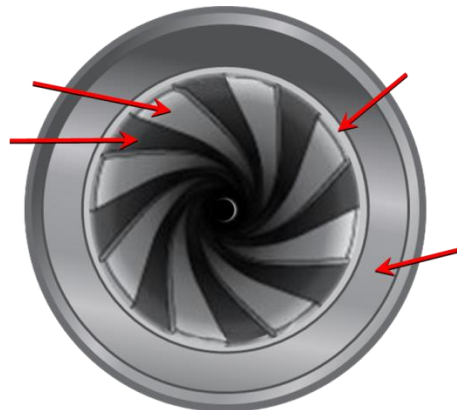
2. Label the part of a gun's barrel, placing a letter by each arrow on the drawing, then writing the word by the letter below:

A.

B.

C.

D.



3. A gun's barrel width is often referred to as its _____.
4. Gun measurement for barrels over 3" in diameter includes caliber measurement of _____ divided by bore diameter in inches.
5. The arc of elevation is the total vertical arc through which a gun barrel can be _____ or _____.
6. What prevents large guns being fired into the ship or aircraft's structure?
7. Explain the difference between a propelling charge and a projectile, and discuss the process describing how they work together. Use the back of this paper for space.

Chapter 2 / Section 2: NS3-M3U6C2S2 – Gun Projectiles

(Section 2 of 2)

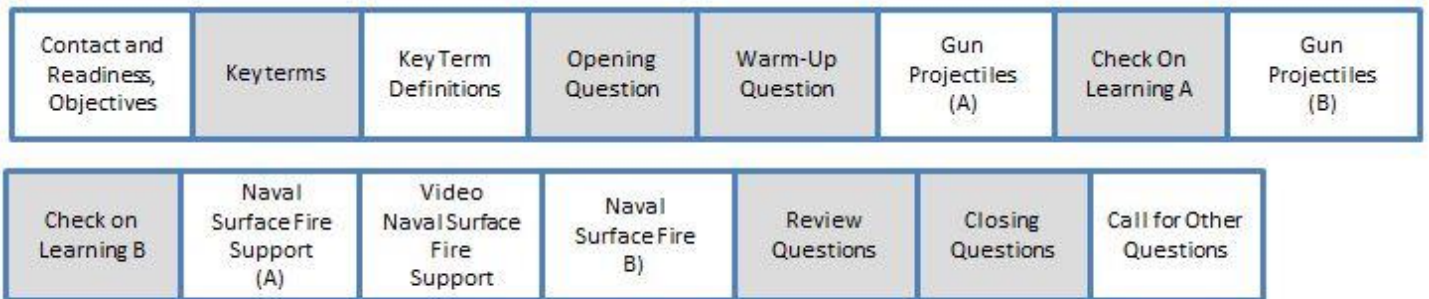
What Students Will Learn to Do:

Demonstrate an understanding of naval weapons

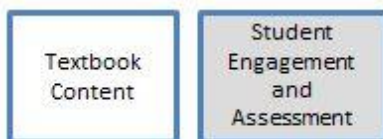
Skills and Knowledge to be Gained:

1. Describe the principles of gun projectiles
2. Describe the techniques used by the Navy to provide gunfire support

LESSON FLOW OUTLINE



Key:



Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 2. Place a checkmark beside the NS3-M3U6C2S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C2S2 - Key Terms and NS3-M3U6C2S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 2 / Section 2: NS3-M3U6C2S2 – Gun Projectiles

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the principles of gun projectiles. We will also learn about the different techniques used by the Navy to provide gunfire support.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Name three features of projectile or gun design that improve its function.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on gun projectiles.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
Gun Projectiles	Explain that the projectile is the part of a round that is expelled at high velocity from the gun bore by the burning propelling charge. Projectiles used in small weapons often consist of solid metal; projectiles used in larger guns, however, are assemblies of several components. The three main parts of a projectile are its metallic body, the fuse that sets off the main charge, and the explosive burster charge. A solid bullet damages by impact alone. Naval high-explosive projectiles inflict damage primarily by blast and fragmentation. This type of projectile is designed to break up into many fragments of specific dimensions upon detonation.	10-12
Gun Projectiles	Explain that projectiles are cylindrical in shape, with curved noses called ogives. Such a shape makes the projectile stable as it spins about its long axis in flight, with a minimum resistance to air. As previously mentioned, the bores of modern Naval guns are rifled in order to impart this spin to the projectile as it travels the length of the bore.	13-14
Gun Projectiles	Explain that various projectiles have different designs, because the targets they are intended for differ in character. There are three general classes of projectiles: penetrating, fragmenting, and special purpose.	15
Gun Projectiles	Explain that Penetrating projectiles include armor-piercing shells designed to penetrate heavy armor such as that of a ship before exploding. The "AP armor	16-17

Chapter 2 / Section 2: NS3-M3U6C2S2 – Gun Projectiles

	<p>piercing" projectile is an example of a projectile of this type. The burster charge must be insensitive to the shock of impact, to permit penetration and subsequent detonation by a delay fuse.</p>	
Gun Projectiles	<p>Explain that fragmenting projectiles are designed to damage by blast effect and fragmentation. Fragmentation is the breaking up of the projectile walls into high-velocity shrapnel. These projectiles have relatively thin walls and large burster charges. The most commonly used projectiles of this type are called HE-PD (high explosive-point detonating) projectiles. They are used against lightly armored surface targets such as torpedo boats, shore installations, or personnel. Since no penetration is required, the bursting charge is sensitive to impact. Most antiaircraft projectiles are of the fragmentation type; some such as the widely used "AA common projectile, are normally fused to detonate in the proximity of the aircraft, and the fragments penetrate the skin.</p>	18-21
Check on Learning Questions A (Lesson questions 3-4)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.</p>	22
Gun Projectiles	<p>Explain that Special Purpose projectiles have a variety of applications, including illumination, smoke, chaff, and target practice. They are not intended to inflict damage by blast or fragmentation. Whatever small amount of explosive may be in the shell is there only to expel the contents to achieve the designed purpose.</p>	23
Gun Projectiles	<p>Explain that illuminating projectiles, often called star shells, contain a bright flare attached to a parachute. The flare is intended to illuminate an enemy target or terrain as it slowly descends under the parachute.</p>	24-25
Gun Projectiles	<p>Explain that incendiary projectiles contain white phosphorus. They can be used to set fire to flammable targets such as fuel and ammunition dumps, to mark the fall of shot during shore bombardment, and to create chaos and confusion among enemy troops. Once released by the exploding projectile, the fragments of burning white phosphorus are almost impossible to extinguish.</p>	26-27
Gun Projectiles	<p>Explain that chaff projectiles contain metal foil strips that are scattered into the air by a small burster charge. The foil strips can confuse enemy search and fire-control radar by causing interference that can mask the intended target.</p>	28
Gun Projectiles	<p>Explain that Nonfragmenting projectiles produce bursts of various colored smoke for antiaircraft gunnery practice. Target projectiles contain sand or other inert material to simulate the weight and balance of burster charges; they are used for surface gunnery practice.</p>	29-30
Gun Projectiles	<p>Explain that once a projectile has hit the target or has come within close proximity of it, a device called a fuse detonates the burster charge. A fuse can be either a mechanical or electrical device. Fuses are classified according to their function as impact, time, or proximity. They may be located either in the nose or the base of a projectile, again depending on their intended function. Various physical forces of flight, impact on or proximity of target, or passage of a set time can cause the fuse to initiate the explosive train.</p> <p>NOTE: While the words 'fuze' and 'fuse' are linguistically interchangeable, military usage distinguishes between them. A fuze is a mechanical or electronic device which detonates a projectile and a fuse is a pyrotechnic (Light the fuse and run) device [a fuze is also a device to open an electric circuit in case of a short].</p>	31-32
Gun Projectiles	<p>Explain that proximity fused (VT-fused) shells were introduced in 1943. A VT fuse contains a radio transceiver that emits pulses of radio energy and receives a reflection</p>	33-36

Chapter 2 / Section 2: NS3-M3U6C2S2 – Gun Projectiles

	<p>of those pulses back from the target. It is designed to detonate the projectile at a position that will cause the greatest damage to the target. If the projectile comes within a hundred feet of the target, the returning pulse is strong enough to set off the fuse. In the case of a projectile fitted with a VT fuse, a near miss can be nearly as effective as a direct hit. VT fuses are commonly used in fragmentation shells. A more recent innovation is the controlled variable time fuse (CVT), which delays for a set time after the projectile is fired before becoming active (arming), allowing the weapons officer to choose the time at which the fuse arms and begins radiating. For example, if a ship were firing over friendly ships, the arming would be delayed until the projectile was well past those ships.</p>	
Gun Projectiles	<p>Explain that the mechanical time fuse contains a clock mechanism that explodes the projectile after a preset amount of time elapses. Projectiles containing this type of fuse were commonly used in the 5-inch, 40-caliber, and 20-caliber antiaircraft guns of battleships and cruisers during World War II, which put up "flak" screens to protect fast carrier task forces during enemy air attacks. Flak is heavy antiaircraft barrages through which aircraft must fly to attack the defended targets.</p>	37-39
Check on Learning Questions B (Lesson questions 5-6)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.</p>	40
Naval Surface Fire Support	<p>Explain that bombardment of enemy shore installations was common in World War II. Techniques have been continually improved through experience gained in successive amphibious landings in that war, and later in gunfire support missions in Korea, Vietnam, and several operations in the Middle East, including Desert Storm against Iraq.</p>	41-42
Video on Naval Surface Fire Support	<p>Show video on Naval surface fire support.</p>	43
Naval Surface Fire Support	<p>Explain that Naval gunfire support can mean the difference between success or failure in an opposed amphibious assault. In order for it to be effective, Naval gunfire support for amphibious operations must be carefully planned in advance and executed with precision and timeliness. Naval gunfire is vitally important both before the assault to neutralize beach defenses and after the troops have landed to support them before adequate field artillery can be brought ashore and put into action.</p>	44-45
Naval Surface Fire Support	<p>Explain that Naval gunfire may also be called upon for other support roles, in addition to those connected with amphibious warfare. It can be of prime importance in mine warfare activities, air-sea rescue missions, reconnaissance and demolition operations, feints, raids, and flak suppression during air strikes. It can be used in interdiction of coastal roads, railroads, airfields and troop assembly areas.</p>	46-50
Review Question	<p>The Review Question is, "List and briefly describe the three general classifications of projectiles." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.</p>	51
Closing Questions(Lesson Questions 7 - 8)	<p>Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.</p>	52
Call for Other Questions	<p>Provide the opportunity for students to ask final questions regarding the content covered.</p>	53

Chapter 2 / Section 2: NS3-M3U6C2S2 – Gun Projectiles

III. Supplemental Activities –

A. In Class Activity:

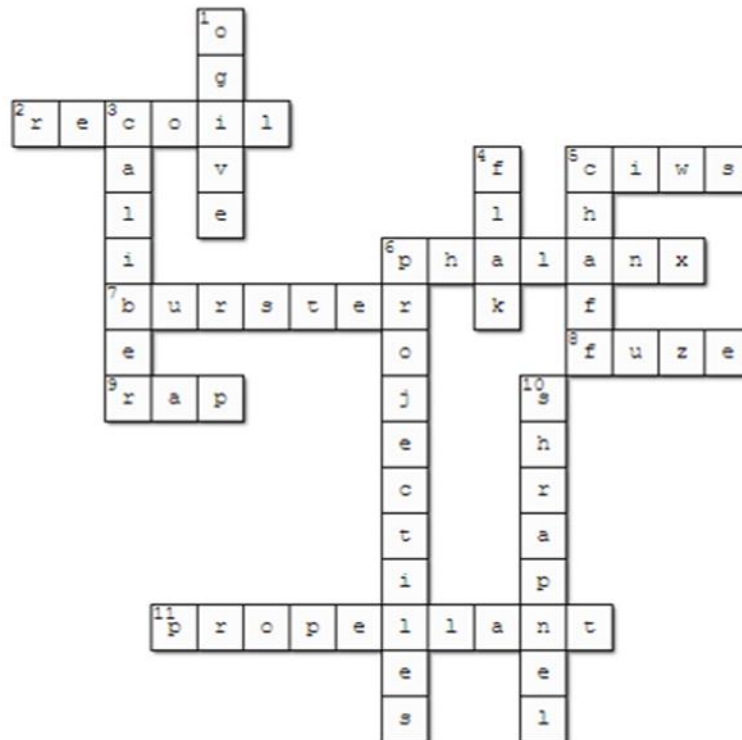
Supplies required: Handout for the homework activity.

When: This lesson should be done at the end of the lesson.

- Divide class into five groups. Have each group take one of the questions below and spend 5-7 minutes brainstorming how and why naval surface fire support would be important in that scenario. Then have each group briefly summarize their discussion to the larger group.
 - Neutralizing beach defense before beach landing
 - Troops after beach landing
 - Reconnaissance and demolition
 - Flak suppression
 - Interdiction of coastal roads, railroads, airfields and troop assembly areas
 -

B. Take Home Activity: Have cadets complete the crossword puzzle at home and review the next class period.

Answer Key:



Created on TheTeachersCorner.net Crossword Maker

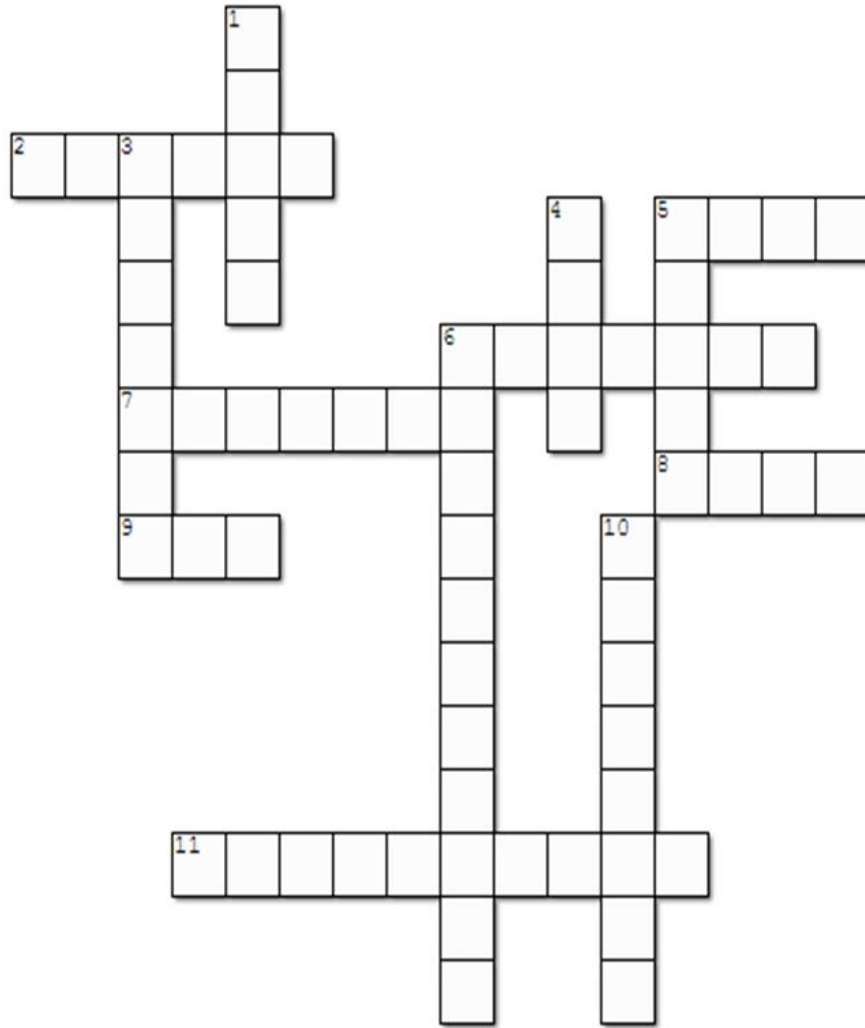
IV. Evaluation - see CPS database for chapter test questions.

Chapter 2 / Section 2: NS3-M3U6C2S2 – Gun Projectiles

Activity 1: Take Home Activity – Crossword Puzzle

Name: _____ Date: _____ Class: _____

Directions: Solve the crossword puzzle using key words from the lesson.



Created on TheTeachersCorner.net Crossword Maker

Across

2. The distance through which a weapon moves backward after discharging
5. Close-in weapons system
6. A type of CIWS
7. Explosive compounds are sealed within the burster tube or the steel projectile body
8. A mechanical or electronic device to detonate an explosive charge
9. Rocket-assisted Projectiles
11. Chemical compound that burns at a rapid rate rather than detonate or explode

Down

1. The curved nose of a missile or rocket
3. The diameter of the bore of a gun taken as a unit of measurement
4. A heavy anti-aircraft barrage through which aircraft must fly to attack their target
5. Strips of metal foil dispersed from projectiles to confuse enemy radar by creating false blips
6. An object fired from a gun with an explosive propelling charge, such as a bullet, shell, rocket, or grenade
10. Shell fragments

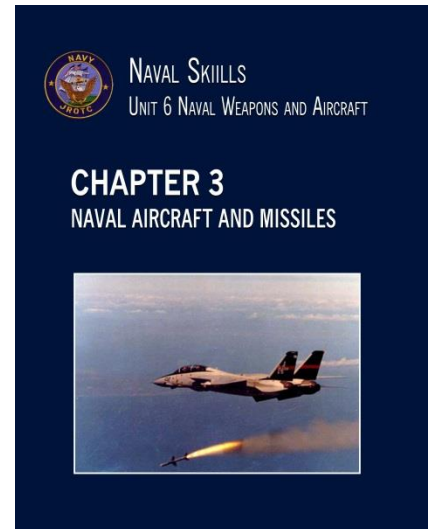
Module 3 Unit 6 Chapter 3: NS3-M3U6C3 – Naval Aircraft and Missiles

What Students Will Learn to Do:

Demonstrate an understanding of naval weapons

Skills and Knowledge to be Gained:

1. Describe the evolution of naval aviation
2. Describe the types of naval aircraft
3. Explain the evolution of naval aircraft weapon systems
4. Describe the general types of guided missiles
5. Describe the four basic component parts of guided missile systems
6. Describe the types and usage of guided missiles used in the Navy.
7. Describe the Navy's submarine-launched ballistic missile program
8. Describe the purpose of the Navy's cruise missiles launched from surface ships, submarines and aircraft
9. Describe the Navy's air-to-air missiles used in the front line defense of the naval task force
10. Describe the second line of fleet defense with the use of Navy's surface-to-air missiles
11. Describe the purpose of the Navy's air-to-surface missiles
12. Describe the Navy's current Undersea Warfare(USW) weapons
13. Explain the two basic types of guided missile trajectories



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts...
- W.11-12.7. Conduct short as well as more sustained research projects to answer a question or solve a problem...
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...

Module 3 Unit 6 Chapter 3: NS3-M3U6C3 – Naval Aircraft and Missiles

- SL.11-12.5. Make strategic use of digital ...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 3 / Section 1: NS3-M3U6C3S1 – Naval Aircraft Weapon Systems

(Section 1 of 3)

What Students Will Learn to Do:

Demonstrate an understanding of Naval weapons

Skills and Knowledge to be Gained:

1. Describe the evolution of Naval aviation
2. Describe the types of Naval aircraft
3. Explain the evolution of Naval aircraft weapon systems
4. Describe the general types of guided missiles
5. Describe the four basic component parts of guided missile systems

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Warm-Up Question	Introduction	Check On Learning A	Naval Aircraft Weapons System (A)
Video Naval Aircraft Weapons System	Naval Aircraft Weapons System (B)	Guided Missiles	Check on Learning B	Missile Components (A)	Video Missile Components	Missile Components (B)	Review Questions
Closing Questions	Call for Other Questions						

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 3. Place a checkmark beside the NS3-M3U6C3S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C3S1 - Key Terms and NS3-M3U6C3S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 3 / Section 1: NS3-M3U6C3S1 – Naval Aircraft Weapon Systems

II. Instructional Flow:

Flow Item	Textbook Content / Student Engagement and Assessment	Slides
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the evolution of Naval aviation. We will also learn about the different types of Naval aircraft. We will discuss the types of Naval aircraft and their weapon systems. We will also learn about the general types of guided missiles. Finally, we will learn about the four basic component parts of guided missile systems.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6
Opening Question(Random Pick a Student – “RPS”)	<p>This Opening Question is, “Based on your existing knowledge, describe different types of naval aircraft.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on naval aircraft and missiles.</p>	7
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	8
Introduction	<p>Explain that Naval aircraft, like aircraft in general, fall into three main groups: fixed-wing, rotary-wing, and lighter-than-air. Fixed-wing airplanes have wings that are the primary lifting devices of the airplane. Rotary-wing craft, primarily helicopters, have two or more rotor blades that lift the aircraft into the air. Lighter-than-air craft, such as blimps, depend on casings filled with light gas, primarily helium, to provide their lifting power.</p>	9-12
Introduction	<p>Explain that fixed-wing aircraft have many roles in the Navy. Attack planes are used for low-level bombing, ground support, or nuclear strikes. They carry heavy payloads (fuel, bombs, and missiles) and can remain on station long enough to support ground troops.</p>	13-14
Introduction	<p>Explain that fighters are high-performance aircraft used to gain air superiority. They may be used defensively as interceptors, offensively as escorts for bombers, or on ground support missions. Some can carry bombs and other precision weapons for limited attack missions.</p>	15-16

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Introduction	Explain that patrol aircraft are land-based, long-range multiengine planes used mainly for antisubmarine patrol. They can detect, locate, and destroy submarines. They can also escort surface convoys, conduct photographic missions, and lay mines from the air.	17-18
Introduction	Explain that electronic warfare (EW) aircraft detect and jam enemy radars to protect the strike group (attack and support aircraft) from being targeted by enemy missiles, guns, or interceptor aircraft. Reconnaissance aircraft are aircraft that have been specially configured to gather intelligence.	19-20
Introduction	Explain that airborne early-warning (AEW) aircraft maintain stations far from a fighting force, to provide early warning of approaching enemy aircraft and cruise missiles, and to direct interceptors into position.	21
Introduction	Explain that rotary-winged helicopters serve a variety of roles in the Navy, among which are cargo and personnel transportation, undersea warfare, observation and reconnaissance, search and rescue, and mine countermeasures. In the other services they are often used in ground-attack roles.	22
Introduction	Explain that for many years following World War II, lighter-than-air craft fell into disuse in the Navy, but in recent years their stability and ability to hover on station for long periods of time have caused renewed interest in them. A new type of USW patrol blimp has been proposed and may possibly join the fleet in the future.	23
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	24
Naval Aircraft Weapons System	Explain that until the end of World War II, most of the armament of Naval fighter-type aircraft consisted of small- to medium-caliber machine guns of one sort or another, augmented at times by unguided rockets suitable for use against land targets, ships, and surfaced submarines. To these were added bombs of various sizes and types, incendiaries in the case of fighter-bomber and attack aircraft, and torpedoes.	25-26
Naval Aircraft Weapons System	Explain that in the years after the war, the advent of nuclear weapons caused several models of Navy attack planes such as the A-3, A-4, and A-5 to be developed specifically to deliver nuclear bombs. Fortunately these capabilities were never called upon in practice, so eventually they were fitted with conventional weaponry or converted to use as unarmed tanker and reconnaissance aircraft.	27
Naval Aircraft Weapons System	Explain that during these same years, guided missiles were developed for fighter aircraft, and these saw some use in aerial combat in both the Korean and Vietnam Wars. Most aerial dogfight engagements in both these wars, however, continued to be decided with bow or wing-mounted machine guns.	28-29
Naval Aircraft Weapons System	Explain that rapid-firing Gatling-type (rotating barrel) machine guns mounted in detachable pods beneath the fuselage began to appear in the late 1960s. These were intended primarily for use against ground targets by contemporary fighter-bomber and attack aircraft, several models of which had not originally been fitted with any guns at all, in the mistaken belief that they were no longer needed—a notion proved very wrong during the Vietnam War. Almost all fighter and attack aircraft developed since have been fitted with some type of integrated gun system.	30
Naval Aircraft Weapons System	Explain that in the 1980s and 1990s, however, improved guidance systems and better propulsion systems did ultimately cause more and more reliance to be placed on the guided missile as the main armament for most modern jet-powered naval fighter-type aircraft. Cruise missiles and precision weapons like smart bombs play major roles in	31-32

Chapter 3 / Section 1: NS3-M3U6C3S1 – Naval Aircraft Weapon Systems

	<p>the case of today's attack aircraft. Modern USW helicopters use air-launched homing torpedoes as their principal weapon against enemy submarines. Carrier- and ground-based aircraft attacks against enemy buildings, tanks, ground equipment, and fortifications during Operation Desert Storm in 1991, and similar attacks later in Operation Enduring Freedom in 2001/2002, and in many other military operations since, have shown how devastatingly accurate today's precision guided weaponry has become.</p>	
Video on Naval Aircraft Weapons System	Show video on Naval aircraft weapons system.	33
Naval Aircraft Weapons System	<p>Explain that, as a result of the combat experience in Vietnam and later conflicts, new fighter aircraft such as the F-16 Falcon and the F/A-18 Hornet were designed from the beginning to incorporate fuselage-mounted 20-millimeter Gatling guns among their armament, the six-barreled version of which can fire 100 rounds per second. These fuselage-mounted guns are more accurate, especially against airborne targets, than the older pod-mounted versions were.</p>	34
Guided Missiles	<p>Explain that a missile is any object that can be projected or thrown at a target. This includes stones and arrows as well as gun projectiles, bombs, torpedoes, and rockets. Today, however, the term usually refers to a guided missile, an unmanned, self-propelled vehicle with a guidance system that controls its flight to the target. By contrast, the term smart bomb has come into common use to describe non-self-propelled air-dropped munitions fitted with guidance systems that can control the flight path to the target. A rocket differs from a guided missile in that it does not have an internal guidance system. A guided missile can carry either a conventional explosive or a nuclear warhead.</p>	35-38
Guided Missiles	<p>Explain that the Navy's homing torpedoes are self-propelled weapons having elaborate guidance systems that hunt for a target and steer for it on a collision course. They are not technically regarded as guided missiles, since they do not travel above the Earth's surface. They will be discussed briefly along with guided missiles, however, because they are so important in the fleet's advanced guided weapon systems.</p>	39
Guided Missiles	<p>Explain that there is a standardized three-letter DOD designation system for the various types of guided missiles, similar to the designation system for Navy ships. The first letter designates the launch environment: A is for air-launched; R is for surface ship-launched; and U is for underwater-launched. The second letter designates the mission, such as G for surface attack; I for aerial intercept; Q for drone; and U for underwater attack. The third letter designates the type: M for guided missile; R for rocket; and N for probe. The three designation letters are followed by a design number. Most missiles are also given names by which they are commonly identified throughout their service lifetimes, regardless of any modifications they may go through. For example the RIM-156 Standard 2 missile is the one hundred fifty-sixth design of ship launched aerial intercept guided missile. It is still named the Standard missile, even though it is several models later than the original design, the RIM-66 Standard 1 missile, phased out of U.S. service in 2003.</p>	40
Check on Learning Questions B (Lesson questions 5-6)	<p>Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.</p>	41
Missile Components	<p>Explain that each guided missile has four basic parts which are the airframe, the propulsion system, the guidance system, and the warhead. The airframe of a missile is the streamlined body that contains the other parts plus the fuel. Missile airframes are</p>	42-46

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	made of aluminum alloys, magnesium, and high tensile steel sheet, all of which are lightweight materials capable of withstanding extreme heat and high pressure.	
Missile Components	Explain that the propulsion system must propel the missile at speeds sufficient to minimize its vulnerability while maximizing the probability of intercepting a target. Most missiles designed to operate at supersonic speeds, or partially above the atmosphere or in the water, are equipped with liquid or solid-fuel propulsion systems containing an oxidizer (oxygen-carrying agent). Subsonic air-breathing "cruise" missiles carry only a petroleum-based fuel and draw their oxygen from the atmosphere, which limits their operating altitude to about 70,000 feet.	47
Missile Components	Explain that the warhead is the high-explosive payload of the missile. It may be either conventional or nuclear or, in the case of a practice missile, may contain telemetry equipment.	48
Video on Missile Components	Show video on missile components.	49
Missile Components	Explain that most Navy guided missiles have one of five types of guidance systems: preset gyro, inertial, homing, command, or beam rider. GPS-based guidance systems are coming into use on some newer models of Tomahawk cruise missiles and precision ordnance.	50-51
Missile Components	Explain that preset gyro guidance uses gyroscopes to keep the missile on a set course, with an on-board computer constantly checking angle of climb and acceleration. When the missile attains the preset course and velocity, power is shut off and it continues to the target as a free (ballistic) projectile.	52
Missile Components	Explain that inertial guidance makes use of a predetermined flight profile programmed into the onboard missile computer. Missile speed and course are checked constantly, and the computer initiates corrections to keep it on track.	53
Missile Components	Explain that homing guidance depends on the missile picking up and tracking a target by means of radar, optical, or heat-seeking devices. The homing system will follow any evasive maneuvers attempted by the target, and the missile is fast enough to overtake most targets trying to outrun it. There are several types of homing guidance. In active homing guidance, the radar transmitter and receiver are both located in the missile. The transmitter emits a signal that is reflected off the target back to the receiver. Active homing is completely independent of the launching ship or aircraft. In semiactive homing guidance, the radar transmitter is located on the launching ship or aircraft, and the receiver is in the missile.	54-56
Missile Components	Explain that in passive homing guidance, the missile picks up and tracks a target by detecting some form of energy emitted by it. Sources of energy used for passive homing include light, sound, or heat. Like active homing, passive homing guidance is completely independent of the launching ship or aircraft.	57
Missile Components	Explain that command guidance involves missile control by signals from the launch station. After the missile is launched on an intercept course, a computer tracks both missile and target and transmits to the missile orders to change its track in order to hit the target even though the target might take evasive action.	58
Missile Components	Explain that beam rider guidance requires the missile to follow a radar beam to the target. A computer within the missile keeps it centered within the radar beam; several missiles may ride the beam simultaneously. If the missile wanders out of the beam, it will automatically self-destruct.	59
Review Question	The Review Question is, "List and briefly describe the three general classifications of	60

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	projectiles.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson with follow-up reinforcement and discussion as appropriate.	61
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	62

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handouts for in class and take home activities

When: At the end of the lesson

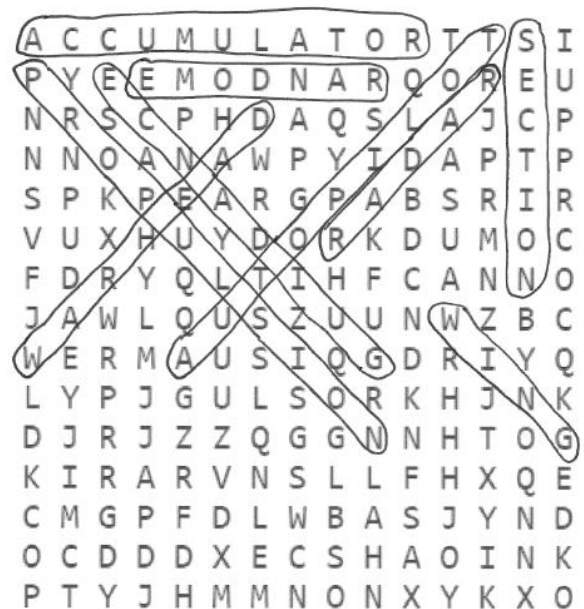
- Have cadets work in pairs or threes, to complete the exercise on missile designation naming.
Note: there are a couple of codes included that are not in the textbook (shown in parentheses in the key) where students will have to research to find what they mean. Cadets can easily do this by accessing a list online with an instructor-trusted source or perhaps a google search if none other available
- After the allotted time (5-7 minutes) – review the correct answers together as a class.

B. Take Home Activity: Have cadets complete at the take home activity “Homing Missile” at home and review the next class period.

IN-CLASS ACTIVITY KEY

1. RIM-156	Surface ship launched; Aerial intercept; Guided missile, design 156
2. AIM-7A	Air launched, Aerial intercept; Guided missile, design 7, version A
3. RGM-6B	Surface ship launched; Surface attack; Guided missile, design 6, version B
4. AGM-12A	Air launched, Surface attack; Guided missile, design 12, version A
5. UGM-27	Underwater launched, Surface attack, Guided missile, design 27
6. AQM-37B	Air launched, drone, Guided missile, design 27, version B
7. ASM-135A	Air launched, (Space), Guided missile, design 135, version A
8. ADM-141A	Air launched, (Decoy), Guided missile, design 141, version A
9. RUM-125B	Surface ship launched, Underwater attack, Guided missile, design 125, version B
10. AGM-109C	Air launched, Surface attack; Guided missile, design 109, version C

TAKE HOME ACTIVITY KEY



IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 1: NS3-M3U6C3S1 – Naval Aircraft Weapon Systems

Activity 1: In Class Activity- Guided Missiles

Name: _____ Date: _____ Class: _____

There is a standardized three-letter DOD designation system for the various types of guided missiles, similar to the designation for Navy ships.

Using the information in your textbook and other resources as necessary, note what you know about these missiles based on each digit/letter. Use the space to the right to write your answer for each.

1. RIM-156	
2. AIM-7A	
3. RGM-6B	
4. AGM-12A	
5. UGM-27	
6. AQM-37B	
7. ASM-135A	
8. ADM-141A	
9. RUM-125B	
10. AGM-109C	

Chapter 3 / Section 1: NS3-M3U6C3S1 – Naval Aircraft Weapon Systems

Activity 1: Take Home Activity – Homing Missile

Name: _____ Date: _____ Class: _____

In this word search activity, you'll be looking for components of an active homing missile, listed in the list below. Find each of the words hidden below and circle them. Note that some of the words may be found in any direction, including diagonally or backwards.

Then draw a picture of an active homing missile in the space at the bottom of the page, and label these parts on your picture.

ACCUMUATOR	A C C U M U L A T O R T T S I
	P Y E E M O D N A R Q O R E U
AUTOPILOT	N R S C P H D A Q S L A J C P
	N N O A N A W P Y I D A P T P
GUIDANCE	S P K P E A R G P A B S R I R
	V U X H U Y D O R K D U M O C
PROPULSION	F D R Y Q L T I H F C A N N O
	J A W L Q U S Z U U N W Z B C
RADAR	W E R M A U S I Q G D R I Y Q
	L Y P J G U L S O R K H J N K
RANDOME	D J R J Z Z Q G G N N H T O G
	K I R A R V N S L L F H X Q E
SECTION	C M G P F D L W B A S J Y N D
	O C D D D X E C S H A O I N K
WARHEAD	P T Y J H M M N O N X Y K X O
WING	

Chapter 3 / Section 2: NS3-M3U6C3S2 – Uses of Guided Missiles

(Section 2 of 3)

What Students Will Learn to Do:

Demonstrate an understanding of naval weapons

Skills and Knowledge to be Gained:

1. Describe the types and usage of guided missiles used in the Navy.
2. Describe the Navy's submarine-launched ballistic missile program
3. Describe the purpose of the Navy's cruise missiles launched from surface ships, submarines and aircraft

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Key terms	Key Term Definitions	Opening Question	Warm-Up Question	Uses of Guided Missiles (A)	Video Uses of Guided Missiles	Uses of Guided Missiles (B)
Check On Learning A	Uses of Guided Missiles (C)	Video 2 Uses of Guided Missiles	Uses of Guided Missiles (D)	Video 3 Uses of Guided Missiles	Uses of Guided Missiles (E)	Check on Learning B	Navy Submarine Launched Ballistic Missiles (A)
Video Navy Submarine Launched Ballistic Missiles	Navy Submarine Launched Ballistic Missiles (B)	Review Questions	Closing Questions	Call for Other Questions			

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 3. Place a checkmark beside the NS3-M3U6C3S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C3S2 - Key Terms and NS3-M3U6C3S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 3 / Section 2: NS3-M3U6C3S2 – Uses of Guided Missiles

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the different types and usage of guided missiles used in the Navy. We will also learn about the Navy’s submarine-launched ballistic missile program. Lastly, we will discuss the purpose of the Navy’s cruise missiles launched from surface ships, submarines and aircraft.</p>	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Based on your existing knowledge, what are some uses of guided missiles?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the uses of guided missiles.	9
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	10
Uses of Guided Missiles	Explain that the development of guided missiles has added a new dimension to the attack and defense capabilities of the U.S. Navy. While missiles cannot perform all the functions of guns, they can have greater range, accuracy, and payloads.	11
Video 1 on Uses of Guided Missiles	Show video 1 on uses of guided missiles.	12
Uses of Guided Missiles	Explain that sea control remains a primary mission of the Navy, but with the advent of the Polaris, Poseidon, and, in the 1980s, the Trident intercontinental ballistic missiles, the sea also has become a hiding and launching place for our nation's most potent seaborne strategic power-projection system. Modern cruise missiles launched from the sea can also project the Navy’s power far inland.	13
Uses of Guided Missiles	Explain that the current fleet ballistic missile (FBM), the Trident ICBM, has a range of over 4,000 nautical miles. With such a range, even the most remote place on Earth can be reached by submarine-launched Trident missile warheads. The Air Force has several models of ICBMs with ranges of over 3,000 nautical miles; the Minuteman is the most powerful of these, having a range of over 5,000 miles. All of these ICBMs have nuclear warheads.	14-15

Chapter 3 / Section 2: NS3-M3U6C3S2 – Uses of Guided Missiles

Uses of Guided Missiles	Explain that certain missiles are designed to intercept incoming enemy ballistic missiles and destroy them before they can reach their targets. These are the antiballistic missiles (ABMs). They must have great acceleration and long range in order to intercept enemy ICBMs. To date the United States has never deployed a fixed ABM system because of arms control agreements negotiated with the Soviet Union in the late 1970s. There have been initiatives in recent years, however, to deploy such systems in some of the former Soviet satellite states now members of NATO, in order to protect against future ballistic missile threats. The Navy has developed an ABM version of the Standard surface-to-air missile, to protect against future potential ballistic missile threats to the fleet and to the United States mainland.	16-17
Uses of Guided Missiles	Explain that although not originally designed to be an ABM missile, the Army's mobile Patriot missile system was extensively used to knock down incoming Iraqi Scud missile warheads fired against Israeli and Saudi Arabian targets during Operation Desert Storm in 1991.	18
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	19
Uses of Guided Missiles	Explain that modern military aircraft fly so high and fast that conventional antiaircraft guns are ineffective against them. The surface-to-air guided missile, however, can successfully intercept attacking aircraft at great heights and ranges.	20
Video 2 on Uses of Guided Missiles	Show video 2 on uses of guided missiles.	21
Uses of Guided Missiles	Explain that guided missiles have become the main weapon used in aerial combat. When two jet aircraft are approaching each other head-on, the range can close at speeds in excess of a mile per second. Under these conditions, it is difficult even to see an approaching enemy aircraft, and hitting it with gunfire under these conditions would be just a matter of luck. But the air-to-air missile can "lock on" the hostile aircraft while it is still miles away and pursue and hit it in spite of any evasive maneuvers.	22-23
Video 3 on Uses of Guided Missiles	Show video 3 on uses of guided missiles.	24
Uses of Guided Missiles	Explain that the defense of a naval force against air attack is somewhat similar to the defense of a city against air attack. The incoming enemy air attack would probably be detected by long-range search radar and AEW aircraft while still hundreds of miles away. The first line of defense would probably be interceptor fighter aircraft, which would attack the enemy planes or cruise missiles with air-to-air missiles. A second line of defense might consist of long-range surface-to-air missiles fired by destroyers and cruisers, which can intercept an incoming target at ranges from 100 to 200 miles. A third line of defense would be medium--range missiles designed to intercept between 40 to 90 miles, and antiaircraft guns with ranges up to 10 miles.	25-29
Uses of Guided Missiles	Explain that point defense missiles and gun systems like Phalanx would be employed against any incoming aircraft or cruise missiles that got past these outer defenses.	30
Uses of Guided Missiles	Explain that protection against underwater attack is afforded by weapons such as ASROC (antisubmarine rocket) that delivers a homing torpedo to a water entry point in close proximity to a detected enemy submarine.	31

Chapter 3 / Section 2: NS3-M3U6C3S2 – Uses of Guided Missiles

Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	32
Navy Submarine-Launched Ballistic Missiles	Explain that Since the initial deployment of the Polaris A-1 submarine-launched ballistic missiles (range of 1,200 nm) in 1960, both the SSBN submarines and the missiles they carry have steadily improved in operational capability and flexibility. The U.S. fleet ballistic submarine force, a major component of our nation's strategic defense system, currently consists of fourteen Trident submarines, each of which can carry twenty-four 4,000-nautical-mile-range MIRV (multiple independently targeted reentry vehicle) ballistic missiles. The submarines are based at King's Bay, Georgia, and Bangor, Washington.	33-35
Navy Submarine-Launched Ballistic Missiles	Explain that ballistic missiles have a two-stage flight path. During the first stage, the guidance system makes corrections to the flight path of the missile to give it the proper trajectory to hit the target. The second stage of the flight, the larger part, has a ballistic free-fall trajectory, although some missiles like the Trident have warheads containing multiple cone-shaped reentry vehicles, each of which can be programmed to hit different targets.	36
Navy Submarine-Launched Ballistic Missiles	Explain that the Harpoon, the Navy's first antiship cruise missile, is designed to be launched from ships, submarines, and aircraft. It is the primary antiship weapon system for U.S. naval forces and is carried by most cruisers, destroyers, frigates, nuclear attack submarines, carrier-based attack and USW aircraft, and shore-based P-3 Orion and P-8 Poseidon maritime patrol aircraft	37-38
Navy Submarine-Launched Ballistic Missiles	Explain that the missile features over-the-horizon (OTH) range, a low-level subsonic cruising trajectory (thus the name cruise), active guidance, counter-countermeasures, and a large payload. It is powered by a turbojet engine. After launch, it descends to 100 feet above the water. This sea-skimming flight profile, along with active terminal guidance radar, ensures a high probability of penetrating enemy defenses and hitting the target. The missile is 15 feet long and weighs 1,400 pounds. It has a maximum range of over 60 nautical miles, with a 500-pound conventional warhead.	39
Navy Submarine-Launched Ballistic Missiles	Explain that The Tomahawk is an all-weather, long-range, subsonic cruise missile. It has both land and antiship attack versions and can be launched from submarines, ships, land, and aircraft. The Tomahawk is capable of delivering either a conventional or nuclear warhead to ranges in excess of 700-1350 nautical miles, depending on the model. The land-attack Tomahawk flies at very low altitudes and has terrain masking and infrared guidance features, making defense against it extremely difficult.	40-41
Video on Navy Submarine-Launched Ballistic Missiles	Show video on Navy submarine launched ballistic missiles.	42
Navy Submarine-Launched Ballistic Missiles	Explain that the latest version has GPS guidance, and can be reprogrammed in flight to an alternate target if deemed necessary. The Tomahawk has been used to great effect over the past twenty years in actions such as Operations Desert Storm and Iraqi Freedom in the Persian Gulf region, and in attacks against al-Qaida terrorists and the Taliban in Operation Enduring Freedom in Afghanistan.	43
Navy Submarine-Launched Ballistic Missiles	Explain that the Standoff Land Attack Missile (SLAM) was developed in the late 1980s to give the Navy a surgical strike capability against high-value land targets and ships. Originally used in Iraq in Operation Desert Storm in 1991, it has been continuously	44-45

Chapter 3 / Section 2: NS3-M3U6C3S2 – Uses of Guided Missiles

	improved and upgraded since its introduction. The SLAM can be launched from a variety of Navy fighter, attack, and patrol aircraft. It has a range in excess of 150 nautical miles.	
Review Question	The Review Question is “Describe some types of guided missiles.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	46
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	47
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	48

III. Supplemental Activities -

A. In class Activity:

Supplies required: Whiteboard or Mobi and CPS system

When: This activity should be done after discussing lines of defense in the lesson

- Instruct cadets to discuss each of these two points with a partner, then use your CPS Random-Pick-A-Student function to choose cadets to share their thoughts.
 - 1. Discuss how the “lock on” feature is effective in guided missile systems. Talk about issues related to visibility when aircraft are very close and very far apart.
 - 2. Discuss the different lines of defense that were outlined in the textbook, and what each one involves, when it’s used and the progression of responses used in the event of a threat.
 -

B. Take Home Activity: have cadets complete the take home activity “Lines of Defense” and review the next class period. (See key on next page)

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 2: NS3-M3U6C3S2 – Uses of Guided Missiles

TAKE-HOME ACTIVITY KEY

1. ICBM stands for Intercombat Ballistic Missile.
A: ICBM stands for Intercontinental Ballistic Missile.
2. The range on the Minuteman Guided Missile is 2,000 miles.
A: The range on the Minuteman Guided Missile is 5,000 miles.
3. The first surface-to-air missiles (SAM) were developed in the 1950s and were unnamed for security reasons.
A: The first surface-to-air missiles (SAM) were developed in the 1960s and 70s and were named Terrier, Tartar and Talos.
4. The third line of defense is SAMs of moderate range (20-65 miles).
A: The second line of defense is SAMs of moderate range (20-65 miles).
5. Protection against air attack is afforded by weapons such as ASROC (Antisubmarine Rocket) that delivers a homing torpedoes to a water entry point in close proximity to detected enemy submarine.
A: Protection against underwater attack is afforded by weapons such as ASROC (Antisubmarine Rocket) that delivers homing torpedoes to a water entry point in close proximity to detected enemy submarine.
6. A cruise missile is a winged guided missile designed to deliver a conventional or nuclear warhead by flying at high altitudes to avoid detection by radar.
A: A cruise missile is a winged guided missile designed to deliver a conventional or nuclear warhead by flying at low altitudes to avoid detection by radar.
7. The SLAM has a range in excess of 500 miles and has not been used in combat yet.
A: The SLAM has a range in excess of 150 miles and was used during Operation Desert Storm (1991).
8. Using GPS guidance, some Tomahawks can refuel themselves in flight.
A: GPS guidance means that some Tomahawks can be reprogrammed in flight to an alternate target if deemed necessary.
9. Navy Trident submarine bases are located in Bangor WA, Kings Bay GA and Jacksonville FL.
A: Navy Trident submarine bases are located in Bangor WA and Kings Bay GA.
10. The first line of defense would be interceptor aircraft, which would attack enemy planes with surface-to-air missiles.
A: The first line of defense would be interceptor aircraft, which would attack enemy planes with air-to-air missiles.

Chapter 3 / Section 2: NS3-M3U6C3S2 – Uses of Guided Missiles

Activity 1: Take Home Activity – Lines of Defense

Name: _____ Date: _____ Class: _____

Directions: All of the statements below are false. Re-write each one so that it becomes a true statement.

1. ICBM stands for Intercombat Ballistic Missile.
2. The range on the Minuteman Guided Missile is 2,000 miles.
3. The first surface-to-air missiles (SAM) were developed in the 1950s and were unnamed for security reasons.
4. The third line of defense is SAMs of moderate range (20-65 miles).
5. Protection against air attack is afforded by weapons such as ASROC (Antisubmarine Rocket) that delivers homing torpedoes to a water entry point in close proximity to detected enemy submarine.
6. A cruise missile is a winged guided missile designed to deliver a conventional or nuclear warhead by flying at high altitudes to avoid detection by radar.
7. The SLAM has a range in excess of 500 miles and has not been used in combat yet.
8. Using GPS guidance, some Tomahawks can refuel themselves in flight.
9. Navy Trident submarine bases are located in Bangor WA, Kings Bay GA and Jacksonville FL.
10. The first line of defense would be interceptor aircraft, which would attack enemy planes with surface-to-air missiles.

Chapter 3 / Section 3: NS3-M3U6C3S3 – Navy Air-to-Air Missiles

(Section 3 of 3)

What Students Will Learn to Do:

Demonstrate an understanding of Naval weapons

Skills and Knowledge to be Gained:

1. Describe the Navy's air-to-air missiles used in the front line defense of the naval task force
2. Describe the second line of fleet defense with the use of Navy's surface-to-air missiles
3. Describe the purpose of the Navy's air-to-surface missiles
4. Describe the Navy's current Undersea Warfare(USW) weapons
5. Explain the two basic types of guided missile trajectories

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Navy Air-to-Air Missiles (A)	Video1 Navy Air-to-Air Missiles	Navy Air-to-Air Missiles (B)
Video2 Navy Air-to-Air Missiles	Navy Air-to-Air Missiles (C)	Check On Learning A	Navy Surface-to-Air Missiles	Navy Air-to-Surface Missiles (A)	Video Navy Air-to-Surface Missiles	Navy Air-to-Surface Missiles (B)	Check on Learning B
Navy Undersea Warfare Weapons (A)	Video Navy Undersea Warfare Weapons	Guided Missile Trajectories	Review Questions	Closing Questions	Call for Other Questions		

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 3 / Section 3: NS3-M3U6C3S3 – Navy Air-to-Air Missiles

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 3. Place a checkmark beside the NS3-M3U6C3S3 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C3S3 - Key Terms and NS3-M3U6C3S3 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will disc the Navy’s air-to-air missiles used in the front line defense of the naval task force. We will also learn about the second line of fleet defense with the use of Navy’s surface-to-air missiles. We will learn about the purpose of the Navy’s air-to-surface missiles. We will discuss the Navy’s current Undersea Warfare (USW) weapons. Lastly, we will discuss the two basic types of guided missile trajectories.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	6-9
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “Based on your existing knowledge, can you name or describe undersea warfare weapons that the U.S. Navy uses?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on the Navy missiles.	10
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	11
Navy Air-to-Air Missiles	Explain that the front line of defense for a Naval task force is its combat air patrols (CAP), which range far out from the fleet to meet incoming enemy air threats with highly capable air intercept missiles (AIM).	12

Chapter 3 / Section 3: NS3-M3U6C3S3 – Navy Air-to-Air Missiles

Video 1 on Navy Air-to-Air Missiles	Show video 1 on Navy air-to-air missiles.	13
Navy Air-to-Air Missiles	Explain that the AIM-9 series Sidewinder missile is carried by both Navy and Air Force fighter and attack aircraft and is designed for use in close-range, dogfight-type air engagements. The missile is an infrared homing heat-seeker air-to-air missile. It varies in weight from 160 to 210 pounds depending on the version, has a speed of Mach 2.5, a range of about 2 miles, and is capable of operating against high-performance aircraft at altitudes from sea level to over 50,000 feet. The improved fuse, warhead, and maneuverability of the latest model provide U.S. pilots with the best possible advantage in close combat.	14-16
Video 2 on Navy Air-to-Air Missiles	Show video 2 on Navy air-to-air missiles.	17
Navy Air-to-Air Missiles	Explain that the AIM-120 advanced medium-range air-to-air missile (AMRAAM) is the latest in the Navy inventory. It was developed jointly by the United States and several NATO nations. It is a follow-on to an older missile series called the Sparrow. It has active radar guidance and an on-board computer system that makes the missile independent of the fire-control system of the launching aircraft. Once the missile closes in on the target, its active radar guides it to intercept. This enables the aircraft pilot to aim and fire several missiles at once at multiple targets, and then perform evasive maneuvers while the missiles guide themselves to the targets. The missile has a high explosive fragmentation warhead.	18-19
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	20
Navy Surface-to-Air Missiles	Explain that during the 1960s and 1970s, the second line of fleet defense was centered on the "3 Ts," the Navy's first surface-to-air (SAM/RIM) guided missiles: Terrier, Tartar, and Talos. The RIM-2 Terrier was the Navy's first operational SAM missile. Weighing 3,000 pounds, it was a solid-fuel missile with a range exceeding 10 miles at a speed of Mach 2. Tartar was similar to Terrier but weighed half as much.	21-23
Navy Surface-to-Air Missiles	Explain that the Talos missile was for many years the Navy's largest shipboard surface-to-air missile. It was designed for launching from cruisers, for long-range air defense. It weighed 7,000 pounds and was propelled by a ramjet engine. Its longest-range version exceeded 100 miles, with a ceiling of 80,000 feet. It was phased out in the late 1970s.	24
Navy Surface-to-Air Missiles	Explain that numerous improvements were made in the Terrier and Tartar missiles over the years, culminating in the Standard missile series, featuring both medium-range (MR) and extended-range (ER) versions.	25
Navy Surface-to-Air Missiles	Explain that presently the Standard-2 (SM-2) is the Navy's primary surface-to-air air defense weapon. It is an integral part of the AEGIS Weapon System (AWS) aboard Ticonderoga-class cruisers and Arleigh Burke-class destroyers, and is launched from the MK 41 Vertical Launch System (VLS).	26-27
Navy Surface-to-Air Missiles	Explain that the Standard-2 MR, 15 and a half feet long and weighing some 1,500 pounds, has a range in excess of 90 miles and a ceiling greater than 80,000 feet. The Standard-2 ER, 21 and a half feet long and weighing some 3200 pounds, has a range exceeding 200 miles and a ceiling of 110,000 feet. The newest version, the Standard-3 ER, about the same size and weight as the Standard-2 ER, has a range of over 270 miles, a ceiling in excess of 150 miles, and was developed for use as an ABM missile. An upgraded version of the Standard-2 ER, the SM-6 ERAM (Extended Range Active Missile), is slated to become operational in 2010. It will have improved capabilities	28

Chapter 3 / Section 3: NS3-M3U6C3S3 – Navy Air-to-Air Missiles

	against agile cruise missiles and over-the-horizon targets.	
Navy Surface-to-Air Missiles	Explain that the RIM-7 Sea Sparrow is a radar guided surface-to-air missile adapted from the earlier air-to-air version for point defense for surface combatants. The latest version, called the ESSM (Evolved Sea Sparrow Missile), is 12 feet long and weighs about 500 pounds. It is used on only a few ship types including CVAs and LHAs in the U.S. Navy, but is a primary air defense weapon aboard many NATO surface warships. It provides excellent defensive capabilities against high performance aircraft and cruise missiles.	29
Navy Air-to-Surface Missiles	Explain that the Navy has several different types of air-to-surface missiles (AGM) and other guided ordnance designed to attack a wide range of surface targets, including armor, air defenses, ground transportation, and ships.	30
Navy Air-to-Surface Missiles	Explain that The AGM-65 Maverick missile is used for close air support of friendly ground forces, interdiction of enemy forces, and suppression of enemy weapon systems. It has two types of warheads. One has a contact fuse in the nose so that it will detonate on impact, and the other has a delayed fuse that allows the missile to penetrate well into hard targets before exploding. The AGM-88 HARM (highspeed antiradiation) missile is designed to home in on and destroy enemy radars used to locate and track U.S. aircraft, missiles, and ships. The AGM-114 Hellfire missile is a laser guided subsonic missile intended mainly for launching by Navy Seahawk helicopters against tanks or other types of enemy armored vehicles. It can also be used as an air-to-air weapon against helicopters or slow-moving fixed-wing aircraft.	31-32
Navy Air-to-Surface Missiles	Explain that another more recently developed air-to-surface weapon is the AGM-154 Joint Stand-Off Weapon (JSOW). It is a large glide bomb developed by a joint Navy–Air Program to allow aircraft to attack surface targets while remaining at safe stand-off distances, thus greatly increasing aircraft survivability. The JSOW has a range of from 12 to 40 nautical miles, depending on the altitude at which it is launched. A powered version has a range in excess of 120 nautical miles.	33
Video on Air-to-Surface Missiles	Show video on air-to-surface missiles.	34
Navy Air-to-Surface Missiles	Explain that there is also a guidance kit called the Joint Direct Attack Munition (JDAM) that converts conventional 1,000- and 2,000-pound bombs into precision-guided munitions using the satellite-based GPS system for guidance. Weapons of this type are often referred to as smart bombs, to distinguish them from older unguided bombs that follow ballistic trajectories after being released from the delivering aircraft.	35
Check on Learning Questions B (Lesson questions 5-6)	Check in on students’ understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	36
Navy Undersea Warfare Weapons	Explain that the Navy’s primary operational undersea warfare (USW) weapons are antisubmarine rockets (ASROC) and antisubmarine torpedoes.	37
Navy Undersea Warfare Weapons	Explain that the ASROC is a supersonic, solid-fueled, antisubmarine ballistic missile, carried by Aegis cruisers and Arleigh Burke- and Spruance-class destroyers, and fired from vertical launch tubes. The purpose of ASROC is the destruction of enemy submarines at long ranges. It does this by the delivery of a homing torpedo through the air to a point in the water from which it can begin a search pattern to find and home in on the target submarine. An ASROC-equipped USW ship can launch its weapons before the submarine is even aware that it is under attack.	38-40
Navy Undersea	Explain that in addition to ASROC, the Navy has several other models of USW	41

Chapter 3 / Section 3: NS3-M3U6C3S3 – Navy Air-to-Air Missiles

Warfare Weapons	torpedoes that can be launched by surface ships and by helicopters. All of these are homing torpedoes guided by the sound of the vessel being attacked or by reflected echoes from it. They are powered by electric motors and batteries. They contain acoustic homing devices, operating either in an active or passive mode.	
Navy Undersea Warfare Weapons	Explain that the active acoustic torpedo is not dependent upon the sound emitted from the target for its homing information. The torpedo itself generates and transmits acoustic pulses, some of which are reflected from the target. The returning echoes guide the torpedo to the target. The passive acoustic torpedo homes in on the noise emitted from the target. It can often be evaded by the use of simple noisemaker-type countermeasures, or the submarine can reduce speed or stop in order to quiet sources of noise. Homing torpedoes of both types can be launched from submarines, surface vessels such as destroyers and cruisers, and helicopters.	42-43
Video on Navy Undersea Warfare Weapons	Show video on Navy undersea warfare weapons.	44
Guided Missile Trajectories	Explain that the trajectory of a missile is its path from launch to impact or destruct. There are two basic types of missile trajectories: ballistic and aerodynamic. A number of other trajectories are named according to the path traveled, such as glide, powered flight, terminal, and standard, among others. In a ballistic trajectory, the missile is acted upon only by gravity and aerodynamic drag after the propulsive force is terminated. Gun projectiles have a purely ballistic trajectory. The major part of the trajectory of ballistic missiles is of this type. An aerodynamic trajectory is one in which aerodynamic forces (thrust, drag, weight, and lift) are used to maintain the flight path.	45-47
Guided Missile Trajectories	Explain that missile trajectories include many shapes or types of curves. The exact nature of the curve is determined by the type of guidance and the nature of the control system used. A hyperbolic trajectory, for instance, will occur with a missile using a hyperbolic guidance system. The missile will first climb to the desired altitude, then follow an arc of a hyperbola before diving on its target.	48-49
Guided Missile Trajectories	Explain that a pursuit curve is followed by most homing and beam rider missiles. At any given instant, the missile is pointed directly toward the target. If such a missile pursues a crossing target, the missile must follow a curved trajectory. In some cases, the extreme curvature required by the pursuit course as the missile nears the target may be too sharp for the missile to follow. In this case, a highly maneuverable aircraft with a proficient pilot may be successful in executing radical maneuvers that will "lose" the missile pursuer. American pilots became adept at outmaneuvering Soviet-made surface-to-air missiles fired from the Hanoi area in North Vietnam during the latter days of the Vietnam War.	50-51
Guided Missile Trajectories	Explain that ICBMs such as Trident are launched vertically so they can get through the densest part of the atmosphere as soon as possible. At a certain computed altitude, which is controlled by preset guidance, the missile inclines to a more gradual climb. After booster burnout or shutdown of the propulsion system, the missile coasts along a ballistic trajectory to the target.	52
Guided Missile Trajectories	Explain that combination trajectories are followed by ASROC weapons. The ASROC is fired from a ship and boosted into the air by rocket thrust. After rocket burnout, the torpedo goes through the air in a ballistic trajectory until striking the water. After water entry, the torpedo dives to a preset depth and then begins its homing target search. When it detects an echo from the target, it follows a pursuit path to attack it.	53
Guided Missile Trajectories	Explain that a missile's trajectory is, of course, greatly affected by the design of the missile and its guidance system. But natural external forces affect the trajectory also.	54

Chapter 3 / Section 3: NS3-M3U6C3S3 – Navy Air-to-Air Missiles

	These include wind, gravity, magnetic forces, and the Coriolis effect. All of these factors must be taken into account with any long-range missile. Modern computers and guidance systems are usually able to compensate for these effects and keep the missile on a correct course to its target.	
Review Question	The Review Question is, “Explain the types of guided missile trajectories.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	55
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson with follow-up reinforcement and discussion as appropriate.	56
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	57

III. Supplemental Activities –

A. In Class Activity:

Supplies required: Handout “Missile Discussion”

When: At the end of the lesson

- In groups of 3-4 cadets, have them discuss and answer the following questions with *BOOKS CLOSED*. After 5-7 minutes, review the correct answers as a group.
 - IN-CLASS ACTIVITY KEY
1. Why are ICBM’s launched vertically? **So that they can get through the densest part of the atmosphere as soon as possible**
 2. Of the two basic missile trajectories, which usually has a winged configuration?
Aerodynamic
 3. A missile trajectory is always a straight line. T/F **(correct the statement if false) false; missile trajectories include many shapes or types of curves**
 4. After a missile first climbs to its desired altitude, it follows an arc of a hyperbola before diving on its target.
 5. Name some of the natural forces that can affect missile trajectory....**wind, gravity, magnetic forces, Coriolis effect**

Chapter 3 / Section 3: NS3-M3U6C3S3 – Navy Air-to-Air Missiles

B. Take Home Activity: Have cadets complete the handout “Weapon Categories” at home and review the next class period.

Key:

1. Place each weapon below in its correct category in the chart:

Cruise Missile	Air-to-Air Missile	Surface-to-Air Missile	Air-to-Surface Missiles	Undersea Warfare Weapons
<ul style="list-style-type: none"> • <i>Harpoon</i> • <i>Tomahawk</i> • <i>SLAM</i> 	<ul style="list-style-type: none"> • <i>AIM-Series Sidewinder</i> • <i>AIM-120</i> 	<ul style="list-style-type: none"> • <i>Talos</i> • <i>RIM-2 Terrier</i> • <i>Standard-2</i> • <i>RIM-7 Sea Sparrow</i> • <i>SM-6 ERAM</i> 	<ul style="list-style-type: none"> • <i>AGM-65 Maverick</i> • <i>AGM-154 JSOW</i> 	<ul style="list-style-type: none"> • <i>ASROC</i>

2. Research two current Naval air craft and identify their weapons capabilities.
Responses will vary.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 3 / Section 3: NS3-M3U6C3S3 – Navy Air-to-Air Missiles

Activity 1: Take Home Activity – Weapon Categories

Name: _____ Date: _____ Class: _____

1. Place each weapon below in its correct category in the chart:

Talos
 Harpoon
 RIM-7 Sea Sparrow
 AGM-65 Maverick
 AIM-120
 Tomahawk
 AIM-Series Sidewinder
 RIM-2 Terrier
 Standard-2
 SLAM
 AGM-154 JSOW
 SM-6 ERAM
 ASROC

Cruise Missile	Air-to-Air Missile	Surface-to-Air Missile	Air-to-Surface Missiles	Undersea Warfare Weapons

2. Research two current Naval air craft and identify their weapons capabilities.

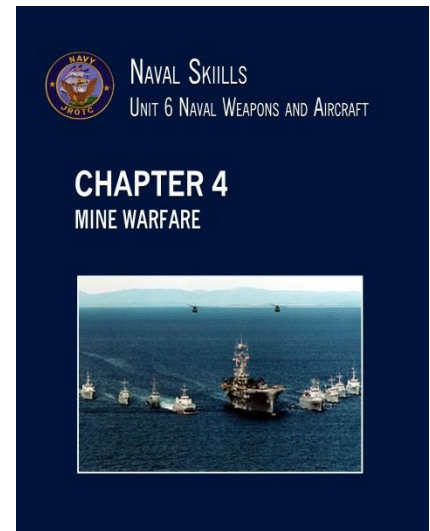
Module 3 Unit 6 Chapter 4: NS3-M3U6C4 – Mine Warfare

What Students Will Learn to Do:

Demonstrate an understanding of naval weapons

Skills and Knowledge to be Gained:

1. Describe the principles used in mine warfare from the American Revolution to the present
2. Describe the classification of mines
3. Describe the three major types of mine countermeasures, to include ship treatment against magnetic and acoustic mines, minesweeping, and mine hunting
4. Describe Mine Hunting and what it involves
5. Describe the major capabilities of mine warfare



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately ...
- W.11-12.7. Conduct short as well as more sustained research projects to answer a question or solve a problem...
- W.11-12.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media ...
- SL.11-12.5. Make strategic use of digital media ...

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

Module 3 Unit 6 Chapter 4: NS3-M3U6C4 – Mine Warfare

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 4 / Section 1: NS3-M3U6C4S1 – Evolution of Mine Warfare

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of Naval weapons

Skills and Knowledge to be Gained:

1. Describe the principles used in mine warfare from the American Revolution to the present
2. Describe the classification of mines

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	KeyTerm Definitions	Opening Question	Warm-Up Question	Video Mine Warfare	Introduction	Evolution Of Mine Warfare (A)
Video Evolution Of Mine Warfare	Evolution Of Mine Warfare (B)	Check On Learning A	Evolution Of Mine Warfare (C)	Mine Classification (A)	Video1 Mine Classification	Mine Classification (B)	Check on Learning B
Mine Classification (C)	Video2 Mine Classification	Mine Classification (D)	Review Questions	Closing Questions	Call for Other Questions		

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 4 / Section 1: NS3-M3U6C4S1 – Evolution of Mine Warfare

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 4. Place a checkmark beside the NS3-M3U6C4S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C4S1 - Key Terms and NS3-M3U6C4S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will discuss the principles used in mine warfare dating back from the American Revolution up until present day. We will also discuss the classification of mines.	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “What consequences might come from blocking access to a port during war or conflict?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on mine warfare.	9
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	10
Video on Mine Warfare	Show video on mine warfare.	11
Introduction	Explain that a mine as used in naval warfare is a device containing a charge of explosive in a watertight casing, floating on, moored in, or planted under a waterway for the purpose of blowing up an enemy vessel that strikes it or passes close by it.	12-13

Chapter 4 / Section 1: NS3-M3U6C4S1 – Evolution of Mine Warfare

Introduction	Explain that mine warfare may be divided into defensive and offensive mining, and mine countermeasures. Defensive mining is that which is done to protect a nation's own harbors and shorelines. Offensive mining may be used to bottle up enemy harbors, to render their shipping routes dangerous or impossible to use, and to make the enemy divert ships, equipment, and personnel to minesweeping chores. By spreading minefields over as wide an area as possible, and by using several different types of mines, the problem of removing or sweeping them is made formidable, and safe shipping routes become more and more difficult to maintain. Offensive minefields also force enemy shipping to go through areas where it may be more readily attacked.	14-18
Introduction	Explain that Mine countermeasures are all methods of countering an enemy's mines, including: <ul style="list-style-type: none"> • Protection for our ships • Sweeping of mines 	19
Evolution of Mine Warfare	Explain that during the American Revolution, David Bushnell attempted to break the British blockade of the Delaware River at Philadelphia with floating kegs filled with gunpowder and equipped with contact-firing devices. An unfortunate current caused the kegs to go astray, and red tape in Congress prevented additional expenditures on the concept. Some years later in the 1800s, Robert Fulton, the inventor of the steamship, contributed to a slowly developing concept in Naval warfare by demonstrating that a ship could be sunk by an underwater explosion.	20-21
Evolution of Mine Warfare	Explain that by the time of the Civil War, "torpedoes" moored in harbors and rivers were considered a prime naval weapon, especially by the Confederates, who used them to defend against the much larger Union Navy.	22
Evolution of Mine Warfare	Explain that Farragut's attack at Mobile Bay in 1864 remains one of the more dramatic episodes in the history of mine warfare. The Confederates had planted some 200 mines, then called torpedoes, to force Union ships into a channel covered by shore batteries—an early use of a mining tactic that later became standard. When the Union monitor Tecumseh hit a submerged mine, blew up, and sank, the Confederate batteries opened fire. Progress into the harbor became confused, and the Union force seemed in danger of defeat.	23-24
Evolution of Mine Warfare	Explain that at this crucial point, however, Admiral Farragut personally ordered his force ahead with the famous quotation, "Damn the torpedoes—full speed ahead!" and taking a calculated risk that no additional mines would explode because of saltwater deterioration. He was correct and the battle was won. With a more reliable mine, the Confederates may have frustrated the Union's attempt to close the last major Southern port, won a major naval victory, and prolonged the war. Thus was dramatized the problem of mine deterioration, a baffler that modern science has not yet entirely solved.	25-26
Video on Evolution of Mine Warfare	Show video on evolution of mine warfare.	27
Evolution of Mine Warfare	Explain that mines were considered only a defensive weapon until the Russo-Japanese War of 1904-5. The Japanese sowed offensive minefields across entrances to Russian harbors and then enticed the Russian Fleet out with a show of inferior forces. The mines sank six ships. The Russians mined defensively with even more success, sinking nine Japanese ships.	28-29
Evolution of Mine Warfare	Explain that after the war, several ships of other nations were sunk by free-floating mines that had broken loose from their wartime moorings, giving rise to the 1907 Hague Convention concerning floating mines. The convention sought to restrict the	30-31

Chapter 4 / Section 1: NS3-M3U6C4S1 – Evolution of Mine Warfare

	use of floating mines unless they could self-deactivate after a time. International law, however, imposes few other restrictions on mine warfare. Moored or bottom mines need not be made to deactivate automatically after a prescribed time.	
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	32
Evolution of Mine Warfare	Explain that these developments called attention to mines and opened up new uses for them, but it was not until World War I that offensive use of mines was actively pursued. The most extensive effort involving mines in World War I was the great Allied North Sea mine barrage laid between northern Scotland and the Norwegian coast. It was designed to keep German U-boats confined in the North Sea and allow the Allies to use Atlantic shipping routes in comparative safety.	33
Evolution of Mine Warfare	Explain that American minelayers planted some 57,000 of these mines, and the British planted over 13,000. They were the anchored contact type, spherical and studded with "horns." There is no definitive information as to the success of this field in sinking U-boats, but that it kept them bottled up to a considerable extent is certain. This damaged German submariners' morale and simultaneously boosted the morale of American and British merchant seamen upon whom wartime logistics depended.	34-35
Evolution of Mine Warfare	Explain that postwar statistics reveal that mines sank more ships than did torpedoes and gunfire combined during World War I. The cost of the North Sea barrage was determined to be equal to the cost of prosecuting the war for one day, so if it shortened the war by even that much, it was a good investment.	36
Evolution of Mine Warfare	Explain that mine warfare of World War II featured offensive mine-laying by both submarines and aircraft. Defensive mining was carried out mainly by conventional types of surface minelayers, and mine clearance was done primarily by surface craft equipped with special minesweeping gear. Countermeasures included novel devices for protection and detection.	37-38
Evolution of Mine Warfare	Explain that in the opening months of the war, Nazi submarines and aircraft sowed extensive minefields off the English and Scottish coasts. A number of British ships were sunk by this mine barrage, which was especially heavy in the Thames estuary. Early in the War, however, the Germans lost one of their secret weapons, an influence mine designed to be triggered by the magnetic field of a passing steel-hulled ship. The mine, dropped by an airplane, overshot its mark and landed intact in a mud bank. The British recovered the mine and shortly thereafter produced a successful countermeasure, doubtless saving countless Allied ships.	39-40
Evolution of Mine Warfare	Explain that Japanese minefields in the Pacific during the war were also quite extensive. They used defensive minefields to protect their major bases and harbors. Their minefields west of the Nansei Shoto protected shipping in the East China Sea throughout the war. Until the last months of the war, the Sea of Japan was effectively sealed off from American submarine and surface ships by Japanese fields in the straits leading into that body of water from the Pacific. Both the Americans and the Japanese laid offensive fields to destroy or divert enemy shipping.	41-42
Evolution of Mine Warfare	Explain that during the Korean and Vietnam wars, Communist forces floated mines down rivers into harbors and out to sea. Several Allied ships were sunk by mines during the Korean conflict. The Viet Cong also used improvised controlled mines in the rivers of South Vietnam, which they would detonate from shore whenever a suitable target came within range. Later, drifting mines caused damage to ships of several nations in the Persian Gulf during the Iran-Iraq War in the 1980s, and to several U.S. warships during Operation Desert Storm in 1991.	43

Chapter 4 / Section 1: NS3-M3U6C4S1 – Evolution of Mine Warfare

Video 1 on Mine Classification	Show video 1 on mine classification.	44
Mine Classification	Explain that mines are classified according to the method of planting (surface, aircraft, or submarine), the final planted position (moored, bottom, or drifting), the mode of operation (controlled or automatic), and the detonating or actuation mechanism (contact or influence).	45-46
Mine Classification	Explain that mines can be planted by surface craft when secrecy is not of prime importance. High-speed minelayers can carry many mines and can lay a large minefield in a relatively short time. Presently, however, the U.S. Navy has no minelayers in commissioned service.	47
Mine Classification	Explain that planting mines by submarine can be accomplished with great secrecy and at great distances from home ports. Once the minefield has been laid, friendly submarines cannot navigate in the area during the armed life of the planted mines.	48
Mine Classification	Explain that aircraft-planted mines can be carried and released like bombs or torpedoes. A parachute is attached to the mine to slow its descent after which the parachute separates from the mine case and sinks on impact with the water. Aircraft can carry mines into enemy-held areas, and the field can be replenished, if necessary, without danger from previously planted mines. There is little secrecy in planting aerial mines though night-flying planes can be used to some extent. Aircraft can mine coastal and shallow waters that no other platform could possibly mine. Blockading enemy shipping lanes and harbors can be very effectively accomplished by this type of mining.	49-51
Mine Classification	Explain that moored mines have buoyant cases containing the explosive charge. They are kept at a predetermined depth by mooring cables attached to an anchor. Because the depth of the mines can be controlled by the length of their mooring cables, the mines can be deployed in shallow water against small craft, or in deeper water against major surface ships and submarines. The major disadvantage is that they may be cleared with comparative ease by mechanical sweeping gear.	52
Mine Classification	Explain that for that reason, bottom mines were developed. Bottom mines can be planted by any type of craft, and because they lie on the bottom, they require costly minesweeping gear to detect and remove them, both difficult tasks. They cannot be planted in water depths greater than 30 fathoms unless intended as antisubmarine weapons.	53-54
Mine Classification	Explain that drifting mines are not actually planted in the true sense. Often, however, a drifting mine is a moored mine that has broken loose from its mooring cable and has become a hazard to all international navigation, neutral and belligerent alike.	55
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	56
Mine Classification	Explain that mine mode of operations are controlled and automatic. Controlled mines are no longer used by the United States Navy, but many varieties of them were used in rivers by the Vietcong in Vietnam. They are manually detonated by a person on shore when an enemy ship is near the mine. Most mines today are designed to detonate automatically when a firing mechanism detects a ship nearby.	57-59
Mine Classification	Explain that detonating or actuation mechanism requires contact and influence. Actual contact of a ship with a mine or its antenna is required to detonate a contact mine. The <i>USS Tripoli</i> was damaged by a floating contact mine during Operation Desert Storm.	60-62

Chapter 4 / Section 1: NS3-M3U6C4S1 – Evolution of Mine Warfare

Video 2 on Mine Classification	Show video 2 on mine classification.	63
Mine Classification	Explain that one common contact mine is equipped with lead horns encasing glass tubes containing an electrolyte. When a horn is struck and bent, the glass tube is broken and the electrolyte flows into a battery cell, generating enough current to detonate the mine. Another type closes an "inertia switch," which completes an electric circuit.	64-65
Mine Classification	Explain that there are three basic types of influence mines: magnetic, acoustic, and pressure. The firing mechanisms of two or all three of these maybe interlocked in the case of a combination mine, making it more difficult to sweep. Influence mines are normally of the bottom type. The magnetic mine is actuated by the target ship's magnetic field. When a ship passes, the firing circuit is actuated and the mine detonates. The acoustic mine is triggered by the noise produced by a passing ship's propellers, machinery, or hull vibrations. The firing mechanism can be set to react only to specific sounds, so it will not be actuated by any normal sea sounds.	66-68
Mine Classification	Explain that the pressure mine is triggered by the change in water pressure caused by a ship passing over the mine. The pressure-activated mine is the most difficult of the three basic influence types to sweep. A pressure mine is detonated by the change in water pressure caused by a ship passing over it.	69
Mine Classification	Explain that a combination mine, detonated by the simultaneous actuation of two or all three of the foregoing types of firing mechanisms, is more effective because it is less susceptible to activation by false targets and harder to sweep. In order for such a mine to detonate, for example, the pressure influence of a ship may have to close a switch at the same time as her magnetic field influences a coil. The U.S. arsenal contains mines detonated by simultaneous actuation of all three mechanisms. Such mines are almost impossible to sweep.	70
Mine Classification	Explain that In addition to the combination of various influence mechanisms, "counters" have been installed in some mines. These are designed to cause the mine to remain inert until the actuation process has occurred a preset number of times. This is intended to give the enemy a false sense of security, by setting up the mines for activation after minesweeping operations have been "successfully concluded" without mishap.	71
Mine Classification	Explain that perhaps the most unusual "mine" in the Navy arsenal is not really a mine at all. Called the CAPTOR (encapsulated torpedo), it consists of an acoustic homing torpedo moored to the bottom with about 300 meters of cable. Primarily a USW weapon, the torpedo, upon identifying a submarine acoustic signature, is automatically released to home in on and destroy the submarine.	72
Review Question	The Review Question is, "Name the four classifications of mines." Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students' best responses for visual reinforcement, and to foster discussion.	73
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	74
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	75

Chapter 4 / Section 1: NS3-M3U6C4S1 – Evolution of Mine Warfare

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Handouts for in class and take home activities

When: At the end of the lesson

- Working in a small group, create a timeline outlining the history of the development of mines that was reviewed in class. After completing the outline, discuss within the group how today's mine technology is different from early mines both in capability and strategies for deployment.

B. Take Home Activity: Have cadets complete the At Home Activity "Mines" at home and review the next class period.

Answer Key:

Method of Planting	Final Planted Position	Mode of Operation	Detonating or Actuation Mechanism
Surface Aircraft Submarine	Moored Bottom Drifting	Controlled Automatic	Contact Influence

1. an acoustic mine
2. a pressure mine
3. Their efforts to destroy the mine would be ignored initially as long as the counter number had not been exceeded, and the mine would be detonated later after the counter number was reached.
4. USS Tripoli continued for four days; USS Princeton was not able to continue and had to be towed into port. (Facts from the video on slide 63)
5. 30 fathoms
6. False

IV. Evaluation - see CPS database for chapter test questions.

Chapter 4 / Section 2: NS3-M3U6C4S2 – Mine Countermeasures

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of Naval weapons

Skills and Knowledge to be Gained:

1. Describe the three major types of mine countermeasures, to include ship treatment against magnetic and acoustic mines, minesweeping, and mine hunting
2. Describe Mine Hunting and what it involves
3. Describe the major capabilities of mine warfare

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Mine Countermeasures (A)	Video1 Mine Countermeasures	Mine Countermeasures (B)
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Video1 Mine Countermeasures	Check On Learning A	Mine Hunting	Mine Warfare Capabilities (A)	Check on Learning B	Mine Warfare Capabilities (B)	Video Mine Warfare Capabilities	Review Questions
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Closing Questions	Call for Other Questions
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Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 4. Place a checkmark beside the NS3-M3U6C4S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C4S2 - Key Terms and NS3-M3U6C4S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 4 / Section 2: NS3-M3U6C4S2 – Mine Countermeasures

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss the three major types of mine countermeasures, including ship treatment against magnetic and acoustic mines, minesweeping and mine hunting. We will learn about mine hunting and what it involves. Finally we will discuss the major capabilities of mine warfare.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “Describe the three categories of influence mines.” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on the slide, focusing on mine countermeasures.	8
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	9
Mine Countermeasures	Explain that mine countermeasures (MCM) include all actions taken to protect friendly shipping against mines. The three major types of mine countermeasures are ship treatment against magnetic and acoustic mines, minesweeping, and mine hunting.	10-11
Mine Countermeasures	Explain that the two principal methods of treating a steel-hulled ship to decrease the magnetic effects that actuate magnetic influence mines are deperming and degaussing. The hull of a steel ship normally acquires a significant permanent magnetic field during construction. This occurs because the steel plates of the hull are constantly being heated, riveted, and hammered during building, causing the iron molecules to align themselves with the Earth's magnetic field. A ship also has an induced magnetic field caused by the interaction of the moving ship with the Earth’s magnetic field.	12-14
Mine Countermeasures	Explain that the purpose of deperming is to reduce a ship's permanent magnetic field to a minimum. Done by means of wrapping the hull with electric coils after the completion of construction, this process is essentially a large-scale version of demagnetizing a magnet. Degaussing was developed by the British during World War II to defeat the aforementioned German influence mine. It neutralizes the strength of both the induced and permanent magnetic fields of a ship by means of an	15-16

Chapter 4 / Section 2: NS3-M3U6C4S2 – Mine Countermeasures

	arrangement of electric coils installed within the hull of the ship. Basically, a direct current is sent through the coils to produce a magnetic field in exact opposition to that generated by the ship itself, thus nullifying any magnetic effects.	
Mine Countermeasures	Explain that though these measures can greatly reduce the magnetic signature of a steel-hulled ship, some residual magnetic field is always generated by all steel vessels. Consequently, minesweeper hulls are built of wood, fiberglass, aluminum, or other nonmagnetic materials.	17
Mine Countermeasures	Explain that very little can be done to protect a ship from acoustic mines. Most underwater noise generated by ships is caused by the movement of the screw blades with respect to the water. This effect is called cavitation because of the bubbles of water vapor that are formed and collapse at sonic or subsonic frequencies around the tips of the blades. Some noise also is produced by water flowing over sharp surfaces on the hull and by machinery inside the ship.	18-19
Mine Countermeasures	Explain that beyond the Albacore hull design of nuclear sub-marines, it appears that little more can be done to change substantially the acoustic characteristics associated with a ship's hull. Research is ongoing to develop a screw shape that would reduce cavitation, at least to some degree. For now, however, underwater ship noise can be reduced only by slowing the speed of the ship, using special noise-reducing mountings for machinery that must operate, and shutting down nonvital noise-producing machinery.	20-21
Mine Countermeasures	Explain that minesweeping is done by traversing a mined area with mechanical sweeps that set moored mines adrift by cutting their mooring cables, and with influence sweeps that simulate the necessary characteristics to cause detonation of influence mines. The sweeps can be dragged through the area either by minesweeping ships or, in some cases, by a helicopter. Minesweeping helicopters were developed in the 1970s, and have been extensively used as sweeping vehicles in most mine-clearing operations conducted by the U.S. Navy since.	22-24
Mine Countermeasures	Explain that the Navy's primary mine countermeasure force is the fourteen-ship Avenger-class of mine countermeasures ships built during the 1980s. They are made of wood sheathed in fiberglass, and can find, classify, and destroy moored and bottom mines. They have both conventional minesweeping gear and newer devices such as remotely operated underwater vehicles to seek out and destroy mines.	25
Video 1 on Mine Countermeasures	Show video 1 on mine countermeasures.	26
Mine Countermeasures	Explain that the Navy's new littoral combat ships also have a mine hunting capability.	27
Video 2 on Mine Countermeasures	Show video 2 on mine countermeasures.	28
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	29
Mine Hunting	Explain that mine hunting is the methodical detection, location, and neutralization of mines. It involves searching an area with mine-detecting gear to locate mines and then removing them by the use of divers or destroying them with explosive charges. Highly trained personnel operate devices called ordnance locators to find the mines; there is a small version of this equipment that can be carried by a diver.	30-31

Chapter 4 / Section 2: NS3-M3U6C4S2 – Mine Countermeasures

Mine Hunting	Explain that in recent years several experimental versions of self-propelled autonomous underwater vehicles (UAVs) have been developed that can be programmed to search for mines automatically after being launched by a mine-hunter vessel. They resemble long torpedoes, but are fitted with electronic mine detection gear and follow search tracks beneath the water. Some have self-contained (SINS) guidance systems that use GPS to determine their position. Sea testing of several models has been conducted and may result in their becoming operational over the next several years.	32
Mine Hunting	Explain that for many years there has been an ongoing effort to use trained dolphins to search for mines and enemy swimmers as part of the Navy Marine Mammals Program. They work with human handlers in much the same way as police dogs do on land. Dolphins from the program were used in the Persian Gulf in both Operations Desert Storm and Iraqi Freedom, and performed well. There are currently approximately seventy-five dolphins in the program at Navy bases on the Gulf and West Coasts.	33
Mine Warfare Capabilities	Explain that of all the aspects of mine warfare, none is as significant as the profound psychological effect of the mine. Invariably, the danger of mines is judged to be much greater than the actual physical threat. Because a minefield is hidden, unknown in extent, and difficult to assess, there is a usual tendency to overestimate the threat. It is not the calculation of the minefield's effectiveness by the minelayer, but the enemy's estimate of the threat that is important.	34
Mine Warfare Capabilities	Explain that in addition to the tactical effects of mine warfare, there is no question that the use or threat of use of mines has had a strong effect on political and military strategy. It is the enemy's estimate (or overestimation) of the threat that is key to mine warfare. Mines possess a number of unique qualities that make them very significant in strategic planning.	35-37
Mine Warfare Capabilities	Explain that mines are versatile. They can do direct damage to military units, but they can also attack the enemy's economy. Ships carry the large bulk of international trade goods, and they are vulnerable to attack and total loss. Mines can destroy a nation's merchant marine. They can increase damage to enemy forces by restricting their area of operations, thereby making their ships more susceptible to attack.	38-39
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	40
Mine Warfare Capabilities	Explain that mines are passive weapons. The target comes to the mine. This has a number of advantages. The mine maintains its vigilance for a considerable amount of time, without continued commitment of forces. The enemy is faced with a choice between confrontation of the minefield and acceptance of a blockade situation.	41-43
Mine Warfare Capabilities	Explain that mines are selective weapons. They can be set to be detonated only by a very specific size or class of target, and can be selective in depth or range. Mines are flexible in duration and times of activation. They can be rendered harmless during selected time intervals or after a set time duration. They can also, in effect, change the geography of the battlespace, by making certain areas impassable to ships. An area that has been declared dangerous because of the use of mines is usually treated with great respect and avoided as if the situation were taking place on land.	44-46
Mine Warfare Capabilities	Explain that an effective mine blockade may aid significantly in gaining a victory over an enemy country. Such a blockade can destroy the enemy's economy, cause food	47

Chapter 4 / Section 2: NS3-M3U6C4S2 – Mine Countermeasures

	shortages, enable conservation of friendly attacking forces, psychologically destroy the enemy morale and will to resist, and prevent sortie of enemy forces from their harbors.	
Mine Warfare Capabilities	<p>Explain that other strategic advantages of mine warfare that might accrue to a belligerent using it effectively are:</p> <ul style="list-style-type: none"> • Forcing the enemy to engage in mine countermeasures, tying up personnel and resources at little cost to the minelayer. • Delay of shipping and disruption of cargo-handling facilities at ports on both ends of a supply line, even if no ship is sunk. • Demoralization of both ship and shore crews faced with confronting a minefield. • Cost-effective potential physical, political, and psychological damage to the enemy. • The potential for mine blockade without direct harm to the local populace can be a useful weapon to force settlement of disputes without actual combat, or to constrain a limited war. 	48-52
Video on Mine Warfare Capabilities	Show video on mine warfare capabilities.	53
Review Question	The Review Question is, “In what ways does a mine blockade effectively impede enemy forces?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	54
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	55
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	56

III. Supplemental Activities -

A. In Class Activity:

Supplies required: An internet connection; handout for take home activity

When: This activity can be done at the beginning, during or at the end of the lesson.

- With an internet connection on your computer connected to the internet, access this video on YouTube: https://www.youtube.com/watch?v=sy_lwblcVOA
- This is a 9-minute video entitled U.S. Navy Dolphins & Sea Lions to Serve as Marine Guardians of U.S. Naval Base. There is an ad at the beginning but you can skip it easily. Video shows dolphins and sea lions from Navy Marine Mammal programs, in action looking for mines. Show as much of the video as time allows, and open for discussion if time allows.

Chapter 4 / Section 2: NS3-M3U6C4S2 – Mine Countermeasures

B. Take Home Activity: Have cadets complete the At Home Activity “Mine Warfare” at home and review the next class period.

Answer Key:

1. Mine countermeasures include all actions taken to protect friendly shipping against mines.
2. Two methods of decreasing the magnetic effects that actuate magnetic mines are deperming and degaussing.
3. Little can be done to protect a ship from acoustic mines.
4. Devices called ordnance locators are used for mine hunting, including a portable version a diver can carry.

IV. Evaluation - see CPS database for chapter test questions.

Chapter 4 / Section 2: NS3-M3U6C4S2 – Mine Countermeasures

Activity 1: Take Home Activity – Mine Warfare

Name: _____ Date: _____ Class: _____

Each of the “tiles” below include four letters. The tiles should be placed in the correct order to create a sentence which is a fact that was covered in the chapter on Mine Warfare. The first tile is circled to get you started for each of the four sentences. Write the letters in the boxes below as you determine the correct order, to make a complete sentence. Spaces in the tiles indicate spaces between words, and punctuation is also in the correct place.

1.

L	U	D	E	A	L	L	I	N	G	I	O	N	S	S	M	I	N	E			
I	N	C	A	G	A	I	N	S	T	T	A	K	E	N	T	N	T	E	R		
O	P	R	O	T	E	C	C	O	U	T	F	R	U	R	E	S	I	E	N	D	
A	C	T	L	Y	S	H	I	P	P	M	I	N	E	M	E	A	S				

2.

A	C	T	U	M	A	G	N	E	T	I	C	E	P	E	R	M	I	N	O	D	S		
T	W	O	R	E	D	T	S	T	E	S	A	E	C	R	E	A	N	D					
A	S	I	N	H	A	T	A	U	S	S	A	T	E	E	M	A	D	E	G				
I	C	E	M	I	N	G	O	F	D	G	T	H	I	N	G	.	F	F	E	C			
M	E	T	H	G	N	E	T																

Chapter 4 / Section 2: NS3-M3U6C4S2 – Mine Countermeasures

3.

L I T T . O P R I N E S L E C A N B
 I C M F R O N E T S H I P M A C O U S T
 E D O T E C T A

4.

U D I N C A L L N C E S I O N E D O V E R
 I V E R R Y . R D N A A D R M I G A
 C E S A R E N E H A B L E U N T I C A R
 D F O N G , D E V I L O C A C A N I N C L
 P O R T T O R S U S E

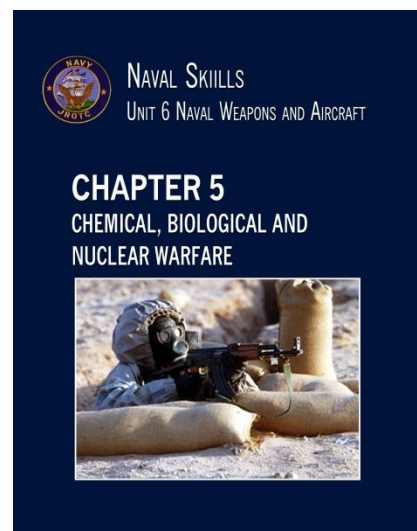
Module 3 Unit 6 Chapter 5: NS3-M3U6C5 – Chemical, Biological, & Nuclear Warfare

What Students Will Learn to Do:

Demonstrate an understanding of naval weapons

Skills and Knowledge to be Gained:

1. Explain what conventional weapons are
2. Describe some examples of the use of chemical and biological warfare in earlier times
3. Explain what has tended to keep the use of chemical and biological warfare in earlier times
4. Explain chemical warfare and describe the common types of chemical warfare agents found in the weapons stockpiles of most major nations today
5. Explain biological warfare
6. Explain nuclear warfare and describe the possible effects of a nuclear warhead explosion
7. Explain the physiological effects of radiation exposure on personnel



Linked Standards in this Chapter:

Common Core English Language Arts 11-12*

Reading: Informational Text

- RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly...
- RI.11-12.4. Determine the meaning of words and phrases as they are used in a text...
- RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats ...

Writing

- W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately ...

Speaking & Listening

- SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions...
- SL.11-12.5. Make strategic use of digital media...

Module 3 Unit 6 Chapter 5: NS3-M3U6C5 – Chemical, Biological, & Nuclear Warfare

Language

- L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases...
- L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases...

*A complete listing of all linked grades 11-12 Common Core English Language Arts Standards and their indicators associated with this Chapter are displayed on the Standards Chapter Matrix – ELA at the end of the Naval Science 3 Instructor’s Guide.

Chapter 5 / Section 1: NS3-M3U6C5S1 – Chemical Warfare

(Section 1 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of Naval weapons

Skills and Knowledge to be Gained:

1. Explain what conventional weapons are
2. Describe some examples of the use of chemical and biological warfare in earlier times
3. Explain what has tended to keep the use of chemical and biological warfare in earlier times
4. Explain chemical warfare and describe the common types of chemical warfare agents found in the weapons stockpiles of most major nations today

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	KeyTerm Definitions	Opening Question	Warm-Up Question	Introduction	Video Chemical, Biological And Nuclear Warfare	Check On Learning A
Chemical Warfare (A)	Video Chemical Warfare	Chemical Warfare (B)	Check on Learning B	Chemical Warfare (C)	Review Questions	Closing Questions	Call for Other Questions

Key:

Textbook Content	Student Engagement and Assessment
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Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 5. Place a checkmark beside the NS3-M3U6C5S1 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C5S1 - Key Terms and NS3-M3U6C5S1 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

Chapter 5 / Section 1: NS3-M3U6C5S1 – Chemical Warfare

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	<p>Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons.</p> <p>In this lesson we will discuss learn what the conventional weapons are. We will discuss different examples of the use of chemical and biological warfare in earlier times. We will discuss what has kept the use of chemical and biological warfare in earlier times. Finally, we will discuss chemical warfare and describe the common types of chemical warfare agents found in the weapons stockpiles of most major nations today.</p>	1-4
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	5
Key terms - Definitions	Reinforce the correct definition for each key term.	6-8
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is, “What have you learned in previous chapters about use of nuclear weapons in history?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on chemical warfare.	9
Warm-Up Questions(Lesson questions 1-2)	<p>Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions.</p> <p>Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.</p>	10
Introduction	Explain that the conventional weapons are those that use high-explosive warhead or explosive device. In addition to these, there are other potentially far more devastating types of weapons in the arsenals of many of today's military forces. These are collectively referred to as CBR weapons (chemical, biological, and radiological or nuclear), or sometimes special weapons or weapons of mass destruction, to differentiate them from conventional weapons. They can inflict massive destruction over a large area, or mass casualties among a population.	11-12
Introduction	Explain that although they are often thought of along with nuclear weapons as being relatively new concepts, in actuality chemical and biological agents (substances) have been in use in warfare for many centuries. Even in ancient times it was common practice to disrupt an enemy's food-production capability by spreading salt on agricultural fields, or contaminate the water supply by dumping dead animals or vegetation into it. More lethal chemical weapons such as mustard (blister) gas were developed and used in the trench warfare of World War I and the use of smoke of various kinds to mask movements at sea was a major tactic until well after the advent of radar in the mid-1940s.	13-14

Chapter 5 / Section 1: NS3-M3U6C5S1 – Chemical Warfare

Introduction	Explain that fortunately, the widespread use of chemical and biological warfare agents in World War II and in more recent conflicts since has been held in check for the most part by threats of retaliation and international accords limiting their use, but many nations still have some of these kinds of weapons. Their use by unprincipled nations against weaker foes unable to retaliate has been documented several times in recent decades, as for example Iraq's use of blister gas against Iranian forces during their protracted war of attrition in the 1980s, and Soviet use of blister and possibly nerve gas against rebel Afghan forces during the same years.	15-17
Introduction	Explain that Iraq's Saddam Hussein threatened to use chemical and possibly biological agents against U.S. and other coalition forces, as well as against Israel, during Operation Desert Storm in 1991. His forces set fire to most of the oil wells in Kuwait following the Iraqi withdrawal, the smoke and soot from which greatly hindered occupying coalition forces for months thereafter. In late 1995, a group of Japanese terrorists used a nerve-gas agent in an attack against civilians in a Japanese subway, incapacitating all those exposed.	18-20
Introduction	Explain that more recently, anthrax-laced mailings were sent to several private and U.S. government buildings following the terrorist attacks of 11 September 2001, allegedly by a disgruntled government research scientist. Anthrax is an infectious, often fatal disease of cattle, sheep and other mammals, caused by <i>Bacillus anthracis</i> and is transmitted to humans by contaminated wool, raw meat or other animal products.	21-22
Introduction	Explain that the age of nuclear weapons began in 1945 with the Allied use of the American-built atomic bomb against the Japanese cities Hiroshima and Nagasaki in the closing days of World War II, followed by the development of the hydrogen bomb shortly thereafter. The end of the war ushered in a fifty-year-long era of nuclear confrontation and stalemate between the Soviet Union and the United States and their respective major power allies called the Cold War, which did not end until the dissolution of the USSR in the early 1990s.	23-26
Introduction	Explain that fortunately, great progress has been made since then with disarmament negotiations and international accords among the remaining world powers that has done much to limit the spread and diminish the stockpiles of CBR weapons. START (Strategic Arms Reduction Treaty) was signed by the United States and the former Soviet Union in July 1991, and has been in force since December 1994. It reduced the levels of nuclear warheads deployed on ballistic missiles (both land- and sea-based), and long-range bombers from Cold War levels of more than 10,000 – to 6,000 by the end of 2001.	27-28
Introduction	Explain that the threat of potential use of CBR weapons still persists. Even in the post-Cold War era, the United States and its allies are required to maintain strong deterrent capabilities in order to try to discourage any aggressive use of CBR weapons in the future.	29-30
Video on Chemical, Biological and Nuclear Warfare	Show video on chemical, biological, and nuclear warfare.	31
Check on Learning Questions A (Lesson questions 3-4)	Check in on students' understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	32
Chemical Warfare	Explain that chemical warfare (CW) is the military use of any chemical to harass or cause casualties among enemy forces. Chemical warfare agents are poisonous chemicals that can cause death, injury, or irritating effects. They may be gases, vapors,	33-34

Chapter 5 / Section 1: NS3-M3U6C5S1 – Chemical Warfare

	powders, or liquids, and include screening smokes and incendiaries. Though they can be deadly, chemical warfare agents are often unstable and difficult to produce and store, and can be dispersed and rendered ineffective by weather and sunlight.	
Chemical Warfare	Explain that chemical warfare agents can be difficult to detect and some are lethal in very small concentrations. Upwind dispersal of chemical agents could contaminate a large area with devastating results. Chemical smoke screens have been used to hide one's own ships or forces, or to confuse enemy forces. The smokes can be combined with other chemical agents as well. Incendiaries—chemical compounds that burn with terrific heat—may be dropped by aircraft, fired in shells, or used with flamethrowers. Disadvantages of CW agents include: unstable, difficult to produce, difficult to store, and dispersed and rendered ineffective by weather and sunlight.	35-37
Video on Chemical Warfare	Show video on chemical warfare.	38
Chemical Warfare	Explain that CW gases cause bodily damage according to the type used. The most common types of CW agents are nerve gases, blister gases, blood gases, choking gases, psycho gases, and vomiting and tear gases. A protective gas mask can protect the eyes and lungs against many of these agents, and specially treated garments will protect the skin.	39-40
Chemical Warfare	Explain that History of Chemical Warfare: <ul style="list-style-type: none"> • WWI poisonous gases: chlorine; phosgene (1915); sulfur mustard (1917) • Nerve agents developed pre- and post-WWII: 1936 tabun (GA); 1937 sarin (GB); 1952 VX • Iran-Iraq (1984): Iraq used sulfur mustard gas > 40 alleged instances • Tokyo (1995) sarin {11 deaths} 	41
Chemical Warfare	Explain that nerve gases are the most deadly of the CW agents. They include Tabun (GA), Sarin (GB), Soman (GD), GF, and VX. They were developed by the Germans in World War II but never used in that war. Entering the body through the nose, skin, or mouth, they are quick killers. Protection against nerve gases depends on speed in detection, masking, and self- or first-aid. According to many analysts these are the most probable CW agents to be used in the future,.	42-43
Check on Learning Questions B (Lesson questions 5-6)	Check in on students' understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	44
Chemical Warfare	Explain that lung-damaging agents include: <ul style="list-style-type: none"> • Chlorine (CL) • Chloropicrin (PS) • Phosgene (CG) • Diphosgene (DP) • Mustard (HD, H), Lewisite (L) • Smokes (isocyanates) (PFIB) (oxides of nitrogen) 	45
Chemical Warfare	Explain that blister agents include: <ul style="list-style-type: none"> • Sulfur mustard (H, HD) • Nitrogen mustard (NH1, NH2, NH3) • Lewisite - chlorovinylchloroarsine (L) • Mustard/Lewisite Mixtures (HL, HT, TL) 	46

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	<ul style="list-style-type: none"> • Phosgene oxime (CX) • Riot-control agents • T-2 mycotoxin 	
Chemical Warfare	Explain that blister gases cause blisters on the skin. A type of blister gas called mustard gas was used extensively in World War I. Mustard gas caused many casualties on both sides. In liquid or vapor form, these gases cause painful burns and blisters on the skin and can damage the eyes even more seriously. If breathed into the lungs, blister gases will inflame the throat, windpipe, and lungs, often resulting in pneumonia and death.	47-48
Chemical Warfare	Explain that Blood Agents (Cyanogens) include: <ul style="list-style-type: none"> • Hydrogencyanide (AC) • Cyanogen chloride (CK) 	48
Chemical Warfare	Explain that blood gases directly affect heart action and interfere with the absorption of oxygen by the body. The body tissues suffocate and die. A mild exposure will produce headache, dizziness, and nausea, followed by recovery within a few hours. Heavy exposure will cause a speedy death. These gases have not been successfully used in war because they are very light and dissipate quickly. They would probably not be used by themselves.	49
Chemical Warfare	Explain that choking gases (lung irritants) act on the respiratory system and are often fatal. Chlorine and phosgene are two common types. Phosgene was used in World War I and caused casualties second only to mustard gas. These gases cause the lungs to fill with liquid, causing death due to lack of oxygen.	50
Chemical Warfare	Explain that psycho gases produce a mentally confused state that includes hallucinations, anger, and inability to sleep. They may also cause physical symptoms such as dizziness, blurred vision, fainting spells, and severe muscle weakness. These gases make people completely ineffective, but they do not kill. Their effects last from eight hours to four days. According to some analysts, psycho gases could be widely used in future wars.	51
Chemical Warfare	Explain that vomiting gases and tear gases produce unpleasant symptoms, but usually for only a short time. They are not intended to cause death. They are used to control riots, to force people out of buildings or caves, or to capture enemy forces without serious injury. They are often used in training exercises. Because they are really vapors, protective gas masks give complete protection if used quickly and correctly. Mixture of these agents with more lethal gases is possible. However, if that were done, many casualties could quickly occur. All of these chemical warfare agents can be delivered via gun projectiles, missiles, or aircraft bombs or spray tanks.	52
Review Question	The Review Question is, “What has tended to keep the use of chemical and biological agents in check in modern warfare?” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	54
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	55
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	56

Chapter 5 / Section 1: NS3-M3U6C5S1 – Chemical Warfare

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Whiteboard, Handout for in class and take home activities

When: This activity should be done after the lesson.

- Using the handout Chemical Weapons, have cadets work in small groups to fill out the missing information on types of Chemical Weapons agents, based on what they learned from the PowerPoint/CPS lesson. Or, if tight on time, have the whole class work together to complete it.

Type of CW Agent/gas	Primary part(s) of body affected	How one can protect against agent

Answer key:

Type of CW Agent/gas	Primary part(s) of body affected	How one can protect against agent
Nerve gas	Nervous system	Protective mask and protective clothing
Blister gas	Skin, eyes, lungs	Protective mask and protective clothing
Blood gas	Heart	Protective mask and protective clothing
Choking gas	Respiratory system	Protective mask
Psycho gas	Brain	Protective mask
Vomiting/tear gas	Lungs, stomach, eyes	Protective mask

Chapter 5 / Section 1: NS3-M3U6C5S1 – Chemical Warfare

B. Take Home Activity: Have cadets complete the “Word Scramble” activity at home and review the next class period. Instructor key follows on last page.

**This may be a challenging exercise for some for whom linguistic-based thinking doesn't come easily. When the cadets return to class with their attempts, they may not have gotten them all, so this could be a group collaborative process in figuring them all out.

Take Home Activity KEY:

Chemical

Biological

Nuclear

Disarmament

START

Cold War

Special Weapons

Mustard gas

Anthrax

Stockpile

Weapons of Mass Destruction

IV. Evaluation - see CPS database for chapter test questions.

Chapter 5 / Section 1: NS3-M3U6C5S1 – Chemical Warfare

Activity 1: In Class Activity – Chemical Weapons

Name: _____ Date: _____ Class: _____

Directions: Fill out the missing information on types of Chemical Weapons agents, based on what you have learned from the lesson.

Type of CW Agent/gas	Primary part(s) of body affected	How one can protect against agent

Chapter 5 / Section 2: NS3-M3U6C5S2 – Biological Warfare

(Section 2 of 2)

What Students Will Learn to Do:

Demonstrate an understanding of naval weapons

Skills and Knowledge to be Gained:

1. Explain biological warfare
2. Explain nuclear warfare and describe the possible effects of a nuclear warhead explosion
3. Explain the physiological effects of radiation exposure on personnel

LESSON FLOW OUTLINE

Contact and Readiness, Objectives	Keyterms	Key Term Definitions	Opening Question	Warm-Up Question	Biological Warfare	Check On Learning A	Nuclear Warfare (A)
Video1 Nuclear Warfare	Nuclear Warfare (B)	Video2 Nuclear Warfare	Nuclear Warfare (C)	Video3 Nuclear Warfare	Nuclear Warfare (D)	Video4 Nuclear Warfare	Check on Learning B
CBR Damage Control (A)	Videos1 & 2 CBR Damage Control	CBR Damage Control (B)	Review Questions	Closing Questions	Call for Other Questions		

Key:

Textbook Content	Student Engagement and Assessment
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Chapter 5 / Section 2: NS3-M3U6C5S2 – Biological Warfare

Outline of Instruction:

I. Preparation:

- Open CPS database, and expand folders until you see Module 3, Unit 6, Chapter 5. Place a checkmark beside the NS3-M3U6C5S2 PowerPoint presentation, and these two CPS question deck files: NS3-M3U6C5S2 - Key Terms and NS3-M3U6C5S2 - Lesson Questions.
- Ensure that every student has a functional CPS response pad and a textbook.

II. Instructional Flow:

<u>Flow Item</u>	<u>Textbook Content / Student Engagement and Assessment</u>	<u>Slides</u>
Establish contact and readiness; provide lesson overview and objectives review	Motivate students by relating real or imaginary events to help them see what the lesson will involve. Explain how this lesson ties in with other lessons. In this lesson we will learn about biological warfare. We will also discuss nuclear warfare and learn the possible effects of a nuclear warhead explosion. Finally, we will discuss the physiological effect of radiation exposure on personnel.	1-3
Key terms - CPS	Ask students to respond to the CPS questions covering each key term.	4
Key terms - Definitions	Reinforce the correct definition for each key term.	5-7
Opening Question(Random Pick a Student – “RPS”)	This Opening Question is “What effect did the end of the Cold War have on the worldwide stockpile of nuclear weapons?” Since this is a discussion question, it can be engaged using the RPS function, where CPS will display one student’s name or clicker number, chosen randomly. That student will orally answer the question (not with his/her clicker). Look for the arrow showing the button to engage it on the CPS toolbar below the slide. You might allow the students to discuss the question for 30-60 seconds with a partner before engaging the RPS question. The MobiView tablet can be used to write the students’ responses to the question on biological and nuclear warfare.	8
Warm-Up Questions(Lesson questions 1-2)	Warm-up questions are typically used to gauge students’ level of interest, to generate interest in learning about upcoming topics, or to gauge prior opinions, knowledge or confidence in their knowledge, and/or uncover misconceptions that might be present. There may or may not be correct answers to these questions. Ask students to respond to each Warm-up question, with follow-up discussion based on responses as appropriate.	9
Biological Warfare	Explain that biological warfare (BW) is the use of living organisms (bacteria, spores, or fungi) or toxins (powerful biologic poisons) to reduce the ability of an enemy to wage war by destroying or contaminating food or water supplies or by spreading epidemic disease. A BW attack would most probably consist of an aerosol spray (fog-like droplets) released into air currents or water supplies, or a powder that people might ingest. Biological agents can be released by aircraft, bombs, and missiles, or even by	10

Chapter 5 / Section 2: NS3-M3U6C5S2 – Biological Warfare

	enemy agents or terrorists. Like certain chemical agents, it only takes a very small amount of many of these agents to do serious harm.	
Biological Warfare	<p>Explain that there are many differences between biological and chemical agents, some include:</p> <p><u>Biological</u></p> <ul style="list-style-type: none"> • Odorless • Non-volatile • Don't enter intact skin • Require incubation period • Multiply in body • Some communicable <p><u>Chemical</u></p> <ul style="list-style-type: none"> • Faint odor (if impure) • Vapor or liquid • Penetrate intact skin • No incubation period (but some cause delayed reaction) • Do not multiply in body • Not communicable 	11
Biological Warfare	Explain that vaccines are available against many potential BW agents such as anthrax and plague, and can be administered to military personnel and civilians in danger of being exposed to this kind of attack. Several kinds of antibiotics are effective in treating the effects of many kinds of BW agents after exposure.	12
Biological Warfare	Explain that BW agents can be released into the air and put into water supplies. A slow laboratory testing process is necessary to detect biological warfare agents, which are very difficult to identify. Many people could become casualties by the time the agent is identified. Once identified, however, diseases caused by most BW agents can be successfully treated. Most BW agents die or lose their effectiveness after a few days of exposure to sunlight and ordinary weather conditions. Food and clothing suspected of being contaminated should be boiled before use. Canned goods are normally considered safe to use.	13-16
Check on Learning Questions A (Lesson questions 3-4)	Check in on student's understanding of information covered so far by engaging lesson questions 3 and 4, with follow-up discussion as appropriate.	17
Nuclear Warfare	Explain that nuclear warfare involves the use of weapons or devices armed with nuclear warheads, or improvised "dirty bombs" with radioactive materials dispersed by conventional explosives.	18
Nuclear Warfare	Explain that when a nuclear warhead detonates, a tremendous shock wave is released, along with intense pulses of light, heat, and electromagnetic and nuclear radiation. These effects, though devastating, last only a few seconds. Subsequent radioactive fallout from this kind of attack can continue for days, and spread over large areas if carried by wind or water currents.	19
Nuclear Warfare	<p>Explain that also with nuclear warhead detonation there may be:</p> <ul style="list-style-type: none"> • Many casualties • Blindness • Melting • Burning • Vaporizing • Fried electronics because of EMP 	20

Chapter 5 / Section 2: NS3-M3U6C5S2 – Biological Warfare

Video 1 on Nuclear Warfare	Show video 1 on a nuclear warfare.	21
Nuclear Warfare	Explain that thermal radiation is the electromagnetic radiation emitted by all matter above a temperature of absolute zero, because of the thermal motion of atomic particles	22
Nuclear Warfare	Explain that the initial nuclear radiation, or first radiation, cannot be seen or felt, but it can be as deadly as any of the other effects. This radiation is made up of alpha (like a helium nucleus) and beta (high-energy electron) particles, high-speed neutrons, and gamma rays. All these particles and rays are lethal to human tissue. Alpha particles can be stopped by a sheet of paper; beta particles can be stopped by a thin sheet of aluminum. The others are much more difficult to stop with anything less than heavy lead shielding or some other dense substance.	23
Video 2 on Nuclear Warfare	Show video 2 on nuclear warfare.	24
Nuclear Warfare	Explain that residual radiation, or fallout, consists of radioactive materials produced by the explosion, plus dust contaminated with alpha and beta particles. It may be deposited for days over a large area by wind and weather. This fallout can be detected and measured by special instruments called radiacs (Geiger counters). If it is present in hazardous concentrations, the area must be decontaminated (washed clean) before unprotected personnel can enter the area. The three main types of ionizing radiation are alpha, beta, and gamma.	25-26
Video 3 on Nuclear Warfare	Show video 3 on nuclear warfare.	27
Nuclear Warfare	Explain that ships may be exposed to three types of nuclear bursts: an air burst, in which the fireball does not touch the Earth; a surface burst, in which the fireball touches the surface; and a shallow underwater burst, in which the explosion is underwater. An air burst produces blast, heat, intense light, and initial radiation, but little fallout requiring decontamination.	28-30
Nuclear Warfare	Explain that in the case of radioactive material dispersed by a conventional explosive, there will be some shock and heat damage in close proximity as with all such detonations, but the most troublesome effect is the radioactive material that can be spread for some distance. Anyone or anything near the site of such an attack can be contaminated with this material. The site itself may be unusable for a long time until complete decontamination can be accomplished, if ever.	31-32
Nuclear Warfare	Explain that the effect of nuclear radiation on people depends on the intensity of the radiation and the time of exposure. The amount of radiation received is called the dosage, and is measured by devices such as film badges called dosimeters.	33
Nuclear Warfare	Explain that the effects of radiation exposure are most severe on soft tissues in the body. They can vary from short-term illness and nausea, to hair loss, immune system deficiencies, sterility, long-term genetic defects, skin lesions, leukemia and other cancers, mental impairment, and severe sickness, delirium, and death within days or weeks, depending on the dosage received and the time interval over which it occurs. Moreover, the effects of radiation dosage are cumulative, meaning that even small exposures repeated often over time can have the same effects as large doses received all at once.	34

Chapter 5 / Section 2: NS3-M3U6C5S2 – Biological Warfare

Video 4 on Nuclear Warfare	Show video 4 on nuclear warfare.	35
Check on Learning Questions B (Lesson questions 5-6)	Check in on student's understanding of information covered so far by engaging lesson questions 5 and 6, with follow-up discussion as appropriate.	36
CBR Damage Control	Explain that the crew of a naval ship can do much to minimize the damage and casualties that might result from an attack with CBR weapons, except where a ship is at or near the point of impact (ground zero) of such weapons. Tests have shown that ships not receiving direct effects of such attacks have a very good chance of survival with relatively few casualties and with weapons systems still operable.	37
CBR Damage Control	Explain that before an attack, ships normally would be at general quarters (GQ), so the ship should be pretty well "buttoned up." Water washdown systems that spray salt water through sprinkler heads are turned on to wet all topside surfaces so most contaminants will tend to wash overboard. All nonvital openings of the ship are closed and Circle-William ventilation fittings are shut to maintain as complete a gas-tight envelope as possible. Protective gas masks are distributed to personnel who must breathe outside air. Topside personnel in exposed positions wear protective clothing as well as masks.	38-39
CBR Damage Control	Explain that after the attack, trained personnel conduct surveys both topside and below deck throughout the ship using specialized equipment to determine the extent and location of contamination. Decontamination is then done in three phases. Phase one is gross decontamination by saltwater washdown, done with firehoses by crewmembers wearing protective gear. It will eliminate 98 percent of the contamination if the surface was wet before the attack and washdown begins while it is still wet. If the surface has dried, only half of the contamination will be removed.	40
CBR Damage Control	Explain that the second phase is detailed decontamination conducted by repair-party personnel and others of the ship's crew topside. They use a steam lance or hose, scrub brushes with detergents, scrapers, and flame torches to try to remove any remaining concentrations of contamination (called hot spots), and wash it overboard.	41
CBR Damage Control	Explain that tactical decontamination take place immediately at sea. They reduce contamination so the ship can carry out her mission without exposing the crew to dangerous levels of radiation or other contaminants.	42
Videos 1 & 2 on CBR Damage Control	Show videos 1 & 2 on CBR Damage Control.	43-44
CBR Damage Control	Explain that decontamination of personnel is done with fire hoses or jury-rigged topside showers. All contaminated clothing and protective gear is discarded. Personnel scrub thoroughly with soap and water and dress out with uncontaminated clothing. Explain the final phase of ship decontamination would normally be conducted at advanced bases by repair ships and tenders using flame burning, acid dips, and sandblasting.	45-46

Chapter 5 / Section 2: NS3-M3U6C5S2 – Biological Warfare

Review Question	The Review Question is “List some of the effects on humans and land after a nuclear explosion.” Question is designed to provide an opportunity for some reflection and assimilation of the content covered, and is to be engaged in RPS mode as the Opening Question above. MobiView can be used here to write the students’ best responses for visual reinforcement, and to foster discussion.	47
Closing Questions(Lesson Questions 7 - 8)	Have students respond to questions 7 and 8 covering the final segment of the lesson, with follow-up reinforcement and discussion as appropriate.	48
Call for Other Questions	Provide the opportunity for students to ask final questions regarding the content covered.	49

III. Supplemental Activities -

A. In Class Activity:

Supplies required: Whiteboard or Mobi View and the Handout “Venn Diagram”

When: This activity should be done at the end of the lesson.

- Divide the class into groups of approximately five cadets each. Draw a Venn diagram on the board and pass out the In Class Activity Handout to each group to collaborate on together.
- Instruct them to compare and contrast biological weapons vs. chemical weapons. Characteristics true only of BW should go in the BW circle; characteristics true of only CW should go in the CW circle; characteristics true of both should go in the overlapping portion of the circles. After the allotted time has passed, use input from all groups to create a master Venn diagram on the classroom board.

B. Take Home Activity: have cadets complete the take home activity “Review” at home and review the next class period. Instructor key follows on last page

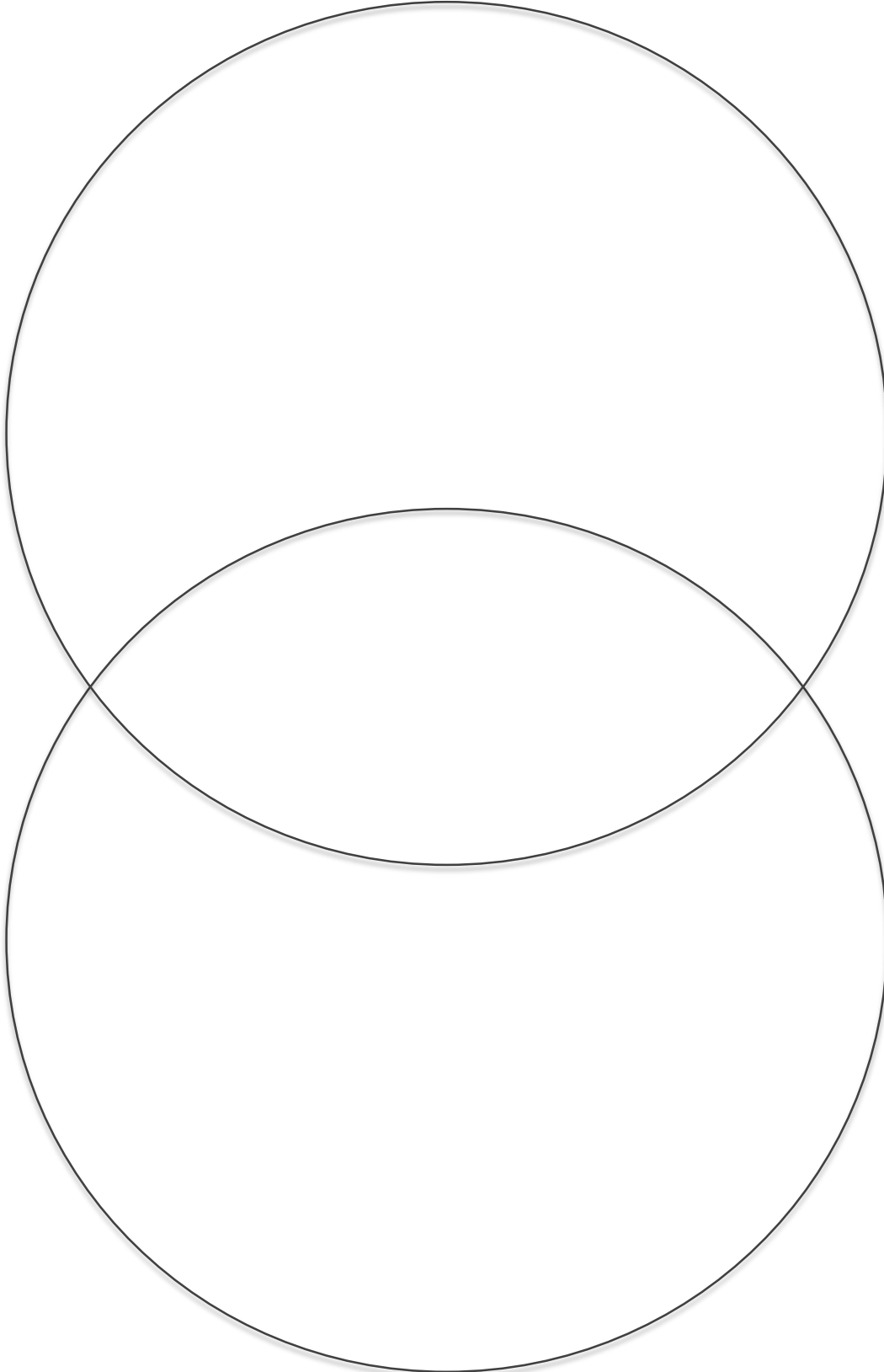
1. Aerosol - G
2. Thermal radiation - H
3. Radiac - B
4. Dosimeter - F
5. Nuclear warfare - A
6. Fallout - C
7. Dirty bomb - I
8. Base surge - E
9. EMP - D

IV. Evaluation - see CPS database for chapter test questions.

Chapter 5 / Section 2: NS3-M3U6C5S2 – Biological Warfare

Activity 1: In Class Activity- Venn Diagram

Name: _____ Date: _____ Class: _____



Chapter 5 / Section 2: NS3-M3U6C5S2 – Biological Warfare

Activity 1: Take Home Activity – Review

Name: _____ Date: _____ Class: _____

Directions: Match the term on the left with its correct definition on the right by placing the letter of the definition by the term.

1. Aerosol _____	A. Involves use of weapons or devices armed with nuclear warheads or dirty bombs with radioactive materials dispersed by conventional weapons
2. Thermal radiation _____	B. The act or process of detecting, identifying and measuring the nuclear radiation at a given place
3. Radiac _____	C. The settling to the ground of airborne particles ejected into the atmosphere from the Earth by explosions, eruptions, forest fires, etc., especially nuclear explosions
4. Dosimeter _____	D. Electro Magnetic Pulse; a short burst of electromagnetic energy
5. Nuclear warfare _____	E. A wall of heavy mist at sea, or cloud of dust on land, created when the column of water or dirt formed by the explosion falls back into the surface
6. Fallout _____	F. An instrument designed to measure radiation received (known as “dosage”)
7. Dirty bomb _____	G. A system of colloidal particles dispersed in a gas; smoke or fog
8. Base surge _____	H. Electromagnetic radiation generated by the thermal motion of charged particles in matter(true for all matter with a temperature greater than absolute zero)
9. EMP _____	I. A weapon that combines radioactive material with conventional explosives

Answer the following questions, using the back of this page as needed for space.

- Why is maintaining a strong military presence a deterrent to nuclear war, and what examples do you see in recent events of the US doing just that?
- Research why an effective large-scale chemical or biological attack would be very difficult to effectively plan and carry out under most circumstances.

Naval Science 3

Linked Standards/Chapter Matrix

Common Core – ELA Grades 11-12

	NS3-M1U1C1: The Importance of Sea Power	NS3-M1U1C2: The U.S. Merchant Marine	NS3-M1U1C3: Grand Strategy	NS3-M1U1C4: U.S. Strategy and the Navy	NS3-M1U1C5: National Security and Modern	NS3-M1U2C1: Naval Operations	NS3-M1U2C2: Naval Communications	NS3-M1U2C3: Naval Intelligence	NS3-M1U2C4: Naval Logistics	NS3-M1U2C5: Naval Research and Development	NS3-M1U3C1: Introduction to Military Law	NS3-M1U3C2: Discipline and Punishment	NS3-M1U4C1: Fundamentals of International Law	NS3-M1U4C2: International Law of the Sea	NS3-M1U4C3: The Law of War at Sea	NS3-M2U1C1: The Challenge of Leadership	NS3-M2U1C2: Qualities of a Leader	NS3-M2U1C3: Intro: Evolution of Performa	NS3-M2U1C4 – How to Give Instruction	NS3-M3U1C1: Ship Construction	NS3-M3U1C2: Damage Control and Firefight	NS3-M3U2C1: Shipboard Organization	NS3-M3U2C2: Watches	NS3-M3U3C1: Deck Seamanship	NS3-M3U3C2: Ground Tackle and Deck Equip	NS3-M3U3C3: Small Boat Seamanship	NS3-M3U4C1: Introduction to Navigation	NS3-M3U4C2: Aids to Navigation	NS3-M3U4C3: Time and Navigation	NS3-M3U5C1: Nautical Rules of the Road	NS3-M3U5C2: The Maneuvering Board	NS3-M3U6C1: Introduction to Naval Weapon	NS3-M3U6C2: Naval Guns	NS3-M3U6C3: Naval Aircraft and Missiles	NS3-M3U6C4: Mine Warfare	NS3-M3U6C5: Chemical, Biological, & Nuclear Warfare			
ENGLISH LANGUAGE ARTS: GRADES 11-12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
RI.11-12. READING: INFORMATIONAL TEXT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																				
RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.						X				X	X	X	X		X	X	X	X	X																				X
RI.11-12.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.			X	X	X																																		
RI.11-12.3. Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.															X							X	X																

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RI.11-12.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).				X																X	X	X	X	X			X	X	X	X	X	X	X	X	X	X		
RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X				X	X	X
RI.11-12.8. Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist, presidential addresses).			X																																			
RI.11-12.9. Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.											X	X																										
W.11-12. WRITING	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

	NS3-M1U1C1: The Importance of Sea Power	NS3-M1U1C2: The U.S. Merchant Marine	NS3-M1U1C3: Grand Strategy	NS3-M1U1C4: U.S. Strategy and the Navy	NS3-M1U1C5: National Security and Modern	NS3-M1U2C1: Naval Operations	NS3-M1U2C2: Naval Communications	NS3-M1U2C3: Naval Intelligence	NS3-M1U2C4: Naval Logistics	NS3-M1U2C5: Naval Research and Development	NS3-M1U3C1: Introduction to Military Law	NS3-M1U3C2: Discipline and Punishment	NS3-M1U4C1: Fundamentals of International Law	NS3-M1U4C2: International Law of the Sea	NS3-M1U4C3: The Law of War at Sea	NS3-M2U1C1: The Challenge of Leadership	NS3-M2U1C2: Qualities of a Leader	NS3-M2U1C3: Intro: Evolution of Performance	NS3-M2U1C4 – How to Give Instruction	NS3-M3U1C1: Ship Construction	NS3-M3U1C2: Damage Control and Firefight	NS3-M3U2C1: Shipboard Organization	NS3-M3U2C2: Watches	NS3-M3U3C1: Deck Seamanship	NS3-M3U3C2: Ground Tackle and Deck Equip	NS3-M3U3C3: Small Boat Seamanship	NS3-M3U4C1: Introduction to Navigation	NS3-M3U4C2: Aids to Navigation	NS3-M3U4C3: Time and Navigation	NS3-M3U5C1: Nautical Rules of the Road	NS3-M3U5C2: The Maneuvering Board	NS3-M3U6C1: Introduction to Naval Weapon	NS3-M3U6C2: Naval Guns	NS3-M3U6C3: Naval Aircraft and Missiles	NS3-M3U6C4: Mine Warfare	NS3-M3U6C5: Chemical, Biological, & Nuclear Warfare		
W.11-12.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	X	X	X									X	X								X				X	X	X	X							X	X	X	
W.11-12.1.a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.																									X	X	X	X								X	X	
W.11-12.1.b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.											X										X				X	X		X						X			X	
W.11-12.1.c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.																									X	X	X	X										
W.11-12.1.d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	X	X	X																																			
W.11-12.1.e. Provide a concluding statement or section that follows from and supports the argument presented.	X	X																																				

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W.11-12.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	X				X	X	X			X		X								X	X	X	X	X	X		X	X							X	X	X	
W.11-12.2.a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.					X	X	X																X				X	X										
W.11-12.2.b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	X				X	X								X									X	X	X			X									X	
W.11-12.2.c. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.					X																							X										
W.11-12.2.d. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.					X															X	X	X	X	X	X			X								X	X	X
W.11-12.2.e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	X				X																																	

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W.11-12.2.f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).					X																																	
W.11-12.3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.																					X	X					X											
W.11-12.3.c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).																					X	X																
W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								X	X								
W.11-12.5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grades 11-12 on page 54.)																													X									

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W.11-12.9.b. Apply grades 11-12 Reading standards to literary nonfiction (e.g., "Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents] and the premises, purposes, and arguments in works of public advocacy [e.g., The Federalist, presidential addresses]").			X								X	X		X																									
W.11-12.10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X											X									
SL.11-12. SPEAKING AND LISTENING	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SL.11-12.1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SL.11-12.1.a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, wellreasoned exchange of ideas.				X		X				X					X							X								X	X					X			

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SL.11-12.1.b. Work with peers to promote civil, democratic discussions and decisionmaking, set clear goals and deadlines, and establish individual roles as needed.									X		X											X			X				X	X	X	X	X			X
SL.11-12.1.c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.					X														X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SL.11-12.1.d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.				X	X																												X	X	X	
SL.11-12.2. Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.	X		X	X	X		X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X
SL.11-12.4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.									X			X	X	X				X	X	X	X															

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SL.11-12.5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.																			X	X		X	X	X	X	X	X					X		X	X	X		
SL.11-12.6. Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11-12 Language standards 1 and 3 on page 54 for specific expectations.)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																				
L.11-12. LANGUAGE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
L.11-12.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																				
L.11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																				
L.11-12.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																				
L.11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11-12 reading and content, choosing flexibly from a range of strategies.	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

	NS3-M1U1C1: The Importance of Sea Power	NS3-M1U1C2: The U.S. Merchant Marine	NS3-M1U1C3: Grand Strategy	NS3-M1U1C4: U.S. Strategy and the Navy	NS3-M1U1C5: National Security and Modern	NS3-M1U2C1: Naval Operations	NS3-M1U2C2: Naval Communications	NS3-M1U2C3: Naval Intelligence	NS3-M1U2C4: Naval Logistics	NS3-M1U2C5: Naval Research and Development	NS3-M1U3C1: Introduction to Military Law	NS3-M1U3C2: Discipline and Punishment	NS3-M1U4C1: Fundamentals of International Law	NS3-M1U4C2: International Law of the Sea	NS3-M1U4C3: The Law of War at Sea	NS3-M2U1C1: The Challenge of Leadership	NS3-M2U1C2: Qualities of a Leader	NS3-M2U1C3: Intro: Evolution of Performa	NS3-M2U1C4 – How to Give Instruction	NS3-M3U1C1: Ship Construction	NS3-M3U1C2: Damage Control and Firefight	NS3-M3U2C1: Shipboard Organization	NS3-M3U2C2: Watches	NS3-M3U3C1: Deck Seamanship	NS3-M3U3C2: Ground Tackle and Deck Equip	NS3-M3U3C3: Small Boat Seamanship	NS3-M3U4C1: Introduction to Navigation	NS3-M3U4C2: Aids to Navigation	NS3-M3U4C3: Time and Navigation	NS3-M3U5C1: Nautical Rules of the Road	NS3-M3U5C2: The Maneuvering Board	NS3-M3U6C1: Introduction to Naval Weapon	NS3-M3U6C2: Naval Guns	NS3-M3U6C3: Naval Aircraft and Missiles	NS3-M3U6C4: Mine Warfare	NS3-M3U6C5: Chemical, Biological, & Nuclear Warfare	
L.11-12.4.a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	X	X																																			
L.11-12.5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.			X	X	X																																
L.11-12.6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Naval Science 3

Standards Chapter Matrix

C3-Framework for Social Studies State Standards

	NS3-M1U1C1: The Importance of Sea Power	NS3-M1U1C2: The U.S. Merchant Marine	NS3-M1U1C3: Grand Strategy	NS3-M1U1C4: U.S. Strategy and the Navy	NS3-M1U1C5: National Security and Modern	NS3-M1U2C1: Naval Operations	NS3-M1U2C2: Naval Communications	NS3-M1U2C3: Naval Intelligence	NS3-M1U2C4: Naval Logistics	NS3-M1U2C5: Naval Research and Development	NS3-M1U3C1: Introduction to Military Law	NS3-M1U3C2: Discipline and Punishment	NS3-M1U4C1: Fundamentals of International Law	NS3-M1U4C2: International Law of the Sea	NS3-M1U4C3: The Law of War at Sea	NS3-M2U1C1: The Challenge of Leadership	NS3-M2U1C2: Qualities of a Leader	NS3-M2U1C3: Intro: Evolution of Performance	NS3-M2U1C4 – How to Give Instruction	NS3-M3U1C1: Ship Construction	NS3-M3U1C2: Damage Control and Firefight	NS3-M3U2C1: Shipboard Organization	NS3-M3U2C2: Watches	NS3-M3U3C1: Deck Seamanship	NS3-M3U3C2: Ground Tackle and Deck Equip	NS3-M3U3C3: Small Boat Seamanship	NS3-M3U4C1: Introduction to Navigation	NS3-M3U4C2: Aids to Navigation	NS3-M3U4C3: Time and Navigation	NS3-M3U5C1: Nautical Rules of the Road	NS3-M3U5C2: The Maneuvering Board	NS3-M3U6C1: Introduction to Naval Weapon	NS3-M3U6C2: Naval Guns	NS3-M3U6C3: Naval Aircraft and Missiles	NS3-M3U6C4: Mine Warfare	NS3-M3U6C5: Chemical, Biological, & Nuclear Warfare		
D2. Civic and Political Institutions	X	X	X	X	X	X		X		X	X	X	X	X	X																							
D2.Civ.1.9-12. Distinguish the powers and responsibilities of local, state, tribal, national, and international civic and political institutions.		X		X				X			X	X	X	X	X																							
D2.Civ.3.9-12. Analyze the impact of constitutions, laws, treaties, and international agreements on the maintenance of national and international order.	X	X	X	X				X			X	X	X	X	X																							
D2.Civ.5.9-12. Evaluate citizens' and institutions' effectiveness in addressing social and political problems at the local, state, tribal, national, and/or international level.		X				X		X				X	X																									
D2.Civ.6.9-12. Critique relationships among governments, civil societies, and economic markets.		X											X	X																								
D2.Civ.7.9-12. Apply civic virtues and democratic principles when working with others.													X																									

	NS3-M1U1C1: The Importance of Sea Power	NS3-M1U1C2: The U.S. Merchant Marine	NS3-M1U1C3: Grand Strategy	NS3-M1U1C4: U.S. Strategy and the Navy	NS3-M1U1C5: National Security and Modern	NS3-M1U2C1: Naval Operations	NS3-M1U2C2: Naval Communications	NS3-M1U2C3: Naval Intelligence	NS3-M1U2C4: Naval Logistics	NS3-M1U2C5: Naval Research and Development	NS3-M1U3C1: Introduction to Military Law	NS3-M1U3C2: Discipline and Punishment	NS3-M1U4C1: Fundamentals of International Law	NS3-M1U4C2: International Law of the Sea	NS3-M1U4C3: The Law of War at Sea	NS3-M2U1C1: The Challenge of Leadership	NS3-M2U1C2: Qualities of a Leader	NS3-M2U1C3: Intro: Evolution of Performance	NS3-M2U1C4 – How to Give Instruction	NS3-M3U1C1: Ship Construction	NS3-M3U1C2: Damage Control and Firefight	NS3-M3U2C1: Shipboard Organization	NS3-M3U2C2: Watches	NS3-M3U3C1: Deck Seamanship	NS3-M3U3C2: Ground Tackle and Deck Equip	NS3-M3U3C3: Small Boat Seamanship	NS3-M3U4C1: Introduction to Navigation	NS3-M3U4C2: Aids to Navigation	NS3-M3U4C3: Time and Navigation	NS3-M3U5C1: Nautical Rules of the Road	NS3-M3U5C2: The Maneuvering Board	NS3-M3U6C1: Introduction to Naval Weapon	NS3-M3U6C2: Naval Guns	NS3-M3U6C3: Naval Aircraft and Missiles	NS3-M3U6C4: Mine Warfare	NS3-M3U6C5: Chemical, Biological, & Nuclear Warfare		
D2.Civ.8.9-12. Evaluate social and political systems in different contexts, times, and places, that promote civic virtues and enact democratic principles.												X	X																									
D2.Civ.9.9-12. Use appropriate deliberative processes in multiple settings.										X		X	X																									
D2.Civ.10.9-12. Analyze the impact and the appropriate roles of personal interests and perspectives on the application of civic virtues, democratic principles, constitutional rights, and human rights.											X	X			X																							
D2.Civ.11.9-12. Evaluate multiple procedures for making governmental decisions at the local, state, national, and international levels in terms of the civic purposes achieved.													X	X	X																							
D2.Civ.12.9-12. Analyze how people use and challenge local, state, national, and international laws to address a variety of public issues.			X	X				X					X	X	X																							
D2.Civ.13.9-12. Evaluate public policies in terms of intended and unintended outcomes, and related consequences.		X			X			X			X	X																										
D2.Civ.14.9-12. Analyze historical, contemporary, and emerging means of changing societies, promoting the common good, and protecting rights.		X	X	X	X	X				X	X	X	X		X																							
D2. Economic Decision Making	X	X					X			X																												

	NS3-M1U1C1: The Importance of Sea Power	NS3-M1U1C2: The U.S. Merchant Marine	NS3-M1U1C3: Grand Strategy	NS3-M1U1C4: U.S. Strategy and the Navy	NS3-M1U1C5: National Security and Modern	NS3-M1U2C1: Naval Operations	NS3-M1U2C2: Naval Communications	NS3-M1U2C3: Naval Intelligence	NS3-M1U2C4: Naval Logistics	NS3-M1U2C5: Naval Research and Development	NS3-M1U3C1: Introduction to Military Law	NS3-M1U3C2: Discipline and Punishment	NS3-M1U4C1: Fundamentals of International Law	NS3-M1U4C2: International Law of the Sea	NS3-M1U4C3: The Law of War at Sea	NS3-M2U1C1: The Challenge of Leadership	NS3-M2U1C2: Qualities of a Leader	NS3-M2U1C3: Intro: Evolution of Performance	NS3-M2U1C4 – How to Give Instruction	NS3-M3U1C1: Ship Construction	NS3-M3U1C2: Damage Control and Firefight	NS3-M3U2C1: Shipboard Organization	NS3-M3U2C2: Watches	NS3-M3U3C1: Deck Seamanship	NS3-M3U3C2: Ground Tackle and Deck Equip	NS3-M3U3C3: Small Boat Seamanship	NS3-M3U4C1: Introduction to Navigation	NS3-M3U4C2: Aids to Navigation	NS3-M3U4C3: Time and Navigation	NS3-M3U5C1: Nautical Rules of the Road	NS3-M3U5C2: The Maneuvering Board	NS3-M3U6C1: Introduction to Naval Weapon	NS3-M3U6C2: Naval Guns	NS3-M3U6C3: Naval Aircraft and Missiles	NS3-M3U6C4: Mine Warfare	NS3-M3U6C5: Chemical, Biological, & Nuclear Warfare				
D2.Eco.5.9-12. Describe the consequences of competition in specific markets.								X																																
D2.Eco.13.9-12. Explain why advancements in technology and investments in capital goods and human capital increase economic growth and standards of living.										X																														
D2.Eco.15.9-12. Explain how current globalization trends and policies affect economic growth, labor markets, rights of citizens, the environment, and resource and income distribution in different nations.	X	X																																						
D2. Geography	X	X	X	X	X				X				X	X																										
D2.Geo.1.9-12. Use geospatial and related technologies to create maps to display and explain the spatial patterns of cultural and environmental characteristics.																																								
D2.Geo.2.9-12. Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions and their political, cultural, and economic dynamics.									X			X	X																											
D2.Geo.4.9-12. Analyze relationships and interactions within and between human and physical systems to explain reciprocal influences that occur among them.	X								X																															

	NS3-M1U1C1: The Importance of Sea Power	NS3-M1U1C2: The U.S. Merchant Marine	NS3-M1U1C3: Grand Strategy	NS3-M1U1C4: U.S. Strategy and the Navy	NS3-M1U1C5: National Security and Modern	NS3-M1U2C1: Naval Operations	NS3-M1U2C2: Naval Communications	NS3-M1U2C3: Naval Intelligence	NS3-M1U2C4: Naval Logistics	NS3-M1U2C5: Naval Research and Development	NS3-M1U3C1: Introduction to Military Law	NS3-M1U3C2: Discipline and Punishment	NS3-M1U4C1: Fundamentals of International Law	NS3-M1U4C2: International Law of the Sea	NS3-M1U4C3: The Law of War at Sea	NS3-M2U1C1: The Challenge of Leadership	NS3-M2U1C2: Qualities of a Leader	NS3-M2U1C3: Intro: Evolution of Performance	NS3-M2U1C4 – How to Give Instruction	NS3-M3U1C1: Ship Construction	NS3-M3U1C2: Damage Control and Firefight	NS3-M3U2C1: Shipboard Organization	NS3-M3U2C2: Watches	NS3-M3U3C1: Deck Seamanship	NS3-M3U3C2: Ground Tackle and Deck Equip	NS3-M3U3C3: Small Boat Seamanship	NS3-M3U4C1: Introduction to Navigation	NS3-M3U4C2: Aids to Navigation	NS3-M3U4C3: Time and Navigation	NS3-M3U5C1: Nautical Rules of the Road	NS3-M3U5C2: The Maneuvering Board	NS3-M3U6C1: Introduction to Naval Weapon	NS3-M3U6C2: Naval Guns	NS3-M3U6C3: Naval Aircraft and Missiles	NS3-M3U6C4: Mine Warfare	NS3-M3U6C5: Chemical, Biological, & Nuclear Warfare		
D2.Geo.11.9-12. Evaluate how economic globalization and the expanding use of scarce resources contribute to conflict and cooperation within and among countries.	X	X	X	X	X							X	X																									
D2.Geo.12.9-12. Evaluate the consequences of human-made and natural catastrophes on global trade, politics, and human migration.	X			X	X			X				X	X																									
D2. History			X	X		X	X	X		X				X	X																							
D2.His.1.9-12. Evaluate how historical events and developments were shaped by unique circumstances of time and place as well as broader historical contexts.							X	X																														
D2.His.2.9-12. Analyze change and continuity in historical eras.							X	X																														
D2.His.3.9-12. Use questions generated about individuals and groups to assess how the significance of their actions changes over time and is shaped by the historical context.			X	X					X																													
D2.His.4.9-12. Analyze complex and interacting factors that influenced the perspectives of people during different historical eras.				X																																		
D2.His.13.9-12. Critique the appropriateness of the historical sources used in a secondary interpretation.																																						

	NS3-M1U1C1: The Importance of Sea Power	NS3-M1U1C2: The U.S. Merchant Marine	NS3-M1U1C3: Grand Strategy	NS3-M1U1C4: U.S. Strategy and the Navy	NS3-M1U1C5: National Security and Modern	NS3-M1U2C1: Naval Operations	NS3-M1U2C2: Naval Communications	NS3-M1U2C3: Naval Intelligence	NS3-M1U2C4: Naval Logistics	NS3-M1U2C5: Naval Research and Development	NS3-M1U3C1: Introduction to Military Law	NS3-M1U3C2: Discipline and Punishment	NS3-M1U4C1: Fundamentals of International Law	NS3-M1U4C2: International Law of the Sea	NS3-M1U4C3: The Law of War at Sea	NS3-M2U1C1: The Challenge of Leadership	NS3-M2U1C2: Qualities of a Leader	NS3-M2U1C3: Intro: Evolution of Performance	NS3-M2U1C4 – How to Give Instruction	NS3-M3U1C1: Ship Construction	NS3-M3U1C2: Damage Control and Firefight	NS3-M3U2C1: Shipboard Organization	NS3-M3U2C2: Watches	NS3-M3U3C1: Deck Seamanship	NS3-M3U3C2: Ground Tackle and Deck Equipment	NS3-M3U3C3: Small Boat Seamanship	NS3-M3U4C1: Introduction to Navigation	NS3-M3U4C2: Aids to Navigation	NS3-M3U4C3: Time and Navigation	NS3-M3U5C1: Nautical Rules of the Road	NS3-M3U5C2: The Maneuvering Board	NS3-M3U6C1: Introduction to Naval Weapon	NS3-M3U6C2: Naval Guns	NS3-M3U6C3: Naval Aircraft and Missiles	NS3-M3U6C4: Mine Warfare	NS3-M3U6C5: Chemical, Biological, & Nuclear Warfare			
D2.His.14.9-12. Analyze multiple and complex causes and effects of events in the past.					X		X							X	X																								
D2.His.15.9-12. Distinguish between long-term causes and triggering events in developing a historical argument.				X																																			
D3. Gathering and Evaluating Sources					X		X					X	X		X																								
D3.1.9-12. Gather relevant information from multiple sources representing a wide range of views while using the origin, authority, structure, context, and corroborative value of the sources to guide the selection.					X		X					X	X		X																								
D4. Communicating Conclusions and Taking Informed Action	X	X	X	X	X	X		X	X	X	X	X	X	X	X																								
D4.1.9-12. Construct arguments using precise and knowledgeable claims, with evidence from multiple sources, while acknowledging counterclaims and evidentiary weaknesses.			X	X									X																										
D4.2.9-12. Construct explanations using sound reasoning, correct sequence (linear or non-linear), examples, and details with significant and pertinent information and data, while acknowledging the strengths and weaknesses of the explanation given its purpose (e.g., cause and effect, chronological, procedural, technical).	X	X			X			X	X	X	X	X		X																									

	NS3-M1U1C1: The Importance of Sea Power	NS3-M1U1C2: The U.S. Merchant Marine	NS3-M1U1C3: Grand Strategy	NS3-M1U1C4: U.S. Strategy and the Navy	NS3-M1U1C5: National Security and Modern	NS3-M1U2C1: Naval Operations	NS3-M1U2C2: Naval Communications	NS3-M1U2C3: Naval Intelligence	NS3-M1U2C4: Naval Logistics	NS3-M1U2C5: Naval Research and Development	NS3-M1U3C1: Introduction to Military Law	NS3-M1U3C2: Discipline and Punishment	NS3-M1U4C1: Fundamentals of International Law	NS3-M1U4C2: International Law of the Sea	NS3-M1U4C3: The Law of War at Sea	NS3-M2U1C1: The Challenge of Leadership	NS3-M2U1C2: Qualities of a Leader	NS3-M2U1C3: Intro: Evolution of Performance	NS3-M2U1C4 – How to Give Instruction	NS3-M3U1C1: Ship Construction	NS3-M3U1C2: Damage Control and Firefight	NS3-M3U2C1: Shipboard Organization	NS3-M3U2C2: Watches	NS3-M3U3C1: Deck Seamanship	NS3-M3U3C2: Ground Tackle and Deck Equip	NS3-M3U3C3: Small Boat Seamanship	NS3-M3U4C1: Introduction to Navigation	NS3-M3U4C2: Aids to Navigation	NS3-M3U4C3: Time and Navigation	NS3-M3U5C1: Nautical Rules of the Road	NS3-M3U5C2: The Maneuvering Board	NS3-M3U6C1: Introduction to Naval Weapon	NS3-M3U6C2: Naval Guns	NS3-M3U6C3: Naval Aircraft and Missiles	NS3-M3U6C4: Mine Warfare	NS3-M3U6C5: Chemical, Biological, & Nuclear Warfare			
D4.5.9-12. Critique the use of the reasoning, sequencing, and supporting details of explanations.																																							
D4.6.9-12. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time and place.	X		X	X		X		X	X	X			X	X																									
D4.7.9-12. Assess options for individual and collective action to address local, regional, and global problems by engaging in self-reflection, strategy identification, and complex causal reasoning.		X	X	X		X		X	X				X	X	X																								
D4.8.9-12. Apply a range of deliberative and democratic strategies and procedures to make decisions and take action in their classrooms, schools, and out-of-school civic contexts.										X																													

