Marine Biology

Course Compendium

The course will focus on the biotic (living) components that make up the ocean environment. Topics include but are not limited to: The co-evolution of life and the earth, classification of life, plankton, marine invertebrates, fishes, reptiles, birds, mammals, marine ecosystems, and human impacts.

UNITS OF STUDY*

Unit 1- Marine Ecosystems
Unit 2- Marine Organisms
Unit 3- Human Impacts on the Ocean

INTERDISCIPLINARY CONNECTIONS -

NJSLS Companion Standards Grades 9-12 (Reading & Writing in Science & Technical Subjects)

NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

NJSLSA.R8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.

RST.11-12.1. Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.

RST.11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

RST.11-12.5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

RST.11-12.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

RST.11-12.8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

RST.11-12.9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding

NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

See individual units for Pacing Guide, NJSLS Standards, Transfer Skills, Enduring Understandings, Essential Questions, Learning Objectives, Key Vocabulary, Skills, Resources, & Assessments

NJSLSA.W7. Conduct short as well as more sustained research projects, utilizing an inquiry based research process, based on focused questions, demonstrating understanding of the subject under investigation.
NJSLSA.W9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

WHST.11-12.1. Write arguments focused on discipline-specific content.
WHST.11-12.2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

21st Century Life and Careers

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence

9.3.ST.2 Use technology to acquire, manipulate, analyze and report data.
9.3.ST.3 Describe and follow safety, health and environmental standards related to science, technology, engineering and mathematics (STEM) workplaces.
9.3.ST.4 Understand the nature and scope of the Science, Technology, Engineering & Mathematics Career Cluster and the role of STEM in society and the economy.
9.3.ST.5 Demonstrate an understanding of the breadth of career opportunities and means to those opportunities in each of the Science, Technology, Engineering & Mathematics Career Pathways.

9.3.ST-ET.1 Use STEM concepts and processes to solve problems involving design and/or production.
9.3.ST-ET.2 Display and communicate STEM information.
9.3.ST-ET.4 Apply the elements of the design process.
9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.

9.3.ST-SM.1 Apply science and mathematics to provide results, answers and algorithms for engineering and technological activities.

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9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.

9.3.ST-SM.3 Analyze the impact that science and mathematics has on society.

9.3.ST-SM.4 Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.

Technology

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

  A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.

    8.1.12.A.CS1 Understand and use technology systems.

    8.1.12.A.CS2 Select and use applications effectively and productively.

  C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

    8.1.12.C.1 Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.

E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

    8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment

C. Design: The design process is a systematic approach to solving problems.

8.2.12.C.4 Explain and identify interdependent systems and their functions.

  E. Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

    8.2.12.E.1 Demonstrate an understanding of the problem-solving capacity of computers in our world.

MODIFICATIONS / ACCOMMODATIONS

GENERAL CONSIDERATIONS FOR DIVERSE LEARNERS

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English Language Learners	Students Receiving Special Education Services	Advanced Learners
- Personal glossary - Text-to-speech - Extended time - Simplified / verbal instructions - Frequent breaks WIDA Can Do Descriptors for Grade 9-12 WIDA Essential Actions Handbook FABRIC Paradigm Wall Township ESL Grading Protocol *Use WIDA Can Do Descriptors in coordination with Student Language Portraits (SLPs).	- Small group/One to one - Additional time - Review of directions - Student restates information - Space for movement or breaks - Extra visual and verbal cues and prompts - Preferential seating - Follow a routine/schedule - Rest breaks - Verbal and visual cues regarding directions and staying on task - Checklists - Immediate feedback Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.	- Use of high level academic vocabulary/texts - Problem-based learning - Preassess to condense curriculum - Interest-based research - Authentic problem-solving - Homogeneous grouping opportunities Knowledge and Skill Standards in Gifted Education for All Teachers Pre-K-Grade 12 Gifted Programming Standards Gifted Programming Glossary of Terms
	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. Considerations for Special Education Students 6-12 National Center on Universal Design for Learning - About UDL UDL Checklist UDL Key Terms	**Students with 504 Plan**
		Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.

At Risk Learners / Differentiation Strategies		
Alternative Assessments Choice Boards Games and Tournaments Group Investigations Learning Contracts Leveled Rubrics Literature Circles Multiple Texts Personal Agendas Homogeneous Grouping	Independent Research & Projects Multiple Intelligence Options Project-Based Learning Varied Supplemental Activities Varied Journal Prompts Tiered Activities/Assignments Tiered Products Graphic Organizers Choice of Activities Mini-Workshops to Reteach or Extend Think-Pair-Share by readiness or interest Use of Collaboration of Various Activities	Jigsaw Think-Tac-Toe Cubing Activities Exploration by Interest Flexible Grouping Goal-Setting with Students Homework Options Open-Ended Activities Varied Product Choices Stations/Centers Work Alone/Together

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