Design 1

Content Area: **Practical Arts**
Course(s):
Time Period: **Marking Period 1**
Length: **Semester**
Status: **Published**

Course Pacing Guide

Unit 1	History and Background	MP3	2 weeks
Unit 2	Problem solving Through Design	MP3	4 weeks
Unit 3	2 Dimensional vs 3 Dimensional Design	MP3	6 weeks
Unit 4	Universal Design	MP 4	6 weeks

Unit Overview

Unit 1: Design is Everywhere. Unit one is designed to understand the who, what, when, where and why of Design in our lives.We will:

Understand the impact of design on a local and global community

Understand ethical and safety issues related to plagiarism, intellectual freedom, copyright privacy and acceptable use of schools technologies.

Understand the potential career paths and educational opportunities in design and design related pathways.

Unit 2: Life is a series of problems in need of solutions. Design is a part of those solutions. Failure is part of these solutions.

In this unit we will understand the components of asking questions to determine the problem in need of solution and how best to approach these solutions. We will:

- Select and use appropriate technology for educational and personal goals.
- Understand ethical and safety issues related to plagiarism, intellectual freedom, copyright privacy and acceptable use of schools technologies.
- Use resources responsibly
- Learn independently and collaborate with others
- Understand the impact of asking questions
- Investigate community impact and integration of design
- Understand the collaborative nature of design
- Understand college and career readiness for a variety of design based professions

Unit 3: This is the key unit to **understanding how visions become realities.**

In this unit students will explore and understand differences between 2 and 3 dimensional design and how it impacts local and global communities.

- Understand and explore two dimensional design to convey ideas and brainstorm solutions

- Understand ethical and safety issues related to plagiarism, intellectual freedom, copyright privacy and acceptable use of schools technologies.
- Understand what makes design universal and sustainable
- Explore the impact of materials
- Explore the creation of a 2 dimensional design into three dimensions and the impact on the design
- Use resources responsibly
- Learn independently and collaborate with others

Unit 4: Design is Universal.

In this unit students will explore and understand how products and environments are designed for a local and global community using design thinking to solve a universal problem. We will:

- Understand and explore the impact of design on a local and global community
- Understand ethical and safety issues related to plagiarism, intellectual freedom, copyright privacy and acceptable use of schools technologies.
- Understand what it means to make design universal and sustainable
- Explore the impact of materials and prototyping processes
- Select and use appropriate technology for design goals.
- Use resources responsibly
- Learn independently and collaborate with others

Enduring Understandings

- Design is an integral part of life no matter your future College or career path.
- Design impacts all communities and cultures
- Elements of design add to the success and sustainability of environments and opportunities
- Design is Two and three dimensional
- Technology is used to enhance a design experience and solve a problem but requires the human factor..

Essential Questions

Essential Questions

- How is design thinking relevant to all subjects and forms of design?
- How do questioning strategies impact design?
- How might we use design to solve problems?
- How might we redesign a space, product or profession?
- How does design affect family, friends and community?
- Can effective design make improvements to a local or global community?
- How is design sustainable and universal?
- How does technology impact design?
- Does the environment or conditions affect design and art?
- What is the environmental impact of design?
- What are the legal impacts and implications in design?
- What impact does design have on affecting change in a community or group?

New Jersey Student Learning Standards (No CCS)

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- Different types of jobs require different knowledge and skills.
- 9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.
- 9.3.12.AC.1 Use vocabulary, symbols and formulas common to architecture and construction.
- 9.3.12.AR-VIS.3 Analyze and create two and three-dimensional visual art forms using various media
- 9.3.12.AC-DES.1 Justify design solutions through the use of research documentation and analysis of data. 9.3.12.AC-DES.2 Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues.
- 9.3.12.AC-DES.3 Describe the requirements of the integral systems that impact the design of

buildings.

- 9.3.12.AC-DES.5 Identify the diversity of needs, values and social patterns in project design, including accessibility standards.

- 9.3.12.AC-DES.7 Employ appropriate representational media to communicate concepts and project design

Creativity and Innovation:

Creativity includes the use of a wide range of idea-creation techniques (such as brainstorming) to generate new and worthwhile ideas (both incremental and radical concepts). Additionally, within creativity, flexibility is evident through the elaboration, refinement, analysis and evaluation of ideas in order to maximize creative efforts. Originality and inventiveness in work may also be evident while understanding the real-world limits to adopting new ideas. Failure is viewed as an opportunity to learn and adapt as well as understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes.

By the end of grade 12 Brainstorming can create new, innovative ideas.

• Collaboration with individuals with diverse perspectives can result in new ways of thinking and/or innovative solutions.

• Curiosity and willingness to try new ideas (intellectual risk taking) contributes to the development of creativity and innovation.

• Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.

• With a growth mindset, failure is an important part of success.

• Innovative ideas or innovation can lead to career opportunities.

Critical Thinking and Problem-solving

Critical thinking involves the ability to use various types of reasoning as appropriate to the situation. Essential to critical thinking is systems thinking, which analyzes how parts of a whole interact together to produce outcomes. Critical thinking also includes making judgements and decisions by analyzing evidence, claims, points of view then communicating the interpretation of both the information and conclusions based on the best analysis. In tandem with critical thinking, problem solving involves the ability to generate and execute a solution to a problem. Problem solving occurs through one’s use of initiative and flexibility to use trial and error to solve a problem until a successful solution is found.

By the end of grade 12 Critical thinkers must first identify a problem then develop a plan to address it in order to effectively solve a problem. The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.

• Multiple solutions exist to solve a problem.

• An essential aspect of problem solving is being able to self reflect on why possible solutions for solving problems were or were not successful.

• Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.

• 9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

• 9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving

• 9.4.12.CT.3: Enlist input from a variety of stakeholders (e.g., community members, experts in the field) to design a service learning activity that addresses a local or global issue (e.g., environmental justice).

VA.9-12.1.5.12prof.Cr1	Generating and conceptualizing ideas.
VA.9-12.1.5.12prof.Cr1a	Use multiple approaches to begin creative endeavors.
VA.9-12.1.5.12prof.Cr2a	Engage in making a work of art or design without having a preconceived plan.
VA.9-12.1.5.12prof.Cr3	Refining and completing products.
VA.9-12.1.5.12prof.Cr3a	Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on and plan revisions for works of art and design in progress.
VA.9-12.1.5.12prof.Pr5	Developing and refining techniques and models or steps needed to create products.
VA.9-12.1.5.12prof.Pr5a	Analyze and evaluate the reasons and ways an exhibition is presented.
VA.9-12.1.5.12prof.Pr6a	Analyze and describe the impact that an exhibition or collection has on personal awareness of social, cultural or political beliefs and understandings.
VA.9-12.1.5.12prof.Re7	Perceiving and analyzing products.
CS.9-12.8.2.12.ED.1	Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers.
CS.9-12.8.2.12.ED.3	Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis.
CS.9-12.8.2.12.ED.6	Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor).
CS.9-12.8.2.12.NT.1	Explain how different groups can contribute to the overall design of a product.
CS.9-12.8.2.12.NT.2	Redesign an existing product to improve form or function.
CS.9-12.8.2.12.ETW.1	Evaluate ethical considerations regarding the sustainability of environmental resources that are used for the design, creation, and maintenance of a chosen product.
CS.9-12.8.2.12.ETW.4	Research historical tensions between environmental and economic considerations as driven by human needs and wants in the development of a technological product and present the competing viewpoints.
CS.9-12.8.2.12.ITH.1	Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints.

Amistad Integration

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https://nj.gov/education/amistad/about.htm)

Purpose:

> The Amistad Commission ensures that the Department of Education and public schools of New Jersey implement materials and texts which integrate the history and contributions of African-Americans and the descendants of the African Diaspora.

Goals:

1) To infuse the history of Africans and African-Americans into the curriculum in order to provide an accurate, complete and inclusive history.

2) To ensure that New Jersey teachers are equipped to effectively teach the revised social studies core curriculum content standards.

3) To create and coordinate workshops, seminars, institutes, memorials and events which raise public awareness about the importance of the history of African-Americans to the growth and development of American society in global context.

Holocaust/Genocide Education

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RE: N.J.S.A. 18A:35-28, Holocaust/Genocide Education

a. Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils.

b. The instruction shall enable pupils to identify and analyze applicable theories concerning human nature and behavior: to understand that genocide is a consequence of prejudice and discrimination: and to understand that issues of moral dilemma and conscience have a profound impact on life. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Interdisciplinary Connections

Global and Cultural Awareness

To possess a cultural and global awareness is to fully understand that individuals are composed of complex cultural backgrounds, which are influenced by a multitude of factors. Armed with this crucial understanding, individuals can then better learn and work collaboratively with people from diverse cultures, religions and lifestyles in a spirit of mutual respect and open dialogue, whether in a personal, work, or community-based context. Such an awareness also stresses the importance of recognizing and understanding the rich histories

and multitude of languages of other nations and cultures.

By the end of grade 12

Individuals from different cultures may have different points of view and experiences. Culture and geography can shape an individual's experiences and perspectives.

Awareness of and appreciation for cultural differences is critical to avoid barriers to productive and positive interaction.

Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences.

9-12.HS-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
9-12.HS-ETS1-3.6	Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles and theories.
9-12.HS-ETS1-4.ETS1.B.1	Both physical models and computers can be used in various ways to aid in the engineering design process. Computers are useful for a variety of purposes, such as running simulations to test different ways of solving a problem or to see which one is most efficient or economical; and in making a persuasive presentation to a client about how a given design will meet his or her needs.

Technology Standards

Digital tools have a purpose.

• Collaboration can simplify the work an individual has to do and sometimes produce a better product.

• Different digital tools have different purposes.

• Collaborating digitally as a team can often develop a better artifact than an individual working alone.

• Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.

• Digital tools differ in features, capacities, and styles. Knowledge of different digital tools is helpful in selecting the best tool for a given task.

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• 9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task

TECH.8.1.P.A.4	Use basic technology terms in the proper context in conversation with peers and teachers (e.g., camera, tablet, Internet, mouse, keyboard, and printer).
TECH.8.1.P.A.5	Demonstrate the ability to access and use resources on a computing device.
TECH.8.1.P.A.CS1	Understand and use technology systems.
TECH.8.1.P.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.
TECH.8.1.P.B.CS2	Create original works as a means of personal or group expression.

21st Century Themes/Careers

With a growth mindset, failure is an important part of success.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas. Innovative ideas or innovation can lead to career opportunities.

• 9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).

• 9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1). Critical Thinking and Problem-solving Core Ideas Performance Expectations Collaboration with individuals with diverse experiences can aid in the problem-solving process, particularly for global issues where diverse solutions are needed.

• 9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

• 9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).

• 9.4.12.CT.3: Enlist input from a variety of stakeholders (e.g., community members, experts in the field) to design a service learning activity that addresses a local or global issue (e.g., environmental justice).

Digital Citizenship Core Ideas

Performance Expectations Laws govern the use of intellectual property and there are legal consequences to utilizing or sharing another's original works without permission or appropriate credit.

• 9.4.12.DC.1: Explain the beneficial and harmful effects that intellectual property laws can have on the creation and sharing of content (e.g., 6.1.12.CivicsPR.16.a).

• 9.4.12.DC.2: Compare and contrast international differences in copyright laws and ethics. Laws govern many aspects of computing, such as privacy, data, property, information, and identity. These laws can have beneficial and harmful effects, such as expediting or delaying advancements in computing and protecting or infringing upon people's rights.

• 9.4.12.DC.5: Debate laws and regulations that impact the development and use of software. Cultivating online reputations for employers and academia requires separating private and professional digital identities. 9.4.12.DC.6: Select information to post online that positively impacts personal image and future college and career opportunities. Digital communities influence many aspects of society, especially the workforce. The increased connectivity between people in different cultures and different career fields have changed the nature,

content, and responsibilities of many careers.

CAEP.9.2.12.C.1	Review career goals and determine steps necessary for attainment.
CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.

Financial Literacy Integration

Remove/replace the text in this section - this is for your reference -- (link to helpful resources: https://www.nj.gov/education/aps/cccs/career/FLResources.pdf)

An Act concerning public school instruction on financial literacy and supplementing chapter 35 of Title 18A of the New Jersey Statutes.

Be It Enacted by the Senate and General Assembly of the State of New Jersey:

1. The State Board of Education shall require that a school district incorporate in each of the grades 1[kindergarten] six1 through eight financial literacy instruction to pupils enrolled in those grades. The purpose of the instruction shall be to provide 1[elementary and]1middle school students with the basic financial literacy necessary for sound financial decision-making.

The instruction shall meet the requirements established by the State board and shall:

a. be appropriate to, and reflect the age and comprehension of, the students enrolled in the particular grade level; and

b. include content on budgeting, savings, credit, debt, insurance, investment, and other issues associated with personal financial responsibility as determined by the State board.

Instructional Strategies & Learning Activities

All units in this class will be designed with a series of open-ended design thinking challenges encouraging the students to use learned skills to Brainstorm and prototype solutions to real world situations. Activities will be scaffolded to challenge the designers to consider a wider variety of viewpoints and criteria.

Differentiated Instruction

- Curriculum Map
- Inquiry/Problem-Based Learning

- Learning preferences integration (visual, auditory, kinesthetic)
- Sentence & Discussion Stems
- Tiered Learning Targets
- Learning through play
- Meaningful Student Voice & Choice
- Relationship-Building & Team-Building
- Self-Directed Learning
- Choice Boards
- Debate
- LMS use
- The Hot Seat/Role-Play
- Student Data Inventories
- Mastery Learning (feedback toward goal)
- Goal-Setting & Learning Contracts
- Game-Based Learning
- Grouping
- Genius Hour
- Rubrics
- Learning Menus
- Jigsaws
- Learning Through Workstations
- Concept Attainment
- Flipped Classroom
- Mentoring
- Assessment Design & Backwards Planning
- Student Interest & Inventory Data

Formative Assessments

- Daily teacher observation and conversation
- Student to student Critique and feedback
- Individualized meetings to discuss and review
- Self Evaluation

Summative Assessment

- Projects

- Final Portfolio
- Video Blog of the process

Benchmark Assessments

Students will be assessed on opening knowledge of design and design thinking.

At final students will produce a project that demonstrates knowledge of commercial art, critical thinking and design thinking.

By the end of this course 85 percent of the students will achieve a 90 or higher

Alternate Assessments

- Additional time on assignments
- Modified criteria on assignments
- Assignments to be done in an alternative setting
- Manual manipulatives as a replacement for drawn or computer work

Resources & Technology

- In class all students will use Dell desktops with Windows based software and have access to the Adobe Creative Cloud Suite of products.
- Adobe Express Free software
- TinkerCAD free software
- Sketchup for Schools included in Google Suite
- Additional online free software to mimic Adobe Suite for Chromebooks and home use

BOE Approved Texts

No text books for this course

Closure

Such as:

- Snowstorm - Students write down what they learned on a piece of scratch paper and wad it up. Given a signal, they throw their paper snowballs in the air. Then each learner picks up a nearby response and reads it aloud.
- Parent Hotline - Give students an interesting question about the lesson without further discussion. Email their guardians the answer so that the topic can be discussed over dinner.
- DJ Summary - Learners write what they learned in the form of a favorite song. Offer to let one or two sing thier summary.
- Gallery Walk - On chart paper, small groups of students write and draw what they learned. After the completed works are attached to the classroom walls, others students affix post-its to the posters to extend on the ideas, add questions.
- Sequence It - create timelines of major events discussed
- Low-Stakes Quizzes - Give a short quiz using technologies like Kahoot or a Google form.
- Have students write down three quiz questions (to ask at the beginning of the next class).
- Question Stems - Have students write questions about the lesson on cards, using question stems framed around Bloom's Taxonomy. Have students exchange cards and answer the question they have acquired.
- Kids answer the following prompts: "What takeaways from the lesson will be important to know three years from now? Why?
- Have students dramatize a real-life application of a skill.
- Ask a question. Give students ten seconds to confer with peers before you call on a random student to answer. Repeat.
- Have kids orally describe a concept, procedure, or skill in terms so simple that a child in first grade would get it.
- Direct kids to raise their hands if they can answer your questions. Classmates agree (thumbs up) or disagree (thumbs down) with the response.
- Have kids create a cheat sheet of information that would be useful for a quiz on the day's topic.
- Kids write notes to peers describing what they learned from them during class discussions.
- Ask students to summarize the main idea in under 60 seconds to another student acting as a well-known personality who works in your discipline. After summarizing, students should identify why the famous person might find the idea significant.
- Have students complete the following sentence: "The [concept, skill, word] is like _____ because _____."
- Ask students to write what they learned, and any lingering questions on an "exit ticket". Before they leave class, have them put their exit tickets in a folder or bin labeled either "Got It," "More Practice, Please," or "I Need Some Help!"
- After writing down the learning outcome, ask students to take a card, circle one of the following options, and return the card to you before they leave: "Stop (I'm totally confused. Go (I'm ready to move on.)" or "Proceed with caution (I could use some clarification on . . .)"

*Add to or remove any of these as you see fit.

ELL

Such as:

- Alternate Responses
- Advance Notes
- Extended Time
- Teacher Modeling
- Simplified Written and Verbal Instructions
- Frequent Breaks
- E-Dictionaires
- Google Translate

*Add to or remove any of these as you see fit.

Special Education

List is not inclusive but may include examples such as:

- Shorten assignments to focus on mastery of key concepts.
- Shorten spelling tests to focus on mastering the most functional words.
- Substitute alternatives for written assignments (clay models, posters, panoramas, collections, etc.)
- Specify and list exactly what the student will need to learn to pass.
- Evaluate the classroom structure against the student's needs (flexible structure, firm limits, etc.).
- Keep workspaces clear of unrelated materials.
- Keep the classroom quiet during intense learning times.
- Reduce visual distractions in the classroom (mobiles, etc.).
- Provide a computer for written work.
- Seat the student close to the teacher or a positive role model.
- Use a study carrel. (Provide extras so that the student is not singled out.)
- Provide an unobstructed view of the chalkboard, teacher, movie screen, etc.
- Keep extra supplies of classroom materials (pencils, books) on hand.
- Maintain adequate space between desks.
- Give directions in small steps and in as few words as possible.
- Number and sequence the steps in a task.
- Have student repeat the directions for a task.
- Provide visual aids.
- Go over directions orally.
- Provide a vocabulary list with definitions.
- Permit as much time as needed to finish tests.
- Allow tests to be taken in a room with few distractions (e.g., the library).
- Have test materials read to the student, and allow oral responses.

- Divide tests into small sections of similar questions or problems.
- Allow the student to complete an independent project as an alternative test.
- Give progress reports instead of grades.
- Grade spelling separately from content.
- Allow take-home or open-book tests.
- Show a model of the end product of directions (e.g., a completed math problem or finished quiz).
- Stand near the student when giving directions or presenting a lesson.
- Mark the correct answers rather than the incorrect ones.
- Permit a student to rework missed problems for a better grade.
- Average grades out when assignments are reworked, or grade on corrected work.
- Use a pass-fail or an alternative grading system when the student is assessed on his or her own growth.

*Add to or remove any of these as you see fit.

504

Examples of accommodations in 504 plans include but are not limited to:

- preferential seating
- extended time on tests and assignments
- reduced homework or classwork
- verbal, visual, or technology aids
- modified textbooks or audio-video materials
- behavior management support
- adjusted class schedules or grading
- verbal testing
- excused lateness, absence, or missed classwork
- pre-approved nurse's office visits and accompaniment to visits
- occupational or physical therapy

*Add to or remove any of these as you see fit.

At Risk

Examples may include:

- Use of mnemonics
- Have student restate information
- Provision of notes or outlines
- Concrete examples
- Use of a study carrel
- Assistance in maintaining uncluttered space
- Weekly home-school communication tools (notebook, daily log, phone calls or email messages)
- Peer or scribe note-taking

- Lab and math sheets with highlighted instructions
- Graph paper to assist in organizing or lining up math problems
- Use of manipulatives
- No penalty for spelling errors or sloppy handwriting
- Follow a routine/schedule
- Teach time management skills
- Verbal and visual cues regarding directions and staying on task
- Adjusted assignment timelines
- Visual daily schedule
- Immediate feedback
- Work-in-progress check
- Pace long-term projects
- Preview test procedures
- Film or video supplements in place of reading text
- Pass/no pass option
- Cue/model expected behavior
- Use de-escalating strategies
- Use peer supports and mentoring
- Have parent sign homework/behavior chart
- Chart progress and maintain data

*Add to or remove any of these as you see fit.

Gifted and Talented

Focus on effort and practice

Offer the Most Difficult First

Offer choice

Speak to Student Interests

Allow G/T students to work together

Encourage risk taking