



Township of Ocean Schools

Assistant Superintendent
Office of Teaching and Learning

SPARTAN MISSION:

Meeting the needs of all students with a proud tradition of academic excellence.

Department Applied Technology

Course Technology, Engineering, and Design II

Curriculum Development Timeline

School: Ocean Township High School

Course: Technology, Engineering, and Design II

Department: Applied Technology

Board Approval	Supervisor	Notes
August 2013	Michael Lambusta	Update Standards
July 2016	Michael Lambusta	Update Standards
December 2017	Patrick O'Neill	Revisions aligned to Grant
August 2020	Patrick O'Neill	Alignment to Standards
August 2021	Patrick O'Neill	Review
August 2024	Erin Leahy	Updated to Include New State Mandate and Name Change
August 2025	Erin Leahy	Revision

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Department Applied Technology

Course Technology, Engineering, and Design II

Township of Ocean Pacing Guide			
Week	Marking Period 1	Week	Marking Period 2
1	CAD: Laser Cutting and CNC Routing	21	Robotics
2	CAD: Laser Cutting and CNC Routing	22	Robotics
3	CAD: Laser Cutting and CNC Routing	23	Programming Microprocessors and Circuits
4	CAD: Laser Cutting and CNC Routing	24	Programming Microprocessors and Circuits
5	CAD: Laser Cutting and CNC Routing	25	Programming Microprocessors and Circuits
6	CAD: Laser Cutting and CNC Routing	26	Programming Microprocessors and Circuits
7	CAD: Laser Cutting and CNC Routing	27	Programming Microprocessors and Circuits
8	CAD: Laser Cutting and CNC Routing	28	Programming Microprocessors and Circuits
9	Robotics	29	Programming Microprocessors and Circuits
10	Robotics	30	Programming Microprocessors and Circuits
11	Robotics	31	Programming Microprocessors and Circuits
12	Robotics	32	Programming Microprocessors and Circuits
13	Robotics	33	Final Project
14	Robotics	34	Final Project
15	Robotics	35	Final Project
16	Robotics	36	Final Project
17	Robotics	37	Final Project

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Department	Applied Technology	Course	Technology, Engineering, and Design II
18	Robotics	38	Final Project
19	Robotics	39	Final Project
20	Robotics	40	Final Project

Core Instructional & Supplemental Materials including various levels of Texts

3d Printer
Adobe Illustrator Software
Arduino Circuit Boards, Hardware, and Programming Software
CNC Lathe / Milling Machine
CNC Router
Injection Molder
Java Programming Language and Editor
Laser Cutter
Thermoplastic Heater
Trimble Sketchup Software
TinkerCAD Circuits Software
Vacuum Former
VexNET and Vex Robotics Parts, Mechanisms, and Programming Software

Time Frame	Weeks 1-4
Topic	
CAD: Laser Cutting and CNC Routing	
Alignment to Standards	
8.1.12.CS.3: Compare the functions of application software, system software, and hardware. 8.1.12.CS.4: Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. 8.1.12.AP.4: Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue. 8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects. 8.1.12.AP.6: Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.	

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8.1.12.AP.7: Collaboratively design and develop programs and artifacts for broad audiences by incorporating feedback from users.

8.1.12.AP.8: Evaluate and refine computational artifacts to make them more usable and accessible.

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.

8.2.12.ED.2: Create scaled engineering drawings for a new product or system and make modifications to increase optimization based on feedback.

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.

8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).

8.2.12.ED.6: Analyze the effects of changing resources.

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.

8.2.12.NT.1: Explain how different groups can contribute to the overall design of a product.

8.2.12.NT.2: Redesign an existing product to improve form or function.

Learning Objectives and Activities

SWBAT answer the following questions

- What does CAD stand for? How is CAD used in manufacturing? What are various types of CAD? What are Vector Graphics? Can you see the difference between vector type graphics and other graphics? Why use vector graphics? Identify the benefits of vector graphics? What file types and software create and save vector graphics? What other fields, professions, and processes use vector graphics? In what ways are these graphics used? How do these benefits translate to a better outcome or product? What are various types of manufacturing? How does CAD control machines? How is CAD integrated in production?

SWBAT understand the following concepts

- CAD is Computer Aided Design, formerly Computer Aided Drafting. CAD is used to create designs that machines will then follow the information to create or modify materials using various methods. One method is subtracting, taking a piece of material and removing such until you have the desired design or piece. CAD is a vital part of rapid manufacturing methods such as CNC Routing, Laser Cutting, and 3d Printing.

SWBAT to "do"

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- Using adobe illustrator, students will be able to create the vectors of a design to be routed, milled, or laser cut. Students will create pieces which will interlock, join, or hold together in various mechanical methods. Students will CAD and CNC route forms, and complete the manufacturing process by using them to cast various materials. Students will identify different types of manufacturing and be able to analyze which method would be the best for a given product or problem. Students will explore various types of manufacturing by performing hands-on projects.

Assessments

Formative:

- Daily teacher observations and individualized student feedback.

Summative:

- Accurately measuring to create a product of correct scale and size. Creating joints and parts that correctly move and function as part of a whole.

Benchmark:

- Pre-test and post-test encompassing all class units.

Alternative:

- Daily teacher observations and individualized student feedback.

Interdisciplinary Connections

English Language Arts

SL.PE.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with peers on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively

SL.II.9-10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, qualitatively, orally) evaluating the credibility and accuracy of each source.

SL.UM.9-10.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance findings, reasoning, and evidence and to add interest.

Career Readiness, Life Literacies, and Key Skills

9.2.12.CAP.6: Identify transferable skills in career choices and design alternative career plans based on those skills.

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9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

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).

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.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.).

9.4.12.TL.3: Analyze the effectiveness of the process and quality of collaborative environments.

Technology Integration

- Students will use CAD Software (Current Platform is Sketchup and Illustrator), Laser Cutter, and CNC Router to collaborate and work towards solving authentic problems.
 - 9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a)
- Students will use Google Classroom to collaborate, work towards solving authentic problems, or participate in an online classroom discussion.
 - 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6)

Career Education

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.

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.

CRP9. Model integrity, ethical leadership and effective management.

CRP11. Use technology to enhance productivity.

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Department Applied Technology

Course Technology, Engineering, and Design II

Time Frame	Weeks 5-11
Topic	
ROBOTICS	
Alignment to Standards	
8.1.12.CS.1: Describe ways in which integrated systems hide underlying implementation details to simplify user experiences. 8.1.12.CS.2: Model interactions between application software, system software, and hardware. 8.1.12.CS.3: Compare the functions of application software, system software, and hardware. 8.1.12.CS.4: Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. 8.1.12.AP.1: Design algorithms to solve computational problems using a combination of original and existing algorithms. 8.1.12.AP.2: Create generalized computational solutions using collections instead of repeatedly using simple variables. 8.1.12.AP.3: Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice. 8.1.12.AP.4: Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue. 8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects. 8.1.12.AP.6: Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs. 8.1.12.AP.7: Collaboratively design and develop programs and artifacts for broad audiences by incorporating feedback from users. 8.1.12.AP.8: Evaluate and refine computational artifacts to make them more usable and accessible. 8.1.12.AP.9: Collaboratively document and present design decisions in the development of complex programs. 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. 8.2.12.ED.4: Design a product or system that addresses a global problem and document decisions made based on research, constraints, trade-offs, and aesthetic and ethical considerations and share this information with an appropriate audience.	

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8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).

8.2.12.NT.1: Explain how different groups can contribute to the overall design of a product.

Learning Objectives and Activities

SWBAT answer the following questions

- What are robots? What are robots used for? Who uses robots? Who creates and builds robots? How do robots make our lives better? Worse? What are the various ways robots can perform? How can robots be programmed to solve a particular problem? How important is the Engineering Design Process in developing an effective robot designed for a specific task?

SWBAT understand the following concepts

- Robots are machines that produce an output of motion or force. Robots are programmed by humans to perform specific tasks or solve a particular problem. The Engineering Design Loop is important for identifying problems and designing robots that can solve them. By building and programming robots to complete a variety of specific tasks, students are involved in self-guided discovery. Testing a robotic creation gives an opportunity to problem solve and immediately evaluate and improve its design.

SWBAT to "do"

- Students will be able to build a robot and program it to complete given tasks and problems.
- Students will be able to identify programming commands then evaluate and compare various created programs and given logic.
- Students will be able to calculate various needed vectors to be traveled and evaluate simple machine mechanisms to accomplish tasks.
- Students will test and evaluate tradeoffs while designing a robot.

Assessments

Formative:

- Daily teacher observations and individualized student feedback.

Summative:

- Successfully navigating obstacle courses and meeting specific robotic project goals, ie: a robot that senses an opponent and pushes it out of bounds.

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Course Technology, Engineering, and Design II

Benchmark:

-

Alternative:

- Daily teacher observations and individualized student feedback.

Interdisciplinary Connections

English Language Arts

SL.PE.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with peers on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively

SL.II.9-10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, qualitatively, orally) evaluating the credibility and accuracy of each source.

SL.UM.9-10.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance findings, reasoning, and evidence and to add interest.

Career Readiness, Life Literacies, and Key Skills

9.2.12.CAP.6: Identify transferable skills in career choices and design alternative career plans based on those skills.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

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).

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.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.).

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Department Applied Technology Course Technology, Engineering, and Design II

9.4.12.TL.3: Analyze the effectiveness of the process and quality of collaborative environments.

9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6).

Technology Integration

- Students will use Robotics Parts (Current Platform is VEX) and Robotics Programming Software (Current Platform is VEX) to collaborate and work towards solving authentic problems.
 - 9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12.prof.CR3a)
- Students will use Google Classroom to collaborate, work towards solving authentic problems, or participate in an online classroom discussion.
 - 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6)

Career Education

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.

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.

CRP9. Model integrity, ethical leadership and effective management.

CRP11. Use technology to enhance productivity.

Time Frame	Weeks 12-16
Topic	
PROGRAMMING MICROPROCESSORS AND CIRCUITS	
Alignment to Standards	
8.1.12.CS.1: Describe ways in which integrated systems hide underlying implementation details to simplify user experiences.	
8.1.12.CS.2: Model interactions between application software, system software, and hardware.	

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Department Applied Technology Course Technology, Engineering, and Design II

8.1.12.CS.3: Compare the functions of application software, system software, and hardware.
8.1.12.CS.4: Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.

8.1.12.AP.1: Design algorithms to solve computational problems using a combination of original and existing algorithms.

8.1.12.AP.2: Create generalized computational solutions using collections instead of repeatedly using simple variables.

8.1.12.AP.3: Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice.

8.1.12.AP.4: Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue.

8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.

8.1.12.AP.6: Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.

8.1.12.AP.7: Collaboratively design and develop programs and artifacts for broad audiences by incorporating feedback from users.

8.1.12.AP.8: Evaluate and refine computational artifacts to make them more usable and accessible.

8.1.12.AP.9: Collaboratively document and present design decisions in the development of complex programs.

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.

Learning Objectives and Activities

SWBAT answer the following questions

- What are microprocessors? Can you identify the difference between a microprocessor and other processors? When are microprocessors used? Identify the benefits of programming microprocessors? Compare programming microprocessors with creating mechanical circuitry. What file types and software are used to program microprocessors? What fields, professions, processes, and products use microprocessors? How do microprocessors and the robotics field interact and/or compare?

SWBAT understand the following concepts

- Microprocessor is a controlling unit of a micro-computer, fabricated on a small chip capable of performing ALU (Arithmetic Logical Unit) operations and communicating with the other devices connected to it. Microprocessors are cost effective, small, use low power consumption, and reliable. Uses of microprocessors have grown from industries such as assembly lines and mass production, to computers, to handheld

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electronics and now into just about all products including automobiles, appliances, and homes. Microprocessors can control not just the programs on your computer, but also external devices for input and output such as sensors like motion and motors like used to move automobiles and robots.

SWBAT to "do"

- Students will be able to create programmed circuitry to control electrical components. Students will be able to analyze how different fields may use microprocessors by researching, viewing, and being able to list different examples. Students will be able to identify digital and analog circuits and then evaluate and compare them.

Assessments

Formative:

- Daily teacher observations and individualized student feedback.

Summative:

- Correctly wiring and programming a circuit and microprocessor to complete a selected task.

Benchmark:

-

Alternative:

- Daily teacher observations and individualized student feedback.

Interdisciplinary Connections

English Language Arts

SL.PE.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with peers on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively

SL.II.9-10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, qualitatively, orally) evaluating the credibility and accuracy of each source.

SL.UM.9-10.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance findings, reasoning, and evidence and to add interest.

Career Readiness, Life Literacies, and Key Skills

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9.2.12.CAP.6: Identify transferable skills in career choices and design alternative career plans based on those skills.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

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).

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.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.).

9.4.12.TL.3: Analyze the effectiveness of the process and quality of collaborative environments.

9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6).

Technology Integration

Students will use CID's, Microprocessors (Current is Arduino), Programming Language (current is Arduino) and Circuit Building tools and materials to collaborate and work towards solving authentic problems.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a)

Students will use Google Classroom to collaborate, work towards solving authentic problems, or participate in an online classroom discussion.

9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6)

Career Education

CRP1. Act as a responsible and contributing citizen and employee.

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CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

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Time Frame	Weeks 17-20
Topic	
FINAL PROJECT	
Alignment to Standards	
8.1.12.CS.1: Describe ways in which integrated systems hide underlying implementation details to simplify user experiences. 8.1.12.CS.2: Model interactions between application software, system software, and hardware. 8.1.12.CS.3: Compare the functions of application software, system software, and hardware. 8.1.12.CS.4: Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. 8.1.12.AP.1: Design algorithms to solve computational problems using a combination of original and existing algorithms. 8.1.12.AP.2: Create generalized computational solutions using collections instead of repeatedly using simple variables. 8.1.12.AP.3: Select and combine control structures for a specific application based upon performance and readability, and identify trade-offs to justify the choice. 8.1.12.AP.4: Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue. 8.1.12.AP.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects. 8.1.12.AP.6: Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs. 8.1.12.AP.7: Collaboratively design and develop programs and artifacts for broad audiences by incorporating feedback from users. 8.1.12.AP.8: Evaluate and refine computational artifacts to make them more usable and accessible. 8.1.12.AP.9: Collaboratively document and present design decisions in the development of complex programs. 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. 8.2.12.ED.2: Create scaled engineering drawings for a new product or system and make modifications to increase optimization based on feedback.	

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8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics).

8.2.12.ED.6: Analyze the effects of changing resources.

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.

8.2.12.NT.1: Explain how different groups can contribute to the overall design of a product.

Learning Objectives and Activities

SWBAT answer the following questions

- What elements make a product better than another? What are trade offs when evaluating a product? How is the Engineering Design Process used to solve design problems and design products in industries and professions? How can the skills learned by students throughout the course be combined to design a project that is interactive, and thus more engaging?

SWBAT understand the following concepts

- The Engineering Design Process is a multi-step process that may require repeating steps in order to modify and improve the project's design and functionality. The design of a project may be approached in a variety of different ways using a variety of different building materials. Combining a variety of design features can enhance a project by making it more interactive and entertaining.

SWBAT to "do"

- Students will be able to combine the skills they've learned and use the Engineering Design Process to design a final project, such as an interactive sign, traffic light, or other multi sensory device.
- Students will be able to choose, shape, and finish a variety of building materials for their project (cardboard, styrofoam, wood, metal, 3D printed elements, CNC design parts, laser cut parts).
- Students will be able to solve design problems by employing the Engineering Design Process.

Assessments

Formative:

- Daily teacher observations and individualized student feedback.

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Summative:

- Successfully applying course concepts to completing a selected problem solving task.

Benchmark:

-

Alternative:

- Daily teacher observations and individualized student feedback.

Interdisciplinary Connections

English Language Arts

SL.PE.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with peers on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively

SL.II.9-10.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, qualitatively, orally) evaluating the credibility and accuracy of each source.

SL.UM.9-10.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance findings, reasoning, and evidence and to add interest.

Career Readiness, Life Literacies, and Key Skills

9.2.12.CAP.6: Identify transferable skills in career choices and design alternative career plans based on those skills.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

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).

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).

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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 (e.g., W.11-12.6.).

9.4.12.TL.3: Analyze the effectiveness of the process and quality of collaborative environments.

Technology Integration

- Students will collaborate and work towards developing and creating a developed solution to an authentic problem using the tools, materials, and knowledge from this class and integrating any cross content as they see fit.
 - 9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a)
- Students will use Google Classroom to collaborate, work towards solving authentic problems, or participate in an online classroom discussion.
 - 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem (e.g., 7.1.AL.IPERS.6)

Career Education

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.

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.

CRP9. Model integrity, ethical leadership and effective management.

CRP11. Use technology to enhance productivity

Modifications (ELL, Special Education, At-Risk Students, Gifted & Talented, & 504 Plans)

ELL:

- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Teacher models reading aloud daily
- Provide peer tutoring
- Use of Bilingual Dictionary
- Guided notes and/or scaffold outline for written assignments
- Provide students with English Learner leveled readers.

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Supports for Students With IEPs:

- Allow extra time to complete assignments or tests
- Guided notes and/or scaffold outline for written assignments
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications

At-Risk Students:

- Guided notes and/or scaffold outline for written assignments
- Introduce key vocabulary before lesson
- Work in a small group
- Lesson taught again using a differentiated approach
- Allow answers to be given orally or dictated
- Use visuals / Anchor Charts
- Leveled texts according to ability

Gifted and Talented:

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts
- Organize integrated problem-solving simulations
- Propose interest-based extension activities
- Expose students to beyond level texts.

Supports for Students With 504 Plans:

- Follow all the 504 plan modifications
- Text to speech/audio recorded selections
- Amplification system as needed
- Leveled texts according to ability
- Fine motor skill stations embedded in rotation as needed
- Modified or constrained spelling word lists
- Provide anchor charts with high frequency words and phonemic patterns

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