

ROCKWOOD

ENGINEERING & TECHNOLOGY

Technology Systems 8th Grade

Lesson Plans Mr. Kush

October 30

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to comply with the set expectations and procedures for this class.
Students will be able to use a ruler and measure to the nearest 1/2" inch.
- ACTIVITIES:** Introduction discussion of course
Procedure / Policy Handout
Distribute folder & Engineering Design Journal
"Giant Inch" measuring review activity
Begin "Measuring Practice" handout
- EVALUATION:** Procedure / Policy / Student Expectation signature form is due tomorrow
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
- ENRICHMENT:** Independent exploration and application of measuring
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

October 31

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to use a ruler and measure to the nearest 1/16" inch.
- ACTIVITIES:** Completion of the following measuring activities:
"Measuring Practice" handout
"Measuring Practice 1" handout
"Measuring Practice 2" handout

Measuring Test Monday

EVALUATION: Informal assessment of completion of the measuring practice guides
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of measuring

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
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Modified Tests & Quizzes
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PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

September 1

Technology Systems 8th Grade

OBJECTIVES: Students will be able to use a ruler and proficiently and accurately measure to the nearest 1/16" inch.
Students will be able to complete the measuring assessment.

UNIT 1 – Technological Systems: How They Work

Students will be able to determine that a system is a group of interrelated components or parts that collectively achieve a desired result.

Students will be able to identify components of a system.

Students will be able to compare and contrast natural and manmade systems of human anatomy subsystems and automobile subsystems

ACTIVITIES: Completion of the following measuring activities:
“Measuring Practice 2” handout – review of answers
Review measuring activity on the white board
Measuring Test 17 points

Presentation - Technological Systems: How They Work

Discuss that system is a group of interrelated components or parts that collectively achieve a desired result and compare this to a sports team or a team/group activity

Identify components of a computer system

Compare and contrast natural and manmade systems

EVALUATION: Informal assessment of completion of the measuring practice guide and measuring review activity
Formal assessment of 17 point measuring test
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
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September 2

Technology Systems 8th Grade

OBJECTIVES: Students will be able to identify the function of the Universal Systems Model.
Students will be able to identify the functions of inputs, processes, outputs, and feedback.
Students will be able to apply the Universal Systems Model to an automobile.

ACTIVITIES: Presentation - **Technological Systems: How They Work**
Discuss that system is a group of interrelated components or parts that collectively achieve a desired result and compare this to a sports team or a team/group activity
Identify components of a computer system
Compare and contrast natural and manmade systems
Identify the components of a home heating system and place them in a Universal System Model.

EVALUATION: Informal assessment of completion of the measuring practice guide and measuring review activity
Formal assessment of 17 point measuring test
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
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PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A
Standards for Technological Literacy: N/A

September 5

**No School
Labor Day**

September 6

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to compare and contrast human anatomical sub systems and man-made subsystems.
Students will be able to identify the parts of the universal systems graphic model.
Students will be able to apply the universal systems model concept to a home heating system.
- ACTIVITIES:** In groups of two - compare, contrast, & link human anatomical sub systems and man-made subsystems with the PowerPoint presentation
Note in Engineering Journals the universal systems graphic model
In groups of two - apply the universal systems model concept to a home heating system in the Engineering Journal
- EVALUATION:** Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the “Home Heating System” activity guide
- ENRICHMENT:** Independent exploration and application of Universal Systems Model
- ACCOMMODATIONS:** Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
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September 7

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to follow specific directions.
Students will be able to construct a basic communication system using the provided materials.
Students will be able to use the scientific process to explore their communication system using the student guided questions.

Students will be able to list the pros and cons of their communication system in comparison to a standard telephone or cell phone.

Students will be able to create a Universal System Model Chart according to their communication system.

- ACTIVITIES:** In groups of two – students will build and explore a string & cup communication system
Students will use the guided questions from the activity PPT
Students will complete Engineering Journal Entry based on specific questions from the PPT
- EVALUATION:** Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the “Cup & String Communication” answers in the Engineering Journal
- ENRICHMENT:** Independent exploration and application of Universal Systems Model
- ACCOMMODATIONS:** Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
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September 8

Technology Systems 8th Grade

- OBJECTIVES:**
- CONTINUED:** Students will be able to follow specific directions.
Students will be able to construct a basic communication system using the provided materials.
Students will be able to use the scientific process to explore their communication system using the student guided questions.
Students will be able to list the pros and cons of their communication system in comparison to a standard telephone or cell phone.
Students will be able to create a Universal System Model Chart according to their communication system.
- NEW:** Students will be able to reflect from the activity that Natural and human-made objects are made up of parts / Systems are made of parts that work together / A system is made from INPUTS, PROCESSES, OUTPUTS, and FEEDBACK / Systems are used to accomplish a goal.
Students will be able to identify that systems are found in nature, and some are made by humans and be able to provide examples of each kind.

- ACTIVITIES:** **CONTINUED:** In groups of two – students will build and explore a string & cup communication system
Students will use the guided questions from the activity PPT
Students will complete Engineering Journal Entry based on specific questions from the PPT
- NEW:** Review of learning objectives from the “Cup & String Communication” activity
Student will participate in identifying systems that are found in nature and those that are manmade
- EVALUATION:** Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the “Cup & String Communication” answers in the Engineering Journal
- ENRICHMENT:** Independent exploration and application of Universal Systems Model
- ACCOMMODATIONS:** Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
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September 9

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to identify and determine system inputs, processes, outputs, and feedback within a systems model.
Students will be able to use a variety of parts and a power source to create a basic communication system.
Students will be able to apply the systems model graphic to the communication system.
- ACTIVITIES:** In groups of two – student will use variety of parts and a power source to create a basic communication system and communicate in Morse code
Students will discuss and then apply the systems model graphic to the communication system that they developed
- EVALUATION:** Informal assessment of participation and completion of class activity
Completion of the “Hello Operator” design brief handout
- ENRICHMENT:** Independent exploration and application of the universal systems graphic model via communication
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments

T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
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PA STANDARDS for Science and Technology: 3.1.7A, 3.1.10A

September 12

Technology Systems 8th Grade

OBJECTIVES: CONTINUED: Students will be able to create a communication system to send a simple message
Students will be able to apply the parts of the universal systems graphic model to the created communication system
Students will be able to observe and identify the pros / cons with the given system
Students will be able to identify and apply the concept of sub systems to their communication system

ACTIVITIES: “Hello Operator” Design Brief: In groups of two – wire the communication system using the battery source, switch, wires, and doorbell
Complete the accompanying handout with directions and questions

EVALUATION: Informal assessment of participation and completion of class activities, groups participation, and note taking
Completion of the “Hello Operator” design brief handout

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
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Modified Tests & Quizzes
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

September 13

Technology Systems 8th Grade

OBJECTIVES: **CONTINUED:** Students will be able to create a communication system to send a simple message
Students will be able to apply the parts of the universal systems graphic model to the created communication system
Students will be able to observe and identify the pros / cons with the given system
Students will be able to identify and apply the concept of sub systems to their communication system

Students will be able to prepare for the Unit 1 test

ACTIVITIES: “Hello Operator” Design Brief: In groups of two – wire the communication system using the battery source, switch, wires, and doorbell
Complete the accompanying handout with directions and questions

Review Quiz Activity

EVALUATION: Informal assessment of participation and completion of class activities, groups participation, and note taking
Completion of the “Hello Operator” design brief handout

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
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September 14

Technology Systems 8th Grade

OBJECTIVES: Students will be able to prepare for the Unit 1 test on Friday

ACTIVITIES: Review Quiz Activity
Discussion Review

EVALUATION: Informal assessment of participation
Formal assessment of the Unit 1 test

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments

T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
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Additional time to complete assignments as necessary
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September 15

Technology Systems 8th Grade

OBJECTIVES: Students will be able to complete the Unit 1 Test
Students will be able to anticipate Unit 3

ACTIVITIES: Unit 1 Test
Unit 3 Pre Test – No points
Review answers from the pretest

EVALUATION: Informal assessment of participation
Formal assessment of the Unit 1 test

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
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September 16

Technology Systems 8th Grade

OBJECTIVES: Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system

- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
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Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
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Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

September 19

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system
- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
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Modified Tests & Quizzes

Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

September 20

Technology Systems 8th Grade

- OBJECTIVES:**
- Students will be able to prove that systems are usually connected to other systems, both internally and externally.
 - Students will be able to identify that systems can be connected, with the output of one system being the input to the next system
 - Students will be able to identify that sometimes system connections provide control of one system over another system.
 - Students will be able to compare and contrast different systems with different goals.
- ACTIVITIES:**
- Students will observe the music video, "This Too Shall Pass" by OK GO demonstrating intersystem connectivity and activation / control through energy transfer (Rube Goldberg Machine)
 - Students will develop Venn diagram a compare and contrast subsystem connections, interactions, and control from the music video and the coffee maker activity.
- EVALUATION:**
- Informal assessment of participation during video segment and small group activity
 - Formal assessment of the Venn diagram activity
- ENRICHMENT:**
- Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:**
- Additional time to complete tasks / tests / quizzes / assignments
 - T /F Safety tests read to all students
 - Option for students to take formal assessments taken in the Learning Support room
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

September 21

Technology Systems 8th Grade

- OBJECTIVES:**
- Students will be able to identify that a malfunction of any part of a system may affect the function and quality of the system.
 - Students will be able to list the consequences of specific component and system malfunction using the coffee maker and other items as examples.
 - Students will be able to identify that technological systems often interact with one another.
 - Students will be able to identify that different technologies involve different set of processes

- ACTIVITIES:** In pairs, students will list the consequences of specific component and system malfunction using the coffee maker and other items as examples.
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

September 22

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system
- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
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- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

September 23

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system
- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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September 26

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems can be connected, with the output of one system being the input to the next system
Students will be able to identify that sometimes system connections provide control of one system over another system.
Students will be able to compare and contrast different systems with different goals.
- ACTIVITIES:** Students will observe the music video, “This Too Shall Pass” by OK GO demonstrating intersystem connectivity and activation / control through energy transfer (Rube Goldberg Machine)
Students will develop Venn diagram a compare and contrast subsystem connections, interactions, and control from the music video and the coffee maker activity.
- EVALUATION:** Informal assessment of participation during video segment and small group activity

Formal assessment of the Venn diagram activity

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
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September 27

Technology Systems 8th Grade

OBJECTIVES: Students will be able to identify that a malfunction of any part of a system may affect the function and quality of the system.
Students will be able to list the consequences of specific component and system malfunction using the coffee maker and other items as examples.
Students will be able to identify that technological systems often interact with one another.
Students will be able to identify that different technologies involve different set of processes

ACTIVITIES: Students will watch and discuss the NASA spaceship Challenger explosion video and discuss how tolerances of parts and small malfunctions or failures can have catastrophic consequences that can result in the loss of human life.
In pairs, students will list the consequences of specific component and system malfunction using the coffee maker and a bicycle as examples.

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
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September 28

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to identify and develop examples that controls are mechanisms or activities that use information to cause systems to change.
Students will be able to explain the functioning principals of a bimetal strip.
Students will be able to explain how a classic mercury thermostat functions.
- ACTIVITIES:** In pairs, students will list the consequences of specific component and system malfunction using the coffee maker and other items as examples.
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
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September 29

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to understand and follow basic laboratory safety rules.
Students will be aware and know the appropriate behaviors and expectations for laboratory activities.
- ACTIVITIES:** Students will take a tour of the lab facilities to review locations of safety equipment
“Basic Safety Rules” - Handout
Students will read and discuss the handout.
Quiz 28 points “Engineering & Technology Basic Safety Rules Test”
- EVALUATION:** Formal assessment on the completion of the 28 point quiz “Engineering & Technology Basic Safety Rules Test”
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
- ENRICHMENT:** Independent exploration and application of laboratory safety practices
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room

Option for preferential seating
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PA STANDARDS for Science, Engineering, and Technology 3.2.4A, 3.2.10D, 3.7.4A, 3.8.4B, 3.8.12B

September 30

Foundations of Technology 9th Grade

OBJECTIVES: Students will be able to safely and accurately operate the band saw and the drill press.

ACTIVITIES: Safety practices for the band saw and drill press
Participation in safety features & demonstration
Explanation & set-up of machines
Completion of PA safety test for both machines

EVALUATION: Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests

ENRICHMENT: Independent exploration of the band saw and jig saw

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
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Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

October 3

Foundations of Technology 9th Grade

OBJECTIVES: **CONTINUED:** Students will be able to safely and accurately operate the band saw and the drill press.

ACTIVITIES: **CONTINUED:** Safety practices for the band saw and drill press
Participation in safety features & demonstration
Explanation & set-up of machines
Completion of PA safety test for both machines
Student application samples of using the band saw and the drill press

EVALUATION: Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests

ENRICHMENT: Independent exploration of the band saw and jig saw

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

October 4

Foundations of Technology 9th Grade

OBJECTIVES: **COMPLETE:** Students will be able to safely and accurately operate the band saw and the jig saw.
TIME PERMITTING – WE MAY START THE LESSON FOR TUESDAY – SEE TUESDAY OCTOBER 4

ACTIVITIES: **CONTINUED:** Safety practice application for the band saw and drill press

EVALUATION: Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests

ENRICHMENT: Independent exploration of the band saw and jig saw

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

October 5

Technology Systems 8th Grade

OBJECTIVES: **START OF "Radioactive Arm" DESIGN BRIEF**

Students will be able to identify and list the criteria and constraints for the “Robotic Pneumatic or Hydraulic Arm” design brief.

Students will be able explain the concept of a hydraulic system.

Students will be able to explain the concept of a pneumatic system.

Students will be able to compare and contrast hydraulic and pneumatic systems.

Students will be able to select a system to power their “robotic arm”.

Students will be able to research for design ideas.

Students will be able to create a preliminary solution design sketch.

Students will be able to use critical thinking skills and problem solving to design hydraulic or pneumatic robotic arm using the engineering design model that will accomplished a specific task using the provided materials.

Students will be able to document their daily progress using engineering design journal principals.

ACTIVITIES: Students will discuss and note the criteria and constraints for the active “Robotic Pneumatic or Hydraulic Arm”.

Students will use the website, www.howstuffworks.com hydraulics and www.wikipedia.com to research pneumatics to answer the questions on the “Radioactive Arm Student Design Worksheet” on pages 2 and three.

For *only fifteen minutes*, students will use www.youtube.com to research ideas for the robotic arm design using syringes

In small groups of two or three, students will work collaborative to design a solution to the design brief and sketch a solution in their Engineering Notebooks

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 6

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to create a preliminary solution design sketch.

Students will be able to use critical thinking skills and problem solving to design hydraulic or pneumatic robotic arm using the engineering design model that will accomplish a specific task using the provided materials.

Students will be able to document their daily progress using engineering design journal principals.

ACTIVITIES: In small groups of two or three, students will work collaborative to design a solution to the design brief and sketch a solution in their Engineering Notebooks
Students will follow the specific directions on the "Radioactive Arm Student Design Worksheet" to guide the development of the planning stage.

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 7

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

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Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 10
No School
Teacher In-service

October 11

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 12

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
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- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 13

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 14

Technology Systems 8th Grade

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Students will be able to troubleshoot and redesign as necessary.
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EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 17

Technology Systems 8th Grade

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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 18

Technology Systems 8th Grade

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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 19

Technology Systems 8th Grade

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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 20

Technology Systems 8th Grade

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- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 21

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 24

Technology Systems 8th Grade

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Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
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Formal evaluation of the successful testing of the finalized design

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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 25

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.

Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 26

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
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Students will be able to troubleshoot and redesign as necessary.
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 27

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
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- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
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Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 28

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
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Students will be able to safely and effectively use the band saw and the drill press as necessary.
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- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

October 31

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.
- ACTIVITIES:** Radioactive Arm competition
Radioactive Arm presentation
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

November 1

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.
- ACTIVITIES:** Radioactive Arm competition
Radioactive Arm presentation
End of the nine weeks cleanup
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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November 2

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.
- ACTIVITIES:** Radioactive Arm competition
Radioactive Arm presentation
End of the nine weeks cleanup
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance

Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

November 3

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to comply with the set expectations and procedures for this class.
Students will be able to use a ruler and measure to the nearest 1/2" inch.
- ACTIVITIES:** Introduction discussion of course
Procedure / Policy Handout
Distribute folder & Engineering Design Journal
"Giant Inch" measuring review activity
Begin "Measuring Practice" handout
- EVALUATION:** Procedure / Policy / Student Expectation signature form is due tomorrow
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
- ENRICHMENT:** Independent exploration and application of measuring
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 4

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to use a ruler and measure to the nearest 1/16" inch.
- ACTIVITIES:** Completion of the following measuring activities:
"Measuring Practice" handout
"Measuring Practice 1" handout
"Measuring Practice 2" handout
Measuring Test Monday
- EVALUATION:** Informal assessment of completion of the measuring practice guides
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
- ENRICHMENT:** Independent exploration and application of measuring
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 7

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to use a ruler and proficiently and accurately measure to the nearest 1/16" inch.
Students will be able to complete the measuring assessment.
- UNIT 1 – Technological Systems: How They Work**
Students will be able to determine that a system is a group of interrelated components or parts that collectively achieve a desired result.
Students will be able to identify components of a system.
Students will be able to compare and contrast natural and manmade systems of human anatomy subsystems and automobile subsystems
- ACTIVITIES:** Completion of the following measuring activities:
"Measuring Practice 2" handout – review of answers
Review measuring activity on the white board
Measuring Test 17 points
- Presentation - **Technological Systems: How They Work**
Discuss that system is a group of interrelated components or parts that collectively achieve a desired result and compare this to a sports team or a team/group activity
Identify components of a computer system
Compare and contrast natural and manmade systems

EVALUATION: Informal assessment of completion of the measuring practice guide and measuring review activity
Formal assessment of 17 point measuring test
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 8

Technology Systems 8th Grade

OBJECTIVES: Students will be able to identify the function of the Universal Systems Model.
Students will be able to identify the functions of inputs, processes, outputs, and feedback.
Students will be able to apply the Universal Systems Model to an automobile.

ACTIVITIES: Presentation - **Technological Systems: How They Work**
Discuss that system is a group of interrelated components or parts that collectively achieve a desired result and compare this to a sports team or a team/group activity
Identify components of a computer system
Compare and contrast natural and manmade systems
Identify the components of a home heating system and place them in a Universal System Model.

EVALUATION: Informal assessment of completion of the measuring practice guide and measuring review activity
Formal assessment of 17 point measuring test
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary

Modified Tests & Quizzes

Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

Standards for Technological Literacy: N/A

November 9

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to compare and contrast human anatomical sub systems and man-made subsystems.
Students will be able to identify the parts of the universal systems graphic model.
Students will be able to apply the universal systems model concept to a home heating system.
- ACTIVITIES:** In groups of two - compare, contrast, & link human anatomical sub systems and man-made subsystems with the PowerPoint presentation
Note in Engineering Journals the universal systems graphic model
In groups of two - apply the universal systems model concept to a home heating system in the Engineering Journal
- EVALUATION:** Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the "Home Heating System" activity guide
- ENRICHMENT:** Independent exploration and application of Universal Systems Model
- ACCOMMODATIONS:** Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 10

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to follow specific directions.
Students will be able to construct a basic communication system using the provided materials.
Students will be able to use the scientific process to explore their communication system using the student guided questions.

Students will be able to list the pros and cons of their communication system in comparison to a standard telephone or cell phone.

Students will be able to create a Universal System Model Chart according to their communication system.

- ACTIVITIES:** In groups of two – students will build and explore a string & cup communication system
Students will use the guided questions from the activity PPT
Students will complete Engineering Journal Entry based on specific questions from the PPT
- EVALUATION:** Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the “Cup & String Communication” answers in the Engineering Journal
- ENRICHMENT:** Independent exploration and application of Universal Systems Model
- ACCOMMODATIONS:** Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 11
Act 80 Day
No School

November 14

Technology Systems 8th Grade

- OBJECTIVES:** **CONTINUED:** Students will be able to follow specific directions.
Students will be able to construct a basic communication system using the provided materials.
Students will be able to use the scientific process to explore their communication system using the student guided questions.
Students will be able to list the pros and cons of their communication system in comparison to a standard telephone or cell phone.
Students will be able to create a Universal System Model Chart according to their communication system.

NEW: Students will be able to reflect from the activity that Natural and human-made objects are made up of parts / Systems are made of parts that work together / A system is made from INPUTS, PROCESSES, OUTPUTS, and FEEDBACK / Systems are used to accomplish a goal.
Students will be able to identify that systems are found in nature, and some are made by humans and be able to provide examples of each kind.

ACTIVITIES: **CONTINUED:** In groups of two – students will build and explore a string & cup communication system
Students will use the guided questions from the activity PPT
Students will complete Engineering Journal Entry based on specific questions from the PPT
NEW: Review of learning objectives from the “Cup & String Communication” activity
Student will participate in identifying systems that are found in nature and those that are manmade

EVALUATION: Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the “Cup & String Communication” answers in the Engineering Journal

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 15

Technology Systems 8th Grade

OBJECTIVES: Students will be able to identify and determine system inputs, processes, outputs, and feedback within a systems model.
Students will be able to use a variety of parts and a power source to create a basic communication system.
Students will be able to apply the systems model graphic to the communication system.

ACTIVITIES: In groups of two – student will use variety of parts and a power source to create a basic communication system and communicate in Morse code
Students will discuss and then apply the systems model graphic to the communication system that they developed

EVALUATION: Informal assessment of participation and completion of class activity
Completion of the “Hello Operator” design brief handout

ENRICHMENT: Independent exploration and application of the universal systems graphic model via communication

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.7A, 3.1.10A

November 16

Technology Systems 8th Grade

OBJECTIVES: CONTINUED: Students will be able to create a communication system to send a simple message
Students will be able to apply the parts of the universal systems graphic model to the created communication system
Students will be able to observe and identify the pros / cons with the given system
Students will be able to identify and apply the concept of sub systems to their communication system

ACTIVITIES: “Hello Operator” Design Brief: In groups of two – wire the communication system using the battery source, switch, wires, and doorbell
Complete the accompanying handout with directions and questions

EVALUATION: Informal assessment of participation and completion of class activities, groups participation, and note taking
Completion of the “Hello Operator” design brief handout

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 17

Technology Systems 8th Grade

- OBJECTIVES:**
- CONTINUED:** Students will be able to create a communication system to send a simple message
 - Students will be able to apply the parts of the universal systems graphic model to the created communication system
 - Students will be able to observe and identify the pros / cons with the given system
 - Students will be able to identify and apply the concept of sub systems to their communication system
- Students will be able to prepare for the Unit 1 test
- ACTIVITIES:**
- “Hello Operator” Design Brief: In groups of two – wire the communication system using the battery source, switch, wires, and doorbell
 - Complete the accompanying handout with directions and questions
- Review Quiz Activity
- EVALUATION:**
- Informal assessment of participation and completion of class activities, groups participation, and note taking
 - Completion of the “Hello Operator” design brief handout
- ENRICHMENT:**
- Independent exploration and application of subsystems and the universal systems graphic model
- ACCOMMODATIONS:**
- Additional time to complete tasks / tests / quizzes / assignments
 - T /F Safety tests read to all students
 - Option for students to take formal assessments taken in the Learning Support room
 - Option for preferential seating
 - Option for individual guidance
 - Verbal presentation of reading material by aid when present
 - Additional time to complete assignments as necessary
 - Modified Tests & Quizzes
 - Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 18

Technology Systems 8th Grade

- OBJECTIVES:**
- Students will be able to prepare for the Unit 1 test on Friday
- ACTIVITIES:**
- Review Quiz Activity
 - Discussion Review

EVALUATION: Informal assessment of participation
Formal assessment of the Unit 1 test

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 21

Technology Systems 8th Grade

OBJECTIVES: Students will be able to complete the Unit 1 Test
Students will be able to anticipate Unit 3

ACTIVITIES: Unit 1 Test
Unit 3 Pre Test – No points
Review answers from the pretest

EVALUATION: Informal assessment of participation
Formal assessment of the Unit 1 test

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 22

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system
- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 23

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system
- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

November 24 - 29

BE SURE TO GIVE THANKS!

November 30

Technology Systems 8th Grade

OBJECTIVES: Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems can be connected, with the output of one system being the input to the next system
Students will be able to identify that sometimes system connections provide control of one system over another system.
Students will be able to compare and contrast different systems with different goals.

ACTIVITIES: Students will observe the music video, “This Too Shall Pass” by OK GO demonstrating intersystem connectivity and activation / control through energy transfer (Rube Goldberg Machine)
Students will develop Venn diagram a compare and contrast subsystem connections, interactions, and control from the music video and the coffee maker activity.

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance

Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

December 1

Technology Systems 8th Grade

OBJECTIVES: Students will be able to identify that a malfunction of any part of a system may affect the function and quality of the system.
Students will be able to list the consequences of specific component and system malfunction using the coffee maker and other items as examples.
Students will be able to identify that technological systems often interact with one another.
Students will be able to identify that different technologies involve different set of processes

ACTIVITIES: In pairs, students will list the consequences of specific component and system malfunction using the coffee maker and other items as examples.

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

December 2

Technology Systems 8th Grade

OBJECTIVES: Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system

ACTIVITIES: Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems

Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

December 5

Technology Systems 8th Grade

OBJECTIVES: Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system

ACTIVITIES: Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

December 6

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems can be connected, with the output of one system being the input to the next system
Students will be able to identify that sometimes system connections provide control of one system over another system.
Students will be able to compare and contrast different systems with different goals.
- ACTIVITIES:** Students will observe the music video, “This Too Shall Pass” by OK GO demonstrating intersystem connectivity and activation / control through energy transfer (Rube Goldberg Machine)
Students will develop Venn diagram a compare and contrast subsystem connections, interactions, and control from the music video and the coffee maker activity.
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

December 7

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to identify that a malfunction of any part of a system may affect the function and quality of the system.
Students will be able to list the consequences of specific component and system malfunction using the coffee maker and other items as examples.
Students will be able to identify that technological systems often interact with one another.
Students will be able to identify that different technologies involve different set of processes
- ACTIVITIES:** Students will watch and discuss the NASA spaceship Challenger explosion video and discuss how tolerances of parts and small malfunctions or failures can have catastrophic consequences that can result in the loss of human life.

In pairs, students will list the consequences of specific component and system malfunction using the coffee maker and a bicycle as examples.

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

December 8

Technology Systems 8th Grade

OBJECTIVES: Students will be able to identify and develop examples that controls are mechanisms or activities that use information to cause systems to change.
Students will be able to explain the functioning principals of a bimetal strip.
Students will be able to explain how a classic mercury thermostat functions.

ACTIVITIES: In pairs, students will list the consequences of specific component and system malfunction using the coffee maker and other items as examples.

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

December 9

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to understand and follow basic laboratory safety rules.
Students will be aware and know the appropriate behaviors and expectations for laboratory activities.
- ACTIVITIES:** Students will take a tour of the lab facilities to review locations of safety equipment
“Basic Safety Rules”- Handout
Students will read and discuss the handout.
Quiz 28 points “Engineering & Technology Basic Safety Rules Test”
- EVALUATION:** Formal assessment on the completion of the 28 point quiz “Engineering & Technology Basic Safety Rules Test”
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
- ENRICHMENT:** Independent exploration and application of laboratory safety practices
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology 3.2.4A, 3.2.10D, 3.7.4A, 3.8.4B, 3.8.12B

December 12

Foundations of Technology 9th Grade

- OBJECTIVES:** Students will be able to safely and accurately operate the band saw and the drill press.
- ACTIVITIES:** Safety practices for the band saw and drill press
Participation in safety features & demonstration
Explanation & set-up of machines
Completion of PA safety test for both machines
- EVALUATION:** Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests
- ENRICHMENT:** Independent exploration of the band saw and jig saw
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room

Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

December 13

Foundations of Technology 9th Grade

OBJECTIVES: **CONTINUED:** Students will be able to safely and accurately operate the band saw and the drill press.

ACTIVITIES: **CONTINUED:** Safety practices for the band saw and drill press
Participation in safety features & demonstration
Explanation & set-up of machines
Completion of PA safety test for both machines
Student application samples of using the band saw and the drill press

EVALUATION: Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests

ENRICHMENT: Independent exploration of the band saw and jig saw

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

December 14

Foundations of Technology 9th Grade

OBJECTIVES: **COMPLETE:** Students will be able to safely and accurately operate the band saw and the jig saw.
TIME PERMITTING – WE MAY START THE LESSON FOR TUESDAY – SEE TUESDAY OCTOBER 4

ACTIVITIES: **CONTINUED:** Safety practice application for the band saw and drill press

EVALUATION: Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation

Formal evaluation of safety tests

ENRICHMENT: Independent exploration of the band saw and jig saw

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
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Verbal presentation of reading material by aid when present
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PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

December 15

Technology Systems 8th Grade

OBJECTIVES: **START OF "Radioactive Arm" DESIGN BRIEF**
Students will be able to identify and list the criteria and constraints for the "Robotic Pneumatic or Hydraulic Arm" design brief.
Students will be able explain the concept of a hydraulic system.
Students will be able to explain the concept of a pneumatic system.
Students will be able to compare and contrast hydraulic and pneumatic systems.
Students will be able to select a system to power their "robotic arm".
Students will be able to research for design ideas.

Students will be able to create a preliminary solution design sketch.
Students will be able to use critical thinking skills and problem solving to design hydraulic or pneumatic robotic arm using the engineering design model that will accomplished a specific task using the provided materials.
Students will be able to document their daily progress using engineering design journal principals.

ACTIVITIES: Students will discuss and note the criteria and constraints for the active "Robotic Pneumatic or Hydraulic Arm".
Students will use the website, www.howstuffworks.com hydraulics and www.wikipedia.com to research pneumatics to answer the questions on the "Radioactive Arm Student Design Worksheet" on pages 2 and three.
For *only fifteen minutes*, students will use www.youtube.com to research ideas for the robotic arm design using syringes

In small groups of two or three, students will work collaborative to design a solution to the design brief and sketch a solution in their Engineering Notebooks

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
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Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

December 16

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to create a preliminary solution design sketch.
Students will be able to use critical thinking skills and problem solving to design hydraulic or pneumatic robotic arm using the engineering design model that will accomplished a specific task using the provided materials.
Students will be able to document their daily progress using engineering design journal principals.

ACTIVITIES: In small groups of two or three, students will work collaborative to design a solution to the design brief and sketch a solution in their Engineering Notebooks
Students will follow the specific directions on the “Radioactive Arm Student Design Worksheet” to guide the development of the planning stage.

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

December 19

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
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Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

December 20

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
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- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

December 21

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

December 22

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**

Students will be able to construct their robotic arm based on their sketched design.
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

December 23

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

December 26 - January 2

MERRY CHRISTMAS!

January 3

Technology Systems 8th Grade

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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 4

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
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- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 5

Technology Systems 8th Grade

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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 6

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
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Students will be able to safely and effectively use the band saw and the drill press as necessary.
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Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 9

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 10

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 11

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
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ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 12

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.
- ACTIVITIES:** Radioactive Arm competition
Radioactive Arm presentation
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 13

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.
- ACTIVITIES:** Radioactive Arm competition
Radioactive Arm presentation
End of the nine weeks cleanup
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 16

No School

Act 80 Day

January 17

Technology Systems 8th Grade

OBJECTIVES: Radioactive Arm Design Brief

Students will be able to present, demonstrate, and explain their final design.

ACTIVITIES: Radioactive Arm competition
Radioactive Arm presentation
End of the nine weeks cleanup

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

January 18

Technology Systems 8th Grade

OBJECTIVES: Radioactive Arm Design Brief

Students will be able to present, demonstrate, and explain their final design.

ACTIVITIES: Radioactive Arm competition
Radioactive Arm presentation
End of the nine weeks cleanup

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties

Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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January 19

Technology Systems 8th Grade

OBJECTIVES: Students will be able to comply with the set expectations and procedures for this class.
Students will be able to use a ruler and measure to the nearest 1/2" inch.

ACTIVITIES: Introduction discussion of course
Procedure / Policy Handout
Distribute folder & Engineering Design Journal
"Giant Inch" measuring review activity
Begin "Measuring Practice" handout

EVALUATION: Procedure / Policy / Student Expectation signature form is due tomorrow
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of measuring

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
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Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

January 20

Technology Systems 8th Grade

OBJECTIVES: Students will be able to use a ruler and measure to the nearest 1/16" inch.

ACTIVITIES: Completion of the following measuring activities:
"Measuring Practice" handout
"Measuring Practice 1" handout
"Measuring Practice 2" handout
Measuring Test Monday

EVALUATION: Informal assessment of completion of the measuring practice guides
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of measuring

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

January 23

Technology Systems 8th Grade

OBJECTIVES: Students will be able to use a ruler and proficiently and accurately measure to the nearest 1/16" inch.
Students will be able to complete the measuring assessment.

UNIT 1 – Technological Systems: How They Work

Students will be able to determine that a system is a group of interrelated components or parts that collectively achieve a desired result.

Students will be able to identify components of a system.

Students will be able to compare and contrast natural and manmade systems of human anatomy subsystems and automobile subsystems

ACTIVITIES:

Completion of the following measuring activities:

“Measuring Practice 2” handout – review of answers

Review measuring activity on the white board

Measuring Test 17 points

Presentation - **Technological Systems: How They Work**

Discuss that system is a group of interrelated components or parts that collectively achieve a desired result and compare this to a sports team or a team/group activity

Identify components of a computer system

Compare and contrast natural and manmade systems

EVALUATION:

Informal assessment of completion of the measuring practice guide and measuring review activity

Formal assessment of 17 point measuring test

Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT:

Independent exploration and application of Universal Systems Model

ACCOMMODATIONS:

Students that score less than 70% may practice and retake the measuring test at another time

Additional time to complete tasks / tests / quizzes / assignments

T /F Safety tests read to all students

Option for students to take formal assessments taken in the Learning Support room

Option for preferential seating

Option for individual guidance

Verbal presentation of reading material by aid when present

Additional time to complete assignments as necessary

Modified Tests & Quizzes

Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

January 24

Technology Systems 8th Grade

OBJECTIVES:

Students will be able to identify the function of the Universal Systems Model.

Students will be able to identify the functions of inputs, processes, outputs, and feedback.

Students will be able to apply the Universal Systems Model to an automobile.

ACTIVITIES:

Presentation - **Technological Systems: How They Work**

Discuss that system is a group of interrelated components or parts that collectively achieve a desired result and compare this to a sports team or a team/group activity

Identify components of a computer system

Compare and contrast natural and manmade systems
Identify the components of a home heating system and place them in a Universal System Model.

EVALUATION: Informal assessment of completion of the measuring practice guide and measuring review activity
Formal assessment of 17 point measuring test
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A
Standards for Technological Literacy: N/A

January 25

Technology Systems 8th Grade

OBJECTIVES: Students will be able to compare and contrast human anatomical sub systems and man-made subsystems.
Students will be able to identify the parts of the universal systems graphic model.
Students will be able to apply the universal systems model concept to a home heating system.

ACTIVITIES: In groups of two - compare, contrast, & link human anatomical sub systems and man-made subsystems with the PowerPoint presentation
Note in Engineering Journals the universal systems graphic model
In groups of two - apply the universal systems model concept to a home heating system in the Engineering Journal

EVALUATION: Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the "Home Heating System" activity guide

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating

Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

January 26

Technology Systems 8th Grade

OBJECTIVES: Students will be able to follow specific directions.
Students will be able to construct a basic communication system using the provided materials.
Students will be able to use the scientific process to explore their communication system using the student guided questions.
Students will be able to list the pros and cons of their communication system in comparison to a standard telephone or cell phone.
Students will be able to create a Universal System Model Chart according to their communication system.

ACTIVITIES: In groups of two – students will build and explore a string & cup communication system
Students will use the guided questions from the activity PPT
Students will complete Engineering Journal Entry based on specific questions from the PPT

EVALUATION: Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the “Cup & String Communication” answers in the Engineering Journal

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

January 27

Technology Systems 8th Grade

OBJECTIVES: **CONTINUED:** Students will be able to follow specific directions.
Students will be able to construct a basic communication system using the provided materials.

Students will be able to use the scientific process to explore their communication system using the student guided questions.

Students will be able to list the pros and cons of their communication system in comparison to a standard telephone or cell phone.

Students will be able to create a Universal System Model Chart according to their communication system.

NEW: Students will be able to reflect from the activity that Natural and human-made objects are made up of parts / Systems are made of parts that work together / A system is made from INPUTS, PROCESSES, OUTPUTS, and FEEDBACK / Systems are used to accomplish a goal.

Students will be able to identify that systems are found in nature, and some are made by humans and be able to provide examples of each kind.

ACTIVITIES: **CONTINUED:** In groups of two – students will build and explore a string & cup communication system

Students will use the guided questions from the activity PPT

Students will complete Engineering Journal Entry based on specific questions from the PPT

NEW: Review of learning objectives from the “Cup & String Communication” activity

Student will participate in identifying systems that are found in nature and those that are manmade

EVALUATION: Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

Formal assessment on the completion of the “Cup & String Communication” answers in the Engineering Journal

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time

Additional time to complete tasks / tests / quizzes / assignments

T /F Safety tests read to all students

Option for students to take formal assessments taken in the Learning Support room

Option for preferential seating

Option for individual guidance

Verbal presentation of reading material by aid when present

Additional time to complete assignments as necessary

Modified Tests & Quizzes

Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

January 30

Technology Systems 8th Grade

OBJECTIVES: Students will be able to identify and determine system inputs, processes, outputs, and feedback within a systems model.

Students will be able to use a variety of parts and a power source to create a basic communication system.

Students will be able to apply the systems model graphic to the communication system.

ACTIVITIES: In groups of two – student will use variety of parts and a power source to create a basic communication system and communicate in Morse code
Students will discuss and then apply the systems model graphic to the communication system that they developed

EVALUATION: Informal assessment of participation and completion of class activity
Completion of the “Hello Operator” design brief handout

ENRICHMENT: Independent exploration and application of the universal systems graphic model via communication

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.7A, 3.1.10A

January 31

Technology Systems 8th Grade

OBJECTIVES: CONTINUED: Students will be able to create a communication system to send a simple message
Students will be able to apply the parts of the universal systems graphic model to the created communication system
Students will be able to observe and identify the pros / cons with the given system
Students will be able to identify and apply the concept of sub systems to their communication system

ACTIVITIES: “Hello Operator” Design Brief: In groups of two – wire the communication system using the battery source, switch, wires, and doorbell
Complete the accompanying handout with directions and questions

EVALUATION: Informal assessment of participation and completion of class activities, groups participation, and note taking
Completion of the “Hello Operator” design brief handout

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present

Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

February 1

Technology Systems 8th Grade

OBJECTIVES: **CONTINUED:** Students will be able to create a communication system to send a simple message
Students will be able to apply the parts of the universal systems graphic model to the created communication system
Students will be able to observe and identify the pros / cons with the given system
Students will be able to identify and apply the concept of sub systems to their communication system

Students will be able to prepare for the Unit 1 test

ACTIVITIES: “Hello Operator” Design Brief: In groups of two – wire the communication system using the battery source, switch, wires, and doorbell
Complete the accompanying handout with directions and questions

Review Quiz Activity

EVALUATION: Informal assessment of participation and completion of class activities, groups participation, and note taking
Completion of the “Hello Operator” design brief handout

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

February 2

Technology Systems 8th Grade

OBJECTIVES: Students will be able to prepare for the Unit 1 test on Friday

ACTIVITIES: Review Quiz Activity
Discussion Review

EVALUATION: Informal assessment of participation
Formal assessment of the Unit 1 test

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

February 3

Technology Systems 8th Grade

OBJECTIVES: Students will be able to complete the Unit 1 Test
Students will be able to anticipate Unit 3

ACTIVITIES: Unit 1 Test
Unit 3 Pre Test – No points
Review answers from the pretest

EVALUATION: Informal assessment of participation
Formal assessment of the Unit 1 test

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

February 6

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system
- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the "Coffee Anyone?" activity
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

February 7

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system
- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity

Formal assessment on the completion of the “Coffee Anyone?” activity

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

February 8

Technology Systems 8th Grade

OBJECTIVES: Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems can be connected, with the output of one system being the input to the next system
Students will be able to identify that sometimes system connections provide control of one system over another system.
Students will be able to compare and contrast different systems with different goals.

ACTIVITIES: Students will observe the music video, “This Too Shall Pass” by OK GO demonstrating intersystem connectivity and activation / control through energy transfer (Rube Goldberg Machine)
Students will develop Venn diagram a compare and contrast subsystem connections, interactions, and control from the music video and the coffee maker activity.

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

February 9

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to identify that a malfunction of any part of a system may affect the function and quality of the system.
Students will be able to list the consequences of specific component and system malfunction using the coffee maker and other items as examples.
Students will be able to identify that technological systems often interact with one another.
Students will be able to identify that different technologies involve different set of processes
- ACTIVITIES:** Students will watch and discuss the NASA spaceship Challenger explosion video and discuss how tolerances of parts and small malfunctions or failures can have catastrophic consequences that can result in the loss of human life.
In pairs, students will list the consequences of specific component and system malfunction using the coffee maker and a bicycle as examples.
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

February 10

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to identify and develop examples that controls are mechanisms or activities that use information to cause systems to change.
Students will be able to explain the functioning principals of a bimetal strip.
Students will be able to explain how a classic mercury thermostat functions.
- ACTIVITIES:** In pairs, students will list the consequences of specific component and system malfunction using the coffee maker and other items as examples.
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

February 13

Technology Systems 8th Grade

OBJECTIVES: Students will be able to understand and follow basic laboratory safety rules.
Students will be aware and know the appropriate behaviors and expectations for laboratory activities.

ACTIVITIES: Students will take a tour of the lab facilities to review locations of safety equipment
“Basic Safety Rules”- Handout
Students will read and discuss the handout.
Quiz 28 points “Engineering & Technology Basic Safety Rules Test”

EVALUATION: Formal assessment on the completion of the 28 point quiz “Engineering & Technology Basic Safety Rules Test”
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of laboratory safety practices

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology 3.2.4A, 3.2.10D, 3.7.4A, 3.8.4B, 3.8.12B

February 14

Foundations of Technology 9th Grade

OBJECTIVES: Students will be able to safely and accurately operate the band saw and the drill press.

- ACTIVITIES:** Safety practices for the band saw and drill press
Participation in safety features & demonstration
Explanation & set-up of machines
Completion of PA safety test for both machines
- EVALUATION:** Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests
- ENRICHMENT:** Independent exploration of the band saw and jig saw
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

February 15

Foundations of Technology 9th Grade

- OBJECTIVES:** **CONTINUED:** Students will be able to safely and accurately operate the band saw and the drill press.
- ACTIVITIES:** **CONTINUED:** Safety practices for the band saw and drill press
Participation in safety features & demonstration
Explanation & set-up of machines
Completion of PA safety test for both machines
Student application samples of using the band saw and the drill press
- EVALUATION:** Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests
- ENRICHMENT:** Independent exploration of the band saw and jig saw
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

February 16

Foundations of Technology 9th Grade

OBJECTIVES: **COMPLETE:** Students will be able to safely and accurately operate the band saw and the jig saw.

ACTIVITIES: **CONTINUED:** Safety practice application for the band saw and drill press

EVALUATION: Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests

ENRICHMENT: Independent exploration of the band saw and jig saw

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

February 17

Technology Systems 8th Grade

OBJECTIVES: **START OF "Radioactive Arm" DESIGN BRIEF**
Students will be able to identify and list the criteria and constraints for the "Robotic Pneumatic or Hydraulic Arm" design brief.
Students will be able explain the concept of a hydraulic system.
Students will be able to explain the concept of a pneumatic system.
Students will be able to compare and contrast hydraulic and pneumatic systems.
Students will be able to select a system to power their "robotic arm".
Students will be able to research for design ideas.

Students will be able to create a preliminary solution design sketch.
Students will be able to use critical thinking skills and problem solving to design hydraulic or pneumatic robotic arm using the engineering design model that will accomplished a specific task using the provided materials.
Students will be able to document their daily progress using engineering design journal principals.

ACTIVITIES: Students will discuss and note the criteria and constraints for the active "Robotic Pneumatic or Hydraulic Arm".

Students will use the website, www.howstuffworks.com hydraulics and www.wikipedia.com to research pneumatics to answer the questions on the "Radioactive Arm Student Design Worksheet" on pages 2 and three.

For *only fifteen minutes*, students will use www.youtube.com to research ideas for the robotic arm design using syringes

In small groups of two or three, students will work collaborative to design a solution to the design brief and sketch a solution in their Engineering Notebooks

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

February 20

Act 80 Day

February 21

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to create a preliminary solution design sketch.
Students will be able to use critical thinking skills and problem solving to design hydraulic or pneumatic robotic arm using the engineering design model that will accomplished a specific task using the provided materials.
Students will be able to document their daily progress using engineering design journal principals.

ACTIVITIES: In small groups of two or three, students will work collaborative to design a solution to the design brief and sketch a solution in their Engineering Notebooks
Students will follow the specific directions on the "Radioactive Arm Student Design Worksheet" to guide the development of the planning stage.

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

February 22

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

February 23

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

February 24

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

February 27

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

February 28

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.

Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 1

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room

Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 2

Technology Systems 8th Grade

OBJECTIVES:

Radioactive Arm Design Brief

Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES:

Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION:

Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT:

Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS:

Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 3

Technology Systems 8th Grade

OBJECTIVES:

Radioactive Arm Design Brief

Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
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Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 6

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
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Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
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- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
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Option for individual guidance
Verbal presentation of reading material by aid when present

Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 7

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 8

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 9

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary

Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 10

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 13

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.

Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 14

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.

ACTIVITIES: Radioactive Arm competition
Radioactive Arm presentation

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 15

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.
- ACTIVITIES:** Radioactive Arm competition
Radioactive Arm presentation
End of the nine weeks cleanup
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 16

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments

T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 17

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
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Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 20

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.

Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 21

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room

Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 22

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**

Students will be able to present, demonstrate, and explain their final design.

ACTIVITIES: Radioactive Arm competition
Radioactive Arm presentation

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
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Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 23

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**

Students will be able to present, demonstrate, and explain their final design.

ACTIVITIES: Radioactive Arm competition
Radioactive Arm presentation

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

March 24

Technology Systems 8th Grade

OBJECTIVES: Students will be able to comply with the set expectations and procedures for this class.
Students will be able to use a ruler and measure to the nearest 1/2" inch.

ACTIVITIES: Introduction discussion of course
Procedure / Policy Handout
Distribute folder & Engineering Design Journal
"Giant Inch" measuring review activity
Begin "Measuring Practice" handout

EVALUATION: Procedure / Policy / Student Expectation signature form is due tomorrow
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of measuring

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

March 27

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to use a ruler and measure to the nearest 1/16" inch.
- ACTIVITIES:** Completion of the following measuring activities:
"Measuring Practice" handout
"Measuring Practice 1" handout
"Measuring Practice 2" handout
Measuring Test Monday
- EVALUATION:** Informal assessment of completion of the measuring practice guides
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
- ENRICHMENT:** Independent exploration and application of measuring
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

March 28

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to use a ruler and proficiently and accurately measure to the nearest 1/16" inch.
Students will be able to complete the measuring assessment.
- UNIT 1 – Technological Systems: How They Work**
Students will be able to determine that a system is a group of interrelated components or parts that collectively achieve a desired result.
Students will be able to identify components of a system.
Students will be able to compare and contrast natural and manmade systems of human anatomy subsystems and automobile subsystems
- ACTIVITIES:** Completion of the following measuring activities:
"Measuring Practice 2" handout – review of answers
Review measuring activity on the white board
Measuring Test 17 points

Presentation - **Technological Systems: How They Work**

Discuss that system is a group of interrelated components or parts that collectively achieve a desired result and compare this to a sports team or a team/group activity

Identify components of a computer system

Compare and contrast natural and manmade systems

EVALUATION: Informal assessment of completion of the measuring practice guide and measuring review activity
Formal assessment of 17 point measuring test
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

March 29

Technology Systems 8th Grade

OBJECTIVES: Students will be able to understand and follow basic laboratory safety rules.
Students will be aware and know the appropriate behaviors and expectations for laboratory activities.

ACTIVITIES: Students will take a tour of the lab facilities to review locations of safety equipment
“Basic Safety Rules”- Handout
Students will read and discuss the handout.
Quiz 28 points “Engineering & Technology Basic Safety Rules Test”

EVALUATION: Formal assessment on the completion of the 28 point quiz “Engineering & Technology Basic Safety Rules Test”
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of laboratory safety practices

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating

Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology 3.2.4A, 3.2.10D, 3.7.4A, 3.8.4B, 3.8.12B

March 30

Foundations of Technology 9th Grade

OBJECTIVES: Students will be able to safely and accurately operate the band saw and the drill press.

ACTIVITIES: Safety practices for the band saw and drill press
Participation in safety features & demonstration
Explanation & set-up of machines
Completion of PA safety test for both machines

EVALUATION: Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests

ENRICHMENT: Independent exploration of the band saw and jig saw

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

March 31

Foundations of Technology 9th Grade

OBJECTIVES: **CONTINUED:** Students will be able to safely and accurately operate the band saw and the drill press.

ACTIVITIES: **CONTINUED:** Safety practices for the band saw and drill press
Participation in safety features & demonstration
Explanation & set-up of machines
Completion of PA safety test for both machines
Student application samples of using the band saw and the drill press

EVALUATION: Informal assessment of cutting accuracy and safety practices of machine set-up

Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests

ENRICHMENT: Independent exploration of the band saw and jig saw

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

April 3

Foundations of Technology 9th Grade

OBJECTIVES: **COMPLETE:** Students will be able to safely and accurately operate the band saw and the jig saw.
TIME PERMITTING – WE MAY START THE LESSON FOR TUESDAY – SEE TUESDAY OCTOBER 4

ACTIVITIES: **CONTINUED:** Safety practice application for the band saw and drill press

EVALUATION: Informal assessment of cutting accuracy and safety practices of machine set-up
Informal evaluation of handout, note completion, and participation
Formal evaluation of safety tests

ENRICHMENT: Independent exploration of the band saw and jig saw

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.2.7B, 3.7.10A, 3.7.12A

April 4

Technology Systems 8th Grade

OBJECTIVES: **START OF "Radioactive Arm" DESIGN BRIEF**
Students will be able to identify and list the criteria and constraints for the "Robotic Pneumatic or Hydraulic Arm" design brief.

Students will be able explain the concept of a hydraulic system.
Students will be able to explain the concept of a pneumatic system.
Students will be able to compare and contrast hydraulic and pneumatic systems.
Students will be able to select a system to power their “robotic arm”.
Students will be able to research for design ideas.

Students will be able to create a preliminary solution design sketch.
Students will be able to use critical thinking skills and problem solving to design hydraulic or pneumatic robotic arm using the engineering design model that will accomplished a specific task using the provided materials.
Students will be able to document their daily progress using engineering design journal principals.

ACTIVITIES: Students will discuss and note the criteria and constraints for the active “Robotic Pneumatic or Hydraulic Arm”.
Students will use the website, www.howstuffworks.com hydraulics and www.wikipedia.com to research pneumatics to answer the questions on the “Radioactive Arm Student Design Worksheet” on pages 2 and three.
For *only fifteen minutes*, students will use www.youtube.com to research ideas for the robotic arm design using syringes

In small groups of two or three, students will work collaborative to design a solution to the design brief and sketch a solution in their Engineering Notebooks

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 5

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to create a preliminary solution design sketch.
Students will be able to use critical thinking skills and problem solving to design hydraulic or pneumatic robotic arm using the engineering design model that will accomplished a specific task using the provided materials.

Students will be able to document their daily progress using engineering design journal principals.

- ACTIVITIES:** In small groups of two or three, students will work collaborative to design a solution to the design brief and sketch a solution in their Engineering Notebooks
Students will follow the specific directions on the “Radioactive Arm Student Design Worksheet” to guide the development of the planning stage.
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 6

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 7

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 10

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.

Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 11

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
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ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

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April 12 – 17

**Good Friday / Easter
No School**

April 18

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
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- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
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- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
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Formal evaluation of the successful testing of the finalized design
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April 19

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.

Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 20

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 21

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
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Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 24

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 25

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
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Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary

Modified Tests & Quizzes

Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 26

Technology Systems 8th Grade

OBJECTIVES:

Radioactive Arm Design Brief

Students will be able to construct their robotic arm based on their sketched design.

Students will be able to appropriately use materials in the construction of their robotic arm.

Students will be able to safely and effectively use the band saw and the drill press as necessary.

Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES:

Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.

Students will be able to troubleshoot and redesign as necessary.

Daily documentation of project progress in the Engineering Design Journal

EVALUATION:

Informal assessment of daily group participation, progress, and cleanup duties

Formal evaluation of the complete engineering design journal

Formal evaluation of the successful testing of the finalized design

ENRICHMENT:

Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS:

Additional time to complete tasks / tests / quizzes / assignments

T / F Safety tests read to all students

Option for students to take formal assessments taken in the Learning Support room

Option for preferential seating

Option for individual guidance

Verbal presentation of reading material by aid when present

Additional time to complete assignments as necessary

Modified Tests & Quizzes

Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 27

Technology Systems 8th Grade

OBJECTIVES:

Radioactive Arm Design Brief

Students will be able to construct their robotic arm based on their sketched design.

Students will be able to appropriately use materials in the construction of their robotic arm.

Students will be able to safely and effectively use the band saw and the drill press as necessary.

Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES:

Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.

Students will be able to troubleshoot and redesign as necessary.

Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

April 28

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.

ACTIVITIES: Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
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PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

May 1

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

May 2

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to construct their robotic arm based on their sketched design.
Students will be able to appropriately use materials in the construction of their robotic arm.
Students will be able to safely and effectively use the band saw and the drill press as necessary.
Students will be able to document their daily progress in their Engineering Design Journal.
- ACTIVITIES:** Student group members will collaborate and designate tasks to construct their robotic arm based on their sketched design.
Students will be able to troubleshoot and redesign as necessary.
Daily documentation of project progress in the Engineering Design Journal
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties

Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

May 3

Technology Systems 8th Grade

OBJECTIVES: **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.

ACTIVITIES: Radioactive Arm competition
Radioactive Arm presentation

EVALUATION: Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

May 4

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.
- ACTIVITIES:** Radioactive Arm competition
Radioactive Arm presentation
End of the nine weeks cleanup
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

May 5

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.
- ACTIVITIES:** Radioactive Arm competition
Radioactive Arm presentation
End of the nine weeks cleanup
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present

Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

May 8

Technology Systems 8th Grade

- OBJECTIVES:** **Radioactive Arm Design Brief**
Students will be able to present, demonstrate, and explain their final design.
- ACTIVITIES:** Radioactive Arm competition
Radioactive Arm presentation
End of the nine weeks cleanup
- EVALUATION:** Informal assessment of daily group participation, progress, and cleanup duties
Formal evaluation of the complete engineering design journal
Formal evaluation of the successful testing of the finalized design and presentation
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.10E, 3.2.7A, 3.2.10D, 3.4.7C, 3.4.10C, 3.6.7C, 3.6.10C, 3.7.7E

May 9

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to identify the function of the Universal Systems Model.
Students will be able to identify the functions of inputs, processes, outputs, and feedback.
Students will be able to apply the Universal Systems Model to an automobile.
- ACTIVITIES:** Presentation - **Technological Systems: How They Work**
Discuss that system is a group of interrelated components or parts that collectively achieve a desired result and compare this to a sports team or a team/group activity
Identify components of a computer system
Compare and contrast natural and manmade systems
Identify the components of a home heating system and place them in a Universal System Model.

EVALUATION: Informal assessment of completion of the measuring practice guide and measuring review activity
Formal assessment of 17 point measuring test
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 10

Technology Systems 8th Grade

OBJECTIVES: Students will be able to compare and contrast human anatomical sub systems and man-made subsystems.
Students will be able to identify the parts of the universal systems graphic model.
Students will be able to apply the universal systems model concept to a home heating system.

ACTIVITIES: In groups of two - compare, contrast, & link human anatomical sub systems and man-made subsystems with the PowerPoint presentation
Note in Engineering Journals the universal systems graphic model
In groups of two - apply the universal systems model concept to a home heating system in the Engineering Journal

EVALUATION: Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the "Home Heating System" activity guide

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes

Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 11

Technology Systems 8th Grade

- OBJECTIVES:**
- Students will be able to follow specific directions.
 - Students will be able to construct a basic communication system using the provided materials.
 - Students will be able to use the scientific process to explore their communication system using the student guided questions.
 - Students will be able to list the pros and cons of their communication system in comparison to a standard telephone or cell phone.
 - Students will be able to create a Universal System Model Chart according to their communication system.
- ACTIVITIES:**
- In groups of two – students will build and explore a string & cup communication system
 - Students will use the guided questions from the activity PPT
 - Students will complete Engineering Journal Entry based on specific questions from the PPT
- EVALUATION:**
- Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
 - Formal assessment on the completion of the “Cup & String Communication” answers in the Engineering Journal
- ENRICHMENT:**
- Independent exploration and application of Universal Systems Model
- ACCOMMODATIONS:**
- Students that score less than 70% may practice and retake the measuring test at another time
 - Additional time to complete tasks / tests / quizzes / assignments
 - T /F Safety tests read to all students
 - Option for students to take formal assessments taken in the Learning Support room
 - Option for preferential seating
 - Option for individual guidance
 - Verbal presentation of reading material by aid when present
 - Additional time to complete assignments as necessary
 - Modified Tests & Quizzes
 - Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 12

Technology Systems 8th Grade

- OBJECTIVES:**
- CONTINUED:**
- Students will be able to follow specific directions.
 - Students will be able to construct a basic communication system using the provided materials.
 - Students will be able to use the scientific process to explore their communication system using the student guided questions.

Students will be able to list the pros and cons of their communication system in comparison to a standard telephone or cell phone.

Students will be able to create a Universal System Model Chart according to their communication system.

NEW: Students will be able to reflect from the activity that Natural and human-made objects are made up of parts / Systems are made of parts that work together / A system is made from INPUTS, PROCESSES, OUTPUTS, and FEEDBACK / Systems are used to accomplish a goal.
Students will be able to identify that systems are found in nature, and some are made by humans and be able to provide examples of each kind.

ACTIVITIES: **CONTINUED:** In groups of two – students will build and explore a string & cup communication system
Students will use the guided questions from the activity PPT
Students will complete Engineering Journal Entry based on specific questions from the PPT
NEW: Review of learning objectives from the “Cup & String Communication” activity
Student will participate in identifying systems that are found in nature and those that are manmade

EVALUATION: Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points
Formal assessment on the completion of the “Cup & String Communication” answers in the Engineering Journal

ENRICHMENT: Independent exploration and application of Universal Systems Model

ACCOMMODATIONS: Students that score less than 70% may practice and retake the measuring test at another time
Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science, Engineering, and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 15

Technology Systems 8th Grade

OBJECTIVES: Students will be able to identify and determine system inputs, processes, outputs, and feedback within a systems model.
Students will be able to use a variety of parts and a power source to create a basic communication system.
Students will be able to apply the systems model graphic to the communication system.

- ACTIVITIES:** In groups of two – student will use variety of parts and a power source to create a basic communication system and communicate in Morse code
Students will discuss and then apply the systems model graphic to the communication system that they developed
- EVALUATION:** Informal assessment of participation and completion of class activity
Completion of the “Hello Operator” design brief handout
- ENRICHMENT:** Independent exploration and application of the universal systems graphic model via communication
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.7A, 3.1.10A

May 16

Technology Systems 8th Grade

- OBJECTIVES:** CONTINUED: Students will be able to create a communication system to send a simple message
Students will be able to apply the parts of the universal systems graphic model to the created communication system
Students will be able to observe and identify the pros / cons with the given system
Students will be able to identify and apply the concept of sub systems to their communication system
- ACTIVITIES:** “Hello Operator” Design Brief: In groups of two – wire the communication system using the battery source, switch, wires, and doorbell
Complete the accompanying handout with directions and questions
- EVALUATION:** Informal assessment of participation and completion of class activities, groups participation, and note taking
Completion of the “Hello Operator” design brief handout
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating

Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 17

Technology Systems 8th Grade

OBJECTIVES: **CONTINUED:** Students will be able to create a communication system to send a simple message
Students will be able to apply the parts of the universal systems graphic model to the created communication system
Students will be able to observe and identify the pros / cons with the given system
Students will be able to identify and apply the concept of sub systems to their communication system

Students will be able to prepare for the Unit 1 test

ACTIVITIES: “Hello Operator” Design Brief: In groups of two – wire the communication system using the battery source, switch, wires, and doorbell
Complete the accompanying handout with directions and questions

Review Quiz Activity

EVALUATION: Informal assessment of participation and completion of class activities, groups participation, and note taking
Completion of the “Hello Operator” design brief handout

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 18

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prepare for the Unit 1 test on Friday
- ACTIVITIES:** Review Quiz Activity
Discussion Review
- EVALUATION:** Informal assessment of participation
Formal assessment of the Unit 1 test
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 19

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to complete the Unit 1 Test
Students will be able to anticipate Unit 3
- ACTIVITIES:** Unit 1 Test
Unit 3 Pre Test – No points
Review answers from the pretest
- EVALUATION:** Informal assessment of participation
Formal assessment of the Unit 1 test
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance

Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 22

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system
- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 23

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system

- ACTIVITIES:** Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity
- ENRICHMENT:** Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces
- PA STANDARDS for Science and Technology:** 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 24

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems can be connected, with the output of one system being the input to the next system
Students will be able to identify that sometimes system connections provide control of one system over another system.
Students will be able to compare and contrast different systems with different goals.
- ACTIVITIES:** Students will observe the music video, “This Too Shall Pass” by OK GO demonstrating intersystem connectivity and activation / control through energy transfer (Rube Goldberg Machine)
Students will develop Venn diagram a compare and contrast subsystem connections, interactions, and control from the music video and the coffee maker activity.
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance

Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 25

Technology Systems 8th Grade

OBJECTIVES: Students will be able to identify that a malfunction of any part of a system may affect the function and quality of the system.
Students will be able to list the consequences of specific component and system malfunction using the coffee maker and other items as examples.
Students will be able to identify that technological systems often interact with one another.
Students will be able to identify that different technologies involve different set of processes

ACTIVITIES: In pairs, students will list the consequences of specific component and system malfunction using the coffee maker and other items as examples.

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity

ENRICHMENT: Independent exploration and application of subsystems and their connections, interactions and control methods

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T / F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 26

Technology Systems 8th Grade

OBJECTIVES: Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system

ACTIVITIES: Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems

Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 29

**No School
Memorial Day**

May 30

Technology Systems 8th Grade

OBJECTIVES: Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems may be thought of as containing subsystems and as being a subsystem of a larger system

ACTIVITIES: Students will observe a coffee making process video and then list the inputs, processes, outputs, and feedback of the system, identify if it is an open or closed loop system and identify its possible subsystems
Students will use the website, <http://www.howstuffworks.com/coffee-maker.htm>
To answer questions concerning the systems contained and networking inside of a coffee maker

EVALUATION: Informal assessment of participation during video segment and small group activity
Formal assessment on the completion of the “Coffee Anyone?” activity

ENRICHMENT: Independent exploration and application of subsystems and the universal systems graphic model in relation to small household appliances

ACCOMMODATIONS: Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room

Option for preferential seating
Option for individual guidance
Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A

May 31

Technology Systems 8th Grade

- OBJECTIVES:** Students will be able to prove that systems are usually connected to other systems, both internally and externally.
Students will be able to identify that systems can be connected, with the output of one system being the input to the next system
Students will be able to identify that sometimes system connections provide control of one system over another system.
Students will be able to compare and contrast different systems with different goals.
- ACTIVITIES:** Students will observe the music video, “This Too Shall Pass” by OK GO demonstrating intersystem connectivity and activation / control through energy transfer (Rube Goldberg Machine)
Students will develop Venn diagram a compare and contrast subsystem connections, interactions, and control from the music video and the coffee maker activity.
- EVALUATION:** Informal assessment of participation during video segment and small group activity
Formal assessment of the Venn diagram activity
- ENRICHMENT:** Independent exploration and application of subsystems and their connections, interactions and control methods
- ACCOMMODATIONS:** Additional time to complete tasks / tests / quizzes / assignments
T /F Safety tests read to all students
Option for students to take formal assessments taken in the Learning Support room
Option for preferential seating
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Verbal presentation of reading material by aid when present
Additional time to complete assignments as necessary
Modified Tests & Quizzes
Breaking up larger assignments into smaller manageable pieces

PA STANDARDS for Science and Technology: 3.1.10A, 3.1.7E, 3.2.7A, 3.6.10B, 3.7.10A