ROCKWOOD
TECHNOLOGY & ENGINEERING

Energy & Power Systems
Lesson Plans Mr. Kush

August 29

Energy & Power Systems

OBJECTIVES: Students will be able to comply with the set expectations and procedures for this class.
Students will contemplate future job occupations and future education opportunities.

ACTIVITIES: Introduction & discussion of course
Procedure / Policy Handout
Distribute folder & Engineering Design Journal
Complete the occupation questionnaire

EVALUATION: Procedure / Policy / Student Expectation signature form is due by Friday 31st

ENRICHMENT: Independent exploration of Rockwood's Student Expectations"
Be Respectful
Be Prepared
Be On Time

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

PA STANDARDS for Science and Technology: N/A

August 30

Energy & Power Systems

OBJECTIVES: **DAY 1:** Student will be able to explore and then demonstrate how a circuit is a pathway that carries electricity from one end of a battery to another.
Students will identify that a chemical process in the battery creates a pressure known as voltage that pushes electricity forward whenever a complete pathway is present.
Students will discover that if the electrical pathway is broken at any point, electricity no longer flows through the circuit.
Students will be able to safely use a variety of tools and materials for the project challenge.

ACTIVITIES: **Handout – "Wire Loop Game"**
Challenge One – Students will use the battery, two wires, and buzzer to create a complete circuit to activate the buzzer

Challenge Two – Students will build the wire loop game.

http://www.instructables.com/id/Wire-Loop-Game/

EVALUATION: 20 Point assessment on the completion of the "Wire Loop Game" handout and informal assessment of completion building the circuit following specific directions
Formal assessment on the fit and function of the completed game activity
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent online exploration of continuous loop electronic games

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: 3.2.10A, 3.2.10D, 3.4.7B, 3.7.10B

August 31

Energy & Power Systems

OBJECTIVES: **CONTINUED DAY 2:**
Students will discover that if the electrical pathway is broken at any point, electricity no longer flows through the circuit.
Students will be able to safely use a variety of tools and materials for the project challenge.
Following specific directions, students will be able to construct the wire loop game.

ACTIVITIES: Challenge Two – Students will complete building the wire loop game.

http://www.instructables.com/id/Wire-Loop-Game/

EVALUATION: 20 Point assessment on the completion of the "Wire Loop Game" handout and informal assessment of completion building the circuit following specific directions
Formal assessment on the fit and function of the completed game activity
Procedure / Policy / Student Expectation signature form is due Friday
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent online exploration of continuous loop electronic games.

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: 3.2.10A, 3.2.10D, 3.4.7B, 3.7.10B

September 1

ENERGY & POWER SYSTEMS

OBJECTIVES:

CONTINUED DAY 3:
Students will discover that if the electrical pathway is broken at any point, electricity no longer flows through the circuit.
Students will be able to safely use a variety of tools and materials for the project challenge.
Following specific directions, students will be able to construct the wire loop game.

ACTIVITIES:

Challenge Two – Students will complete building the wire loop game.

http://www.instructables.com/id/Wire-Loop-Game/

EVALUATION:

20 Point assessment on the completion of the "Wire Loop Game" handout and informal assessment of completion building the circuit following specific directions
Formal assessment on the fit and function of the completed game activity
Procedure / Policy / Student Expectation signature form is due Friday
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT:

Independent online exploration of continuous loop electronic games.

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: 3.2.10A, 3.2.10D, 3.4.7B, 3.7.10B

September 5

ENERGY & POWER SYSTEMS

OBJECTIVES: Students will be able to identify the foundations of electrical history from the 6th century through the 1800.
Students will be able to distinguish between insulators and conductors.
Students will be able to explain the importance of static electricity's discovery and impact on electrical experimentation.

ACTIVITIES: Students will participate in notes discussion. Students will complete the fill in the blanks activity. "A Brief History of Electrical Discovery"

EVALUATION: Informal assessment of student participation and note taking.
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent online exploration of electrostatic generation.

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: 3.8.7B, 3.8.10B, 3.1.10E, 3.1.12E, 3.2.10A, 3.4.10B

September 6

ENERGY & POWER SYSTEMS

OBJECTIVES: Students will be able to identify the foundations of electrical history from 1800 to 1752.
Students will be able to explain the functioning of a voltaic pyle.
Students will be able to explain the myth of Ben Franklin's kite experiment.
Students will be able to identify modern dynamos.
Students will observe power from a generator.
Students will be able to compare and contrast a dynamo and a generator.

ACTIVITIES: Students will participate in notes discussion. Students will complete the fill in the blanks activity. "A Brief History of Electrical Discovery"
In groups, students will use a dynamo to produce electricity and measure its output with a multimeter.
In groups, students will use a generator to produce electricity and measure its output with a multimeter.
Students will observe the Ben Franklin MythBuster video segment on Franklin's kite experiment.

EVALUATION: Informal assessment of student participation and note taking.

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

ENRICHMENT: Independent online exploration of electrostatic generation.

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: 3.8.7B, 3.8.10B, 3.1.10E, 3.1.12E, 3.2.10A, 3.4.10B

September 7

ENERGY & POWER SYSTEMS

OBJECTIVES: Students will be able to define and identify energy.
Students will be able to identify seven types of energy forms.
Students will be able to discuss the transformation of energy from one form to another.
Students will be able to describe the process of electrical power network and potential problems with the system (EMP, solar flares, terrorism, rolling brown outs, etc.)
Students will be able to list eleven types of power sources.
Students will be able to compare and contrast the United State's power consumption in comparison to France.

ACTIVITIES: Students will participate in notes discussion. Students will complete the fill in the blanks activity. "*What*, *where*, *when*, *why*, and *how* are energy and power systems"
Students will discuss concerns to the electrical power network including EMP, solar flares, terrorism, rolling brown outs, etc.

EVALUATION: Informal assessment of student participation and note taking.
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent online exploration of power sources.

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: 3.8.7B, 3.8.10B, 3.1.10E, 3.1.12E, 3.2.10A, 3.4.10B

September 8

ENERGY & POWER SYSTEMS

OBJECTIVES: Students will be able to identify electrical usage in their homes.
Students will be able to identify and calculate the electrical consumption of light bulbs in their homes.
Students will be able to read a home electric meter.

ACTIVITIES: Students will participate in an electrical consumption discussion.
Students will discuss concerns about the electrical power network including EMP, solar flares, terrorism, rolling brown outs, etc.
Students will complete the "Electrical Use in the Home" activity handout.

EVALUATION: Informal assessment of student participation and note-taking.
Informal assessment of participation and completion of class activities, group participation, and cleanup activities for participation points

ENRICHMENT: Independent online exploration of power sources.

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 11

Energy & Power Systems

OBJECTIVES: Student groups will be able to present their student-selected energy & power topics using PowerPoint. Presentations are based on directed Internet research and the 5 W How questions.

ACTIVITIES: Small group PPT presentations based on their student-selected topics

EVALUATION: Formal evaluation of presentation based on the rubric for the activity. Students had access to the assessment rubric from the beginning of the activity.

ENRICHMENT: Independent exploration of energy and power system sources

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 12

Energy & Power Systems

OBJECTIVES: Student groups will be able to present their student-selected energy & power topics using PowerPoint. Presentations are based on directed Internet research and the 5 W How questions.

ACTIVITIES: Small group PPT presentations based on their student-selected topics

EVALUATION: Formal evaluation of presentation based on the rubric for the activity. Students had access to the assessment rubric from the beginning of the activity.

ENRICHMENT: Independent exploration of energy and power system sources

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 13

Energy & Power Systems

OBJECTIVES: **CONTINUE** Student groups will be able to present their student-selected energy & power topics using PowerPoint. Presentations are based on directed Internet research and the 5 W How questions.

ACTIVITIES: Small group PPT presentations based on their student-selected topics

EVALUATION: Formal evaluation of presentation based on the rubric for the activity. Students had access to the assessment rubric from the beginning of the activity.

ENRICHMENT: Independent exploration of energy and power system sources

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 14

Energy & Power Systems

OBJECTIVES: **CONTINUE / COMPLETE** Student groups will be able to present their student-selected energy & power topics using PowerPoint. Presentations are based on directed Internet research and the 5 W How questions.

ACTIVITIES: Small group PPT presentations based on their student-selected topics

EVALUATION: Formal evaluation of presentation based on the rubric for the activity. Students had access to the assessment rubric from the beginning of the activity.

ENRICHMENT: Independent exploration of energy and power system sources

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 15

Energy & Power Systems

OBJECTIVES: COMPLETION / CONTINUED: Student groups will be able to present their student-selected energy & power topics using PowerPoint. Presentations are based on directed Internet research and the 5 W How questions. Students will be able to apply presentation concepts and facts to complete the crossword puzzle review / test.

ACTIVITIES: Small group PPT presentations based on their student-selected topics
Completion of the crossword puzzle review / unit test

EVALUATION: Formal evaluation of presentation based on the rubric for the activity. Students had access to the assessment rubric from the beginning of the activity.

Formal evaluation of the crossword puzzle / unit test

ENRICHMENT: Independent exploration of energy and power system sources

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 18

Energy & Power Systems

OBJECTIVES: **CONTINUED:** Student groups will be able to present their student-selected energy & power topics using PowerPoint. Presentations are based on directed Internet research and the 5 W How questions.

ACTIVITIES: Small group PPT presentations based on their student-selected topics

EVALUATION: Formal evaluation of presentation based on the rubric for the activity. Students had access to the assessment rubric from the beginning of the activity.

ENRICHMENT: Independent exploration of energy and power system sources

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 19

Energy & Power Systems

OBJECTIVES: **CONTINUED:** Student groups will be able to present their student-selected energy & power topics using PowerPoint. Presentations are based on directed Internet research and the 5 W

How questions. Students will be able to apply presentation concepts and facts to complete the crossword puzzle review / test.

ACTIVITIES: Small group PPT presentations based on their student selected topics
Completion of the crossword puzzle review / unit test

EVALUATION: Formal evaluation of presentation based on the rubric for the activity. Students had access to the assessment rubric from the beginning of the activity.
Formal evaluation of the crossword puzzle / unit test

ENRICHMENT: Independent exploration of energy and power system sources

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 20

Energy & Power Systems

OBJECTIVES: Students will be able to identify solder, its basic composition, and its function. Students will be able to analyze basic rules for soldering, using a heat sink, soldering advice for heat-sensitive components, safety precautions, and preparing the soldering iron.

ACTIVITIES: Using the handout "Soldering Guide" students will use the website http://www.kpsec.freeuk.com/solder.htm to answer questions from the text and diagrams.

EVALUATION: Formal evaluation on the completion of the handout

ENRICHMENT: Independent exploration of soldering technique and safety

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 21

Energy & Power Systems

OBJECTIVES: Students will be able to identify solder, its basic composition, and its function. Students will be able to analyze basic rules for soldering, using a heat sink, soldering advice for heat-sensitive components, safety precautions, and preparing the soldering iron.

ACTIVITIES: Using the handout "Soldering Guide" students will use the website http://www.kpsec.freeuk.com/solder.htm to answer questions from the text and diagrams.

EVALUATION: Formal evaluation on the completion of the handout

ENRICHMENT: Independent exploration of soldering technique and safety

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 22

Energy & Power Systems

OBJECTIVES: Students will be able to identify solder, its basic composition, and its function. Students will be able to analyze basic rules for soldering, using a heat sink, soldering advice for heat-sensitive components, safety precautions, and preparing the soldering iron.

ACTIVITIES: Using the handout "Soldering Guide" students will use the website http://www.kpsec.freeuk.com/solder.htm to answer questions from the text and diagrams.

EVALUATION: Formal evaluation on the completion of the handout

ENRICHMENT: Independent exploration of soldering technique and safety

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 25

Energy & Power Systems

OBJECTIVES: Students will be able to observe the application of soldering and desoldering techniques.

ACTIVITIES: Video – Soldering & Desoldering Make Magazine – 20 minutes
Video – Maker to Maker – Soldering on Make Television
http://blog.makezine.com/archive/2011/01/skill-set-soldering.html

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

ENRICHMENT: Independent exploration of soldering technique and safety

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 26

Energy & Power Systems

OBJECTIVES: Students will be able to identify and label the function, symbol, and terminology for basic electronic components.

ACTIVITIES: Handout – Identifying Components and Functions
Students will use selected sites on the Internet to identify and label the function, symbol, and terminology for basic electronic components
https://electronicsclub.info/circuitsymbols.htm

EVALUATION: Formal assessment on completion of the Identifying Components and Functions handout
Informal assessment of Internet use

ENRICHMENT: Independent exploration of electronic components

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 27

Energy & Power Systems

OBJECTIVES: **CONTINUED:** Students will be able to identify and label the function, symbol, and terminology for basic electronic components.

ACTIVITIES: Handout – Identifying Components and Functions
Students will use selected sites on the Internet to identify and label the function, symbol, and terminology for basic electronic components
https://electronicsclub.info/circuitsymbols.htm

EVALUATION: Formal assessment on completion of the Identifying Components and Functions handout
Informal assessment of Internet use

ENRICHMENT: Independent exploration of electronic components

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 28

Energy & Power Systems

OBJECTIVES: Students will be able to identify and label the function of a resistor. Students will be able to calculate the value of a resistor using the color codes. Students will be able to calculate the tolerance of a resistor.

ACTIVITIES: Handout –" Solder Practice & Police Siren Kit I"
Students will take inventory for the solder practice kit
Students will use the kit guide to answer questions from the handout
Students will use the website http://www.kpsec.freeuk.com/components/resist.htm to answer resistor questions.

EVALUATION: Formal assessment on completion of the "Solder Practice & Police Siren Kit I" handout
Informal assessment of Internet use

ENRICHMENT: Independent exploration of resistors and calculating their values

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

September 29

Energy & Power Systems

OBJECTIVES: CONTINUED: Students will be able to identify and label the function of a resistor. Students will be able to calculate the value of a resistor using the color codes. Students will be able to calculate the tolerance of a resistor.

ACTIVITIES: Handout –" Solder Practice & Police Siren Kit I"
Students will take inventory for the solder practice kit
Students will use the kit guide to answer questions from the handout
Students will use the website http://www.kpsec.freeuk.com/components/resist.htm to answer resistor questions.

EVALUATION: Formal assessment on completion of the "Solder Practice & Police Siren Kit I" handout
Informal assessment of Internet use

ENRICHMENT: Independent exploration of resistors and calculating their values

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 2

Energy & Power Systems

OBJECTIVES: Students will be able to identify electronic components (and calculate some resistance values) for inventory of Kit #1.
Students will be able to use proper pre-soldering techniques for tinning the soldering iron and sponge preparation.
Students will be able to use the seven basic steps for creating a solid solder connection.
Students will be able to use a heat sink, mini pliers, and a wire stripper.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Inventory the components in the practice kit
Read pages 7-14 on Introduction to Soldering, Making a Soldering Connection, Heat Sinking, Hook-Up Wire Preparation, and Types of Components
Remove and adjust the soldering tip
Prepare the sponge and tin the soldering tip

EVALUATION: Formal assessment on completion of the "Solder Practice & Police Siren Kit I" handout
Informal assessment of class participation and following directions

ENRICHMENT: Independent exploration of basic soldering techniques

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 3

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to properly use a heat sink, mini pliers, and a wire stripper.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Page 16 - Inventory the components in the practice kit (2nd time)
Solder components in steps 14-33
Assessment of soldering technique on the completion of #21 A, B, C, D 12 points (3pts each)

EVALUATION: Formal assessment on completion of the "Solder Practice & Police Siren Kit I" handout
Informal assessment of class participation and following directions
Formal assessment of soldering technique on the
completion of #21 A, B, C, D 12 points (3pts each)

ENRICHMENT: Independent exploration of basic soldering techniques

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 4

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to properly use a heat sink, mini pliers, and a wire stripper.
Students will be able to properly and carefully mount an IC socket

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Solder components in steps #34 - 53
Assessment of soldering technique on the completion of #44 IC Socket – 24 points (3 points each)

EVALUATION: Formal assessment on completion of the "Solder Practice & Police Siren Kit I" handout
Informal assessment of class participation and following directions
Formal assessment of soldering technique on the
completion of #44 IC Socket – 24 points (3 points each)

ENRICHMENT: Independent exploration of basic soldering techniques

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 5

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to properly use a heat sink, mini pliers, and a wire stripper.
Students will be able to use the copper wire wick and solder sucker to properly and cleanly desolder components.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Read pages 21-22 on Desoldering Components
Desolder components using the solder sucker and wick according
to the direction on Experience 2 pages 23 – 20 point assessment when completed
Practice Quiz – Use the booklet to answer the 10 quiz questions on pages 23-24

EVALUATION: Formal assessment on completion of the "Solder Practice & Police Siren Kit I" handout
Informal assessment of class participation and following directions

Formal assessment of desoldering techniques on Experience 2
pages 23 – 20 point assessment when completed

ENRICHMENT: Independent exploration of basic desoldering soldering techniques

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 6

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to properly use a heat sink, mini pliers, and a wire stripper.
Students will be able to use the copper wire wick and solder sucker to properly and cleanly desolder components.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Read pages 21-22 on Desoldering Components
Desolder components using the solder sucker and wick according
to the direction on Experience 2 pages 23 – 20 point assessment when completed
Practice Quiz – Use the booklet to answer the 10 quiz questions on pages 23-24

EVALUATION: Formal assessment on completion of the "Solder Practice & Police Siren Kit I" handout
Informal assessment of class participation and following directions
Formal assessment of desoldering techniques on Experience 2
pages 23 – 20 point assessment when completed

ENRICHMENT: Independent exploration of basic desoldering soldering techniques

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 10

Energy & Power Systems

OBJECTIVES: Students will be able to successfully complete the soldering / desoldering assessment.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Practice Quiz –10 quiz questions based on pages 23-24

EVALUATION: Formal assessment of desoldering techniques on Experience 2
pages 23 – 20 point assessment when completed

ENRICHMENT: Independent exploration of basic desoldering soldering techniques

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 11

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to properly use a heat sink, mini pliers, and a wire stripper.
Students will be able to use the copper wire wick and solder sucker to properly and cleanly desolder components as necessary.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Read page 25 "Tools & Materials" "Soldering" "Construction Hints"
Experience 2 page 25 Police Siren
Solder components in steps #1 – 5
Cutoff excess leads from components in steps #1-5

EVALUATION: Informal assessment of class participation and following directions
Formal assessment of completed project

ENRICHMENT: Independent exploration of transistors and 555 timer IC to create a two-tone oscillating siren and flashing lights

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 12

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to properly use a heat sink, mini pliers, and a wire stripper.
Students will be able to use the copper wire wick and solder sucker to properly and cleanly desolder components as necessary.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Experience 2 page 25 Police Siren
Solder components in steps #6-13
Cutoff excess leads from components in steps #1-5

EVALUATION: Informal assessment of class participation and following directions
Formal assessment of completed project

ENRICHMENT: Independent exploration of transistors and 555 timer IC to create a two-tone oscillating siren and flashing lights

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 13

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to properly use a heat sink, mini pliers, and a wire stripper.
Students will be able to use the copper wire wick and solder sucker to properly and cleanly desolder components as necessary.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"

Experience 2 page 25 Police Siren
Solder components in steps #6-13
Cutoff excess leads from components in steps #1-5

EVALUATION: Informal assessment of class participation and following directions
Formal assessment of completed project

ENRICHMENT: Independent exploration of transistors and 555 timer IC to create a two-tone oscillating siren and flashing lights

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 16

Energy & Power Systems

OBJECTIVES: Students will be able to test their Police Siren for functionality.
Students will be able to us the problem-solving process (process of elimination) to troubleshoot problems.
Students will be able to analyze the theory of operation for the Police Siren.
Students will be able to analyze the wiring schematic to locate components and functions.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Experience 2 page 27 Police Siren
Check for correct operation
Read "Troubleshooting" guide on page 28
Read "Theory of Operation" on page 27
Examine the wiring schematic on page 28

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment of completed project

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 17

Energy & Power Systems

OBJECTIVES: Students will be able to analyze the wiring schematic to locate components and label their functions.
Students will be able to correctly answer the questions from Experience 1 & 2 for assessment.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Experience 2 page 28 – Wiring Schematic – Complete the identification and function handout
Experience 1 & 2 Test

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment of completed project & Experience 1 & 2 test

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 18

Energy & Power Systems

OBJECTIVES: Students will be able to analyze the wiring schematic to locate components and label their functions.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Experience 2 page 28 – Wiring Schematic – Complete the identification and function handout

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment of completed project & Experience 1 & 2 test

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 19

Energy & Power Systems

OBJECTIVES: Students will be able to analyze the wiring schematic to locate components and label their functions.

ACTIVITIES: Guide: "Solder Practice & Police Siren Kit I Booklet"
Experience 2 page 28 – Wiring Schematic – Complete the identification and function handout

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment of completed project & Experience 1 & 2 test

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 20

Energy & Power Systems

OBJECTIVES: Students will be able to recall and respond content and concepts from Kit 1.

ACTIVITIES: Completion of flash cards: Electronic Component Functions, Symbols, "Looks Like"
Review Activity – Students will review the flashcards with each other for proficiency

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 23

Energy & Power Systems

OBJECTIVES: Students will be able to recall and respond content and concepts from Kit 1.

ACTIVITIES: Review Activity – Jeopardy based Kit 1 concepts and component knowledge
Website http://people.sinclair.edu/nickreeder/flashgames.htm
resistor calculation review game

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 24

Energy & Power Systems

OBJECTIVES: Students will be able to recall and respond content and concepts from Kit 1

ACTIVITIES: Review Activity - Jeopardy

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment of completed project & Experience 1 & 2 test

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 25

Energy & Power Systems

OBJECTIVES: Students will be able to recall and respond content and concepts from Kit 1.

ACTIVITIES: Kit I / Unit 1 Test

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 26

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the pre activities from Kit #302

ACTIVITIES: Kit #302 pre activities

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 27

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the activities from Kit #302

ACTIVITIES: Kit #302 pre activities

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 30

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the build activity from Kit #302

ACTIVITIES: Kit #302 build activity

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

October 31

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the build activity from Kit #302

ACTIVITIES: Kit #302 build activity

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 1

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the build activity from Kit #302

ACTIVITIES: Kit #302 build activity

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 2

Energy & Power Systems

OBJECTIVES: Students will be able to test their electronic circuits for functionality.
Students will be able to us the problem-solving process (process of elimination) to troubleshoot for problems.
Students will be able to analyze the theory of operation for the European Siren.
Students will be able to analyze the wiring schematic to locate components and functions.

ACTIVITIES: Kit #302 build activity troubleshooting
Submit guide for grading of quiz and activities

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 6

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the European Siren pre build activities from Kit #303

ACTIVITIES: Kit #303 European Siren pre build activities

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 7

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the European Siren pre build activities from Kit #303

ACTIVITIES: Kit #303 European Siren pre build activities

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 8

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the European Siren activity from Kit #303

ACTIVITIES: Kit #303 European Siren activity

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 9

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the European Siren activity from Kit #303

ACTIVITIES: Kit #303 European Siren activity

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 10

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the European Siren activity from Kit #303

ACTIVITIES: Kit #303 European Siren activity

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 14

Energy & Power Systems

OBJECTIVES: Students will be able to test their European Siren for functionality.
Students will be able to us the problem solving process (process of elimination) to troubleshoot for problems.
Students will be able to analyze the theory of operation for the European Siren.
Students will be able to analyze the wiring schematic to locate components and functions.

ACTIVITIES: Kit #303 European Siren activity

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 15

Energy & Power Systems

OBJECTIVES: **Students will be able to inventory KIT# 304 "Ohms Law"**
Student will be able to recall basic principles of electricity, atoms, electrons, protons, neutrons, insulators, and conductors.
Students will be able to identify and define electrical conductance and resistance.
Students will be able to identify the formula for resistance and conductance.
Students will be able to measure, and calculate conductance in Siemens.
Students will be able to create a resistor and measure its resistance using a multimeter.
Students will be able to identify and use the measurement prefixes of mega, kilo, milli, micro.

ACTIVITIES: Guide: Kit #304 "Ohm's Law"
Pages 1-7 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting

ENRICHMENT: Independent exploration of electrical conductance and resistance

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 16

Energy & Power Systems

OBJECTIVES: Student will be able to determine the difference between electrical voltage, current, and resistance.
Students will be able to use the formula E / I * R
Students will be able to quantify that voltage and resistance are directly proportional to each other and that voltage and current are directly proportional to each other.
Students will be able to use a bread board and a multimeter to measure current flowing through a resistor and voltage across the terminals of the same resistor and then calculate the resistance value of the resistor.

ACTIVITIES: Guide: Kit #304 "Ohm's Law"
Pages 8 - 15 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completion of the breadboard activity and the corresponding answers in the booklet.

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 17

Energy & Power Systems

OBJECTIVES: Students will be able to identify and define a watt and joule.
Students will be able to use the formula Joule = Watts x Seconds J=WxT
Students will be able to use electrical measurement prefixes when calculating values.
Students will be able to recall and research for information for the quiz.

ACTIVITIES: Guide: Kit #304 "Ohm's Law"
Pages 15 - 17 Read and complete the activities.
Complete and submit the quiz on page 17-18 20 points 2 points each question

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completed quiz 20 points 2 points each question

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 20

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the Oscillating Siren activity from Kit #304

ACTIVITIES: Kit #304 Oscillating Siren activity
Pages 18 - 21 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 21

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the European Siren activity from Kit #304

Students will be able to test their European Siren for functionality.
Students will be able to us the problem solving process (process of elimination)
to troubleshoot for problems.
Students will be able to analyze the theory of operation for the European Siren.
Students will be able to analyze the wiring schematic to locate components and functions.

ACTIVITIES: Kit #304 Oscillating Siren activity
Pages 18 - 21 Read and complete the activities.
Test project for proper operation and submit for grading.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 22

Energy & Power Systems

OBJECTIVES: **Students will be able to inventory KIT# 305 "Series and Parallel Circuits"**
Student will be able to recall basic principles of circuits.
Students will be able to identify and define series circuits, parallel circuits, and series-parallel circuits.
Students will be able to mathematically find the total resistance in a given series circuit.
Students will be able to use Ohm's law and Kirchhoff's Law.
Students will be able to build a basic series circuit and use a multimeter to read the voltages at the resistors.

ACTIVITIES: Guide: Kit #305 "Series and Parallel Circuits"
Parts and component inventory
Read Pages 3-10
Complete Experience 1 on pages 10-14

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting

ENRICHMENT: Independent exploration of series and parallel circuits

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 29

Energy & Power Systems

OBJECTIVES: Students will be able to mathematically find the total resistance in a given parallel circuit.
Students will be able to use Ohm's law and Kirchhoff's Law.
Students will be able to build a basic parallel circuit and use a multimeter to read the voltages at the resistors.

ACTIVITIES: Guide: Kit #305 "Series and Parallel Circuits"
Read Pages 14-15
Complete Experience 2 on pages 15-20

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting

ENRICHMENT: Independent exploration of series and parallel circuits

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

November 30

Energy & Power Systems

OBJECTIVES: Students will be able to mathematically find the total resistance in a given series-parallel circuit.
Students will be able to use Ohm's law and Kirchhoff's Law.
Students will be able to build a basic series-parallel circuit and use a multimeter to read the voltages at the resistors.
Students will be able to mathematically find the total resistance in a given balanced bridge circuit.
Students will be able to recall and research information for the quiz.

ACTIVITIES: Guide: Kit #305 "Series and Parallel Circuits"
Read Pages 20-23
Complete and submit the quiz on pages 24-25 20 points 2 points for each question

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completed quiz 20 points 2 points for each question

ENRICHMENT: Independent exploration of series and parallel circuits

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 1

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the Battery Tester activity from Kit #305

ACTIVITIES: Kit #305 Battery Tester
Pages 25 - 28 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 4

Energy & Power Systems

OBJECTIVES: **CONTINUED**: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the Battery Tester activity from Kit #305

ACTIVITIES: Kit #305 Battery Tester
Pages 25 - 28 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points

Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 5

Energy & Power Systems

OBJECTIVES: **CONTINUED**: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the Battery Tester activity from Kit #305

ACTIVITIES: Kit #305 Battery Tester
Pages 25 - 28 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 6

Energy & Power Systems

OBJECTIVES: Students will be able to use the laser engraver to process the holes and box identification.
Students will be able to use the laser engraver to process the holes for the aluminum lid.
Students will be able to use the drill press to drill holes in the aluminum lid.

ACTIVITIES: Kit #305 Battery Tester

Laser engrave holes and box identification with the fixture and holes for the aluminum lid.
Use the drill press and fixture to drill holes in the aluminum lid.
Pages 25 - 28 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 7

Energy & Power Systems

OBJECTIVES: Students will be able to use the laser engraver to process the holes and box identification.
Students will be able to use the laser engraver to process the holes for the aluminum lid.
Students will be able to use the drill press to drill holes in the aluminum lid.

ACTIVITIES: Kit #305 Battery Tester
Laser engrave holes and box identification with the fixture and holes for the aluminum lid.
Use the drill press and fixture to drill holes in the aluminum lid.
Pages 25 - 28 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 8

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the Batter Tester activity from Kit #305

Students will be able to test their Battery Tester for functionality.
Students will be able to use the problem-solving process (process of elimination) to troubleshoot for problems.
Students will be able to analyze the theory of operation for the European Siren.
Students will be able to analyze the wiring schematic to locate components and functions.

ACTIVITIES: Kit #305 Battery Tester
Pages 28 - 30 Read and complete the activities.
Test the project for proper operation and submit for grading.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 11

Energy & Power Systems

OBJECTIVES: **Students will be able to inventory KIT# 306 "Flashing LEDs"**
Students will be able to identify and define diodes, semiconductor material and diode making.
Students will be able to identify and explain the difference between reverse biased, forward biased diodes.
Students will be able to identify the polarity of a diode's symbol and direction of current flow.
Students will be able to identify the bias of a diode in a circuit.

ACTIVITIES: Guide: Kit #306 "Diodes"
Pages 1-8 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting

ENRICHMENT: Independent exploration of electrical conductance and resistance

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 12

Energy & Power Systems

OBJECTIVES: Student will be able to complete Experience 1: Diode using the breadboard.
Students will be able to calculate V_D, V_R, I, circuit current.
Students will be able to use the multi meter to measure the voltage across the diode, resistor, circuit current and compare the calculated values

ACTIVITIES: Guide: Kit #306 "Diodes"
Pages 8 - 15 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completion of the breadboard activity and the corresponding answers in the booklet.

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 13

Energy & Power Systems

OBJECTIVES: Students will be able to identify diodes used to chance AC to DC power.
Students will be able to identify the function of a diode rectifier and half-wave rectifier circuit
Students will be able to identify and measure diode characteristics.
Students will be able to use the formula for finding the value of the current limiting resistor for a LED

ACTIVITIES: Guide: Kit #306 "Diodes"
Experience 2: Light Emitting Diode
Pages 15 - 23 Read and complete the activities.
Complete and submit the quiz on page 22-23 20 points 2 points each question

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completed quiz 20 points 2 points each question

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 14

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the Flashing LED activity from Kit #306

ACTIVITIES: Guide: Kit #306 "Diodes"
Pages 24-27 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 15

Energy & Power Systems

OBJECTIVES: **CONTINUED**: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the Flashing LED activity from Kit #306

ACTIVITIES: Guide: Kit #306 "Diodes"
Pages 24-27 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 18

Energy & Power Systems

OBJECTIVES: **CONTINUED**: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the Flashing LED activity from Kit #306

ACTIVITIES: Guide: Kit #306 "Diodes"
Pages 24-27 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 19

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the Flashing LED activity from Kit #306

Students will be able to test their Flashing LEDs for functionality.
Students will be able to us the problem solving process (process of elimination) to troubleshoot for problems.
Students will be able to analyze the theory of operation for the European Siren.
Students will be able to analyze the wiring schematic to locate components and functions.

ACTIVITIES: Guide: Kit #306 "Diodes"
Pages 18 - 21 Read and complete the activities.
Test project for proper operation and submit for grading.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 20

Energy & Power Systems

OBJECTIVES: **Students will be able to inventory KIT# 307 "Police Siren and Morse Code"**
Students will be able to identify the history of transistors as a semiconductor used for amplification and switching,

Students will be able to identify and explain the emitter, base, and collector's function in a transistor
Students will be able to identify the polarity and direction of current flow for a NPN and PNP transistor.
Students will be able to identify how transistors function and identify the formula for beta: the ratio of current carries flowing in the collector to the current carriers flowing in the base

ACTIVITIES: Guide: Kit #307 "Transistors"
Pages 1-7 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting

ENRICHMENT: Independent exploration of electrical conductance and resistance

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 21

Energy & Power Systems

OBJECTIVES: Students will be able to test NPN and PNP transistors using a digital multimeter.
Students will be able to complete Experience 1: Testing a Transistor using the breadboard.

ACTIVITIES: Guide: Kit #307 "Transistors"
Experience 1: Testing a Transistor
Pages 7 - 11 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completion of the breadboard activity and the corresponding answers in the booklet.

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

December 22

Energy & Power Systems

OBJECTIVES: Students will be able to identify transistors as a switch of low to high signals
Students will be able to calculate the collector current by multiplying the base current times beta.
Students will be able to complete Experience 2: The Transistor Switch using the breadboard.
Students will be able to measure the input voltage, input current, output voltage, and input current using a digital multimeter.

ACTIVITIES: Guide: Kit #307 "Transistors"
Experience 2: The Transistor Switch
Pages 11 - 17 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completed quiz 20 points 2 points each question

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 3

Energy & Power Systems

OBJECTIVES: Students will be able to identify the three ways a transistor can function
Students will be able to identify the cutoff functioning as an open switch
Students will be able to identify the transistor in saturation functioning as a closed switch
Students will be able to identify haw a transistor can be biased to set a steady-state level of DC voltages and currents.
Students will be able to identify types of transistors.
Students will be able to use the laser engraver to process plastic for the project box

ACTIVITIES: Guide: Kit #307 "Transistors"
Pages 17 - 20 Read and complete the activities.
Complete and submit the quiz on page 20-22 20 points 2 points each question
Laser engrave plastic for the project box

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completed quiz 20 points 2 points each question

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 4

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the KIT# 307 "Police Siren and Morse Code"
Students will be able to use the laser engraver to process plastic for the project box.

ACTIVITIES: Guide: Kit #307 "Transistors"
Pages 22-26 Read and complete the activities.
Laser engrave plastic for the project box

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 5

Energy & Power Systems

OBJECTIVES: **CONTINUED**: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the KIT# 307 "Police Siren and Morse Code"
Students will be able to use the laser engraver to process plastic for the project box.

ACTIVITIES: Guide: Kit #307 "Transistors"
Pages 22-26 Read and complete the activities.
Laser engrave plastic for the project box

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 8

Energy & Power Systems

OBJECTIVES: **CONTINUED**: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the KIT# 307 "Police Siren and Morse Code"
Students will be able to use the laser engraver to process plastic for the project box.

ACTIVITIES: Guide: Kit #307 "Transistors"
Pages 22-26 Read and complete the activities.
Laser engrave plastic for the project box

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 9

Energy & Power Systems

OBJECTIVES: Students will be able to safely and accurately assemble the project box from their laser engraved plastic pieces.
Students will be able to use the laser engraver to process plastic for the project box.

ACTIVITIES: Guide: Kit #307 "Transistors"
Assemble the project box using super glue and masking tape.
Laser engrave plastic for the project box

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 10

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to assemble the electronic kit into the completed project box
Students will be able to complete the KIT# 307 "Police Siren and Morse Code"

Students will be able to test their KIT# 307 "Police Siren and Morse Code "for functionality.
Students will be able to us the problem solving process (process of elimination)
to troubleshoot for problems.
Students will be able to analyze the theory of operation for the "Police Siren and Morse Code"
Students will be able to analyze the wiring schematic to locate components and functions.

ACTIVITIES: Guide: Kit #307 "Transistors"
Test project for proper operation and submit for grading.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 11

Energy & Power Systems

OBJECTIVES: **Students will be able to inventory KIT# 308 "Blinking Eyes"**
Students will be able to identify the history of capacitors.
Students will be able to identify and explain how capacitors work while reviewing basic principles of electricity.
Students will be able to identify the function of the insulating material: dielectric
Students will be able to identify the function of charging and discharging states in a capacitor

ACTIVITIES: Guide: Kit #308 "Capacitance and Capacitors"
Pages 1-6 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting

ENRICHMENT: Independent exploration of electrical conductance and resistance

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 12

Energy & Power Systems

OBJECTIVES: Students will be able to use a breadboard to test the function of a capacitor to store and release energy.
Student will be able to complete Experience 1: Storing Electrical Energy.
Students will be able to identify a coulomb as a unit of electrical charge and farad as a measure of capacitance.
Students will be able to use a formula to calculate for capacitance, coulombs, and volts.

ACTIVITIES: Guide: Kit #308 "Capacitance and Capacitors"
Experience 1: Testing a Transistor
Pages 7 - 12 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completion of the breadboard activity and the corresponding answers in the booklet.

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 16

Energy & Power Systems

OBJECTIVES: Students will be able to identify charging a capacitor marked with time constants.
Students will be able to calculate TC=RxC
Students will be able to explore RC time constant
Students will be able to complete Experience 2: RC Time Constant using the breadboard.
Students will be able to measure voltage and time using a stopwatch and digital multimeter.

ACTIVITIES: Guide: Kit #308 "Capacitance and Capacitors"
Experience 2: RC Time Constant
Pages 13 - 20 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completed quiz 20 points 2 points each question

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 17

Energy & Power Systems

OBJECTIVES: Students will be able to explore different ways that capacitors are used in practical circuits
Students will be able to identify types of capacitors.

ACTIVITIES: Guide: Kit #308 "Capacitance and Capacitors"
Pages 20 - 24 Read and complete the activities.
Complete and submit the quiz on page 23-24 20 points 2 points each question

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal assessment on the completed quiz 20 points 2 points each question

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 18

Energy & Power Systems

OBJECTIVES: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the KIT# 308 "Blinking Eyes"

ACTIVITIES: Guide: Kit #308 "Capacitance and Capacitors"
Pages 25-29 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A

January 19

Energy & Power Systems

OBJECTIVES: **CONTINUED**: Students will be able to read and follow specific directions.
Students will be able to properly use the seven basic steps for creating a solid solder connection.
Students will be able to complete the KIT# 308 "Blinking Eyes"

ACTIVITIES: Guide: Kit #308 "Capacitance and Capacitors"
Pages 25-29 Read and complete the activities.

EVALUATION: Informal assessment of class participation, following directions, and troubleshooting
Formal rubric assessment on the soldering quality of the project - 30 points
Formal assessment on the functionality of the project - 30 points

ENRICHMENT: Independent exploration of identifying electrical components on a wiring schematic

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: 3.1.4A, 3.1.7A, 3.2.4A, 3.7.4A, 3.7.7A, 3.7.7D, 3.7.10A