MODIFIED UBD LESSON PLAN

COURSE: Foudnations of Technology		
UNIT: Basic Electricity	**EXERCISE:** Parallel Circuits	**TIME FRAME:** 1 - 2 Hours

PREPARATION: *Summary of "to do's" that the teacher should understand and prepare before bringing this lesson to the classroom.*

Information:
Before starting this exercise, students should have an understanding of material covered in:

- ✓ Presentation: Ohm's Law
- ✓ Video: Electricity – Series – Parallel Circuits
- ✓ Video: Simple Circuits
- ✓ Presentation: Series Circuits

Teachers will need to ensure that the proper supplies are available for students to build their solutions.

Materials:
- NASCO electrical supply kit
- Batteries

Tools:
- Internet

SAFETY: *Summary of safety strategies in the lesson.*

Shock: Students will be working with electricity. Extra care should be observed when working with electricity.

S1 DESIRED RESULTS:

ESTABLISHED GOALS:

Problem Solving Techniques and Applications Standards:

Teachers should use the STEM Academy Standards Correlation System available in the STEM Connections area of a unit to extract specific standards and insert these standards here.

TRANSFER:

Students will be able to independently use their learning to…

- Identify the basic characteristics of parallel and compound circuits;
- Verify the characteristics of several circuits.

MEANING:

UNDERSTANDINGS
Students will understand that...

- With parallel circuits, the electricity has multiple paths to take;
- Current is held constant in a parallel circuit.

ESSENTIAL QUESTIONS
Students will keep considering...

- Other circuit types;
- Characteristics of circuits that combine the different types of circuits.

ACQUISITION OF KNOWLEDGE AND SKILL:

Students will know...

- The steps necessary in order to handle electricity safely;
- The various characteristics of parallel circuits.

Students will be skilled at...

- Constructing parallel circuits to specific specifications;
- Handling electricity in circuits safely.

S2 EVIDENCE:

EVALUATIVE CRITERIA:

- Outcome of assignment
- Correct answers

- Outcome of assignment
- Correct answers

- Correct answers

ASSESSMENT EVIDENCE:

Performance Task(s):

Parallel Circuits Assignment:

In this assignment, students will be tasked with constructing and answering questions pertaining to parallel circuits.

Comparative Circuits Assignment:

In this assignment, students will be tasked with constructing and answering questions pertaining to various types of circuits.

Other Evidence:

- Online quiz

S3 LEARNING PLAN: *Summary of Key Learning Events and Instruction*

Outline:

1. Set Introduction
   Ask your students about some of the advantages and disadvantages of series circuits. Use this to discuss how parallel circuits meet some of these challenges.

2. Introduction
   Use the discussion section as a brief introduction to the procedure.

3. Pass Out Materials
   Have your students read the entire procedure section before starting the activity. Pass out the needed materials for this activity while they are reading.

4. Student Time

Once all the materials are passed out and each student completes their reading allow them to start the activity.. Students will be assembling a simple circuit using the materials provided. Using the provided adjustable wire strippers. Be sure to remove enough wire in order to "clip" the wire into the connection.

5. Student Questions
   Make yourself available to any students that may get stuck or have questions.

6. Quiz
   At the end of the activity each student should complete the corresponding online questions.

Progress Monitoring:

- The instructor will need to monitor the classroom, checking student's work and ensuring students are on task and following directions.
- Ensure students store their projects at the end of class and leave all materials in the room.
- At the end of the activity, post student projects in the room and provide appropriate feedback

DIFFERENTIATION: *Summary of Key Differentiation Techniques*

Please use this space to insert your differentiation techniques. Depending on the needs of students, various techniques might be needed in a classroom, therefore use the information below and experts in the area needed to design your plan for differentiation.

The ASCD Study Guide for Integrating Differentiated Instruction and Understating by Design: Connecting Content and Kids.
by Carol Ann Tomlinson, Jay McTighe

Integrating Differentiated Instruction and Understating by Design: Connecting Content and Kids.
by Carol Ann Tomlinson, Jay McTighe
ISBN-13: 978-1416602842
ISBN-10: 1416602844

Differentiating Reading Instruction
by Laura Robb.
ISBN13: 9780545022989

A Teacher's Guide to Differentiating Instruction
The Center for Comprehensive School Reform and Improvement

CAREER CONNECTIONS: *Summary of Career Opportunities Associated with this Lesson*

Electrical Engineer
Electrical engineers design and develop electrical systems.

Utilities Worker
Utilities workers handle electricity and other utilities in a safe manner.

Electrician
Electricians wire buildings and implement electrical systems.

Good sources for career connections:

Occupational Outlook Handbook

http://www.bls.gov/ooh

The National Career Clusters® Framework
http://www.careertech.org/career-clusters

KEYWORDS: *Please Insert Keywords from this Lesson with their Definitions*

PARALLEL CIRCUIT—a closed circuit in which the current flows in multiple paths.

ELECTRICITY—a form of energy resulting from the existence of charged particles.

CIRCUIT—a complete and closed path around which a circulating electric current can flow.

Use resources like dictionary.com to find definitions to your keywords