Middle Bucks Institute of Technology

Course - Electrical Technology

Instructor: Randy McDowell **Date**(s): Week 2-8

Lesson Title: AC/DC Fundamentals Level 300
Lesson Number: 3000

Unit: Level 3 - Semester 1 AC Fundamentals

Objectives/Description:

Students will view a lecture, participate in discussions, and demonstrate skills relating to AC/DC fundamentals by calculating various values in electrical circuits to a proficiency of 70%.

Tasks/Learning Activities: (student focused)

3000- AC/DC FUNDAMENTALS

3060- Identify electrical parts and their symbols

3061- Demonstrate the generation of AC and DC electricity

3062- Identify the parts of a complete circuit

3063- Describe atomic structure of copper and aluminum

3064- Identify and differentiate between conductors and insulators

3065- Covert from metric units to decimal units

3066- Define voltage, current, and resistance

3067- Use Ohm's Law to calculate unknown values of voltage current and resistance

3068- Trace and calculate the distribution of power, voltage, current, and resistance in a combination circuit

3069- Demonstrate the effects of magnetism and electromagnetism

3072- Describe the construction and operation of inductors

3073- Calculate inductance and inductive reactance

3074- Calculate resistive and inductive circuits

3075- Describe the construction and operation of capacitors

3076- Calculate resistive and capacitive circuits

3077- Calculate resistive, inductive, and capacitive circuits

3078- Describe how to calculate and improve power factor in an AC circuit

Standards / Assessment Anchors

Literacy
READING

CC.1.2.11-12.G Integrate and evaluate multiple sources of information presented in different media or formats (e.g. visually, quantitatively) as well as in words in order to address a question or solve a problem.

WRITING

CC.1.4.11-12.B Write with a sharp distinct focus identifying topic, task, and audience.

LISTENING & SPEAKING

CC.1.5.11-12.D Present information, findings, and supporting evidence, conveying a clear and distinct perspective; organization, development, substance, and style are appropriate to purpose, audience, and task.

Math
CC.2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multi-step problems.

13.1.11.A Relate careers to individual interests, abilities, and aptitudes.

Instructional Activities: (teacher focused)

*Pre-Learning
- Quick look
- Vocabulary by accident
- Cornell Notes (A X)
- Directed reading or learning questions
- Reciprocal Teaching
- Demonstrate what was learned
- Exit slips of learning
- Writing journals
- What are three things that you learned?

Special Adaptations:

Per student accommodations
- Study Guide
- Use of Calculator
- Drill and Practice (Repetition of Material)
- Teacher Modeling
- Communication Regarding Behavior & Consequences (PBS)
- Taking Tests in Alternate Setting (or if requested)
- Extended Time (assignments and/or testing)

Assessment:

- FORMATIVE/SUMMATIVE EVALUATION
- Traditional Tests - multiple choice, matching, true/false, short answer completion
- Traditional Quizzes - multiple choice, matching, true/false, short answer completion
- Module Exam
- Graded Homework
- Graded Math practice assignments
- Textbook Computer Generated Tests
- OBSERVATIONAL EVALUATION
- Class Oral Responses
- Teacher evaluating student class participation
- Account if students are prepared for class each day
- Study guides provided prior to tests
- Use of calculator

Safety:

All work shall be performed in a workmanlike and safe manner according to industry and OSHA standards.

Lesson Preparation:

Check to make sure powerpoint presentations and study guide reflect the most current standards and codes.
Access Motor Control book
Print our teacher made handouts and practice sheets
pre-teach unit values of current, resistance, power, and electrical pressure.
Calculators or cell phones for math problems
Set up Google classroom and Jamboards for practice problems

Resources/Equipment:

National Electrical Code, Most recent edition
Electrical supplies & equipment
Powerpoints
Electrical Motor Controls book
Teacher made handouts
Computer
Google Classroom

Additional Notes:

Supplemental materials wil be poted in Google Classroom.