Heavy Duty Equipment Technician

Course Title: (8679) Electrical Fundamentals & Computer Diagnosis 40S
Instructor: Mr. Church
Contact Information:

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Prerequisites:

- Interest in mechanics
- Exploration and Introduction to HD Equipment Technology

Course Description:

This course equips students with the skills needed for the heavy-duty equipment industry, focusing on electrical fundamentals, computers, and diagnostic tools. Students will learn about electrical theory, circuits, and how to use electronic diagnostic interfaces to service and repair heavy-duty equipment systems.

Shop Rules and Policies:

- **Safety Glasses & CSA Approved Footwear:** Must be worn at all times in the shop.
- **Parts Pickup:** Students are not permitted to drive to town for parts during class. Customers provide parts for projects.
- **Safe Work Practices:** Students must follow the safe work practices outlined in the school and division policies. Failure to do so could result in removal from the course or program.
- **Phones:** Will not be aloud used in the classroom or shop.

General Objectives & Learning Outcomes:

1. **Safety Practices:**
    - Understand and apply safety practices for heavy-duty equipment technicians.
2. **Tool and Equipment Use:**
    - Identify, select, use, and maintain tools, equipment, materials, and consumables.
3. **Electrical Knowledge:**
    - Understand and describe various electrical/electronic components, their uses, and functions.
4. **Diagnostic Skills:**
    - Diagnose and repair electrical/electronic problems in heavy-duty equipment systems.
5. **Cross-Curricular Knowledge:**
    - Demonstrate transferable skills and knowledge relating to heavy-duty equipment technology.
6. **Sustainability Awareness:**
    - Understand the impact of sustainability on heavy-duty equipment technology.
7. **Ethical & Legal Standards:**
    - Awareness of ethical and legal standards within the heavy-duty equipment service and repair industry.
8. **Employability Skills:**
    - Develop skills necessary for employment in the heavy-duty equipment industry.
9. **Technological Awareness:**
    - Demonstrate an understanding of the evolution of heavy-duty equipment technology, including emerging trends.

Units of Study:

- Battery Safety
- Battery Load Testing
- Voltage Testing
- Amps Testing
- Resistance Testing
- Study of Ohm's Law
- Soldering, Crimping, and Sealing Connections
- Using Test Lights & Multi-Meters
- Using Scan Tools
- Diagnosing Error Codes
- Reading Schematics
- Diagnosing Opens, Shorts, and Grounds
- Electronic Component Identification

Evaluation:

- **Assignments:** All assignments must be handed in on time. Late assignments will be marked as "0 and missing". All assignments must be handed in to complete the course.
- **Late Assignments:** Late submissions may incur a 20% deduction or may require a quiz to verify the student's understanding of the material.
- **Additional Assignments:** Occasionally, supplementary assignments may be given to reinforce specific learning outcomes.

Learning Behaviors:

Students will be evaluated on the following learning behaviors based on in-class and shop activities. These behaviors will be marked in the PowerSchool program as follows:

1. **Personal Management Skills**
2. **Active Participation in Learning**
3. **Social Responsibility**

Marking Criteria:

- **C** = Constantly demonstrates the behavior
- **U** = Usually demonstrates the behavior
- **S** = Sometimes demonstrates the behavior
- **R** = Rarely demonstrates the behavior

These marks will help assess how effectively students are managing their work and interactions in the class and shop settings

Formative Assessments will occur during the correction and class discussion of booklets.

- Quizzes will be graded by the instructor, and the answers will be discussed with the class.

Summative Assessments will take place at the end of the semester during the final exams.

Final Grade Weights:

- Projects: 50%
- Quiz: 20%
- Classwork: 15%
- Demonstration: 15%

Class Expectations

1. **Safety First**
    - Students must adhere to all safety rules and procedures at all times.
    - Proper Personal Protective Equipment (PPE) must be worn in the shop.
2. **Punctuality and Attendance**
    - Arrive on time for class and be prepared to participate.
    - If absent, it is your responsibility to catch up on missed work. Late assignments may be penalized.
3. **Respect and Communication**
    - Treat all individuals with respect.
    - Use appropriate language; foul language and inappropriate conversations are not allowed.
    - Bullying or harassment will not be tolerated.
4. **Work Area Maintenance**
    - Keep the work area clean and organized to ensure a safe environment.
    - Report any broken or damaged tools immediately. Do not leave parts on toolboxes or in any exit routes.
    - After use, return tools, consumables, and equipment to their designated places.
    - Help others clean up when needed.
5. **Class Participation**
    - Engage actively in all shop activities and class discussions.
    - Use class and shop time efficiently to complete assignments and work.
6. **Personal Responsibility**
    - Do not leave drink containers after use.
    - Stay organized and manage your materials effectively.
7. **Classroom Etiquette**
    - Maintain a clean and respectful environment in both the shop and classroom.
    - Help maintain cleanliness by cleaning up after yourself.

Heavy Duty Mechanics Program - Cell Phone Policy

1. **Instructor Permission Required** – Phones may only be used with instructor approval.
2. **Prohibited Uses** – No gaming or social media at any time.
3. **Shop Use** – Photos of projects are allowed **only** with instructor permission.
4. **Safety First** – No phone use while operating machinery or handling tools.
5. **Violations & Consequences**
    - **1st Offense:** Verbal warning.
    - **2nd Offense:** Phone confiscated for class.
    - **3rd Offense:** Phone turned in at the start of each class.
    - **Further Violations:** Additional discipline as per school policy.