ADVANCED ELECTRO-MECHANICAL TECHNOLOGY

COURSE SYLLABUS

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Course Description

Advanced Electromechanical Technology is designed to provide students with the knowledge and skills to effectively perform basic industrial maintenance procedures in an advanced manufacturing facility. Students in this course develop proficiency in a vast array of electromechanical domains, including: fundamental safety practices in electromechanical technology, shielded metal arc welding (SMAW), basic metal inert gas (MIG) welding, electrical systems, AC and DC motors, calibrating instruments, drive systems, pipe fabrication, hydraulic systems, pumps, digital electronics, programmable logic controllers (PLC), and troubleshooting procedures. Upon completion of this course, proficient students will be prepared to pursue postsecondary electromechanical technology programs and entry-level industrial maintenance technology careers in the advanced manufacturing industry. Standards in this course are aligned with Tennessee State Standards for English Language Arts & Literacy in Technical Subjects and Tennessee State Standards in Mathematics.

Primary Career Cluster: Advanced Manufacturing

Attendance Policy

Students are expected to be present and on time for all scheduled classes. The purpose of this course is to better prepare you to enter the workforce, and in the workforce all employees are expected to be present, on time, and ready to work. Remember to follow the school's reporting policy if it is necessary for you to be absent from class

Course Outcomes

Upon successful completion of this course, students will have a fundamental understanding of how electrical and mechanical technologies work as independent technologies as well as how they combine to operate and control industrial equipment and systems. Students will be prepared to advance to the next level of study in Mechatronics. Students will also be prepared to pursue and complete post-secondary training in Electromechanical Technology or

Mechatronics. At the post-secondary level, students will be assessed to demonstrate competency in each subject in order to progress through a post-secondary program.

Coursework

The following subjects will be covered during the course:

- Fundamental Safety Practices
- Employability Skills
- Electrical Circuits
- Conductors and Cables
- Conductor Termination and Splices
- Fuses and Circuit Breakers
- Schematics and Drawings
- Conduit and Installation
- Transformers
- Motors
- Computers and Electronics
- Mechanical Drives
- Calibration and Instrumentation
- Hydraulics
- Pneumatics
- Pumps
- Valves
- Piping
- Troubleshooting and Maintenance

Course Materials

Textbook

"Core Curriculum: Introductory Craft Skills", NCCER, Pearson Education, 2015

"Manufacturing and Automation Technology", R. Thomas Wright, G-W Publishing, 2006

Other

Course Subjects will be delivered using a combination of electronic textbooks, written handouts, and practical application exercises using classroom trainers. Some subjects will be taught as a stand-alone topic. Others will be blended in will all subjects. For example, drawings and schematics are used in all technologies. Industrial safety is covered in general and included with each topic as a reinforcement.

Grading Policy

This course will following the state approved uniform grading policy for grades 9-12 as follows:

Grade	Percentage Range	
A	93	100
B	85	92
C	75	84
D	70	74
F	0	69

Grades will be based on completing work assignments as described below. Attendance is very important since the majority of work for this class is completed in class. Refer to the student handbook for information on attendance policy and how it can affect grades.

Area	Type of Work
Homework	Occasional homework will be assignments to be completed outside of class. Most of the work will be done in class.
Assignments	Activities that are provided in class and expected to be completed before the end of class or turned in at the assigned time. This will include lab activities.
Projects	Projects will be work like research projects that will require work outside of class and some amount of time to complete.
Quizzes	Quizzes will be conducted frequently to verify that basic concepts have been understood or applied.
Tests	Tests will be administered to cover blocks of work and verify that concepts have been mastered

Behavior Expectations

Students will be expected to adhere to policies and expectations outlined in the Student Handbook. Behaviors in this course will be based on the same standards that are outlined by employers in the local area. Specifically, students are expected to be in attendance, to be on time, to be engaged in the classroom discussion and activities, to follow all safety guidelines, to work with others in a cooperative manner/spirit of teamwork, and to respect all equipment used in the lab.

Course Pacing

Week	Standard/Topic
1-9	Overview, Careers and Employability, Industrial Safety, Electrical Circuits, Conductors and Cables, Termination and Splices
10-18	Fuses and Breakers, Schematics and Drawings, Conduit and Installation, Transformers, and Motors
19-27	Computers and Electronics, Mechanical Drives, Calibration and Instrumentation, Hydraulics, and Pneumatics
28-36	Pumps, Valves, Piping, and Troubleshooting and Maintenance.