MTEC 103. INTRODUCTION TO MAINTENANCE TECHNOLOGIES.
Credit Hours: 3 Hrs.
Scheduled hours per week

Lecture: 2
Lab: 2
Other: Varies as needed due to blended nature of presentation

Catalog Course Description: Topics include fasteners and anchors, oxyfuel cutting, gaskets, pumps, and lubrication. Laboratory exercises are designed to provide hands-on practice of concepts.

Pre-requisites: MTEC 102 or Instructor consent

Co-requisites: None

Course Learning Outcomes:
Through classroom lecture, discussion, laboratory studies and experimentation, students will learn the required skills and knowledge to pass National Center for Construction Education and Research (NCCER) Module Tests and prepare for NCCER Certification Exams.

Topics to be studied:

a) Orientation to the trade
b) Tools of the trade
c) Fasteners and Anchors
d) Oxyfuel cutting
e) Gaskets and Packing
f) Craft Related Mathematics
g) Valves, Pumps and Drivers
h) Introduction to Test Equipment
i) Material Handling and Hand Rigging
j) Mobile and Support Equipment
k) Lubrication

Relationship of Course to Program or Discipline Learning Outcomes:	
Basic understanding of safety.	X
Use of hand tools, power tool, and test instruments	X
Basic understanding of electrical theory and NEC	
Basic understanding of flow, pressure, and temperature	
Basic understanding of electronic components	
Understanding of motors, transformers and distribution	
Understanding of transducers, actuators, and controllers	
Ability to calibrate and configure process loops	
Use of PLCs, data networks, and DCSs	
Level 4 E & I and IM NCCER Certification Project Completion	
Ability to write concise and accurate reports	
Ability to solve algebraic equation	X
Understanding of fractions, decimals, and percentages	X
Understanding of area and volume	X

Demonstrate ability to install and repair pumps, valves, gaskets, seals. bearings, couplings, belts, and chains	X
Understand and use terminology, measuring systems, hand tools, mechanical instruments, lathes, mills and measuring tools.	X
Apply pattern making, layout, and assembly of parts from sheet metal.	X
Read and work to close tolerance from machine prints and drawings commonly used in the machine trades.	X
Show understanding of preventive/predictive maintenance	X
Demonstrate knowledge of hydraulic and pneumatic systems and their uses.	X
Demonstrate use of alignment equipment including dial indication and laser alignment methods.	X
Write reports, requisitions, and operational instruction.	X

Relationship of Course to General Education Learning Outcomes:	
Composition and Rhetoric Students illustrate a fundamental understanding of the best practices of communicating in English and meet the writing standards of their college or program-based communication requirements.	X
Science & Technology Students successfully apply systematic methods of analysis to the natural and physical world, understand scientific knowledge as empirical, and refer to data as a basis for conclusions.	
Mathematics & Quantitative Skills Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts.	X
Society, Diversity, & Connections Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication.	
Human Inquiry & the Past Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills.	X
The Arts & Creativity Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art.	
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Special requirements of the course:

a) Reports
b) Surveys
c) Other

Additional information:

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