Automated Systems Technician Certificate Program

Curriculum Map								
Course	Compose written assignments on occupation safety in general industry.	Demonstrate the installation maintenance and troubleshooting of Programmable Logic Control systems (PLCs) and PLC modules	Set-up and operate fluid powered valves, cylinders, controls filters, and actuators.	Establish a systematic approach to recognizing the essential information given on a blueprint.	Solve formulas by using unknowns and apply this knowledge to solve problems encountered in technological areas and various fields of engineering.	Write descriptive and operational instructions for nontechnical users of technical information	Demonstrate quantitative measurement of electrical circuit parameters; assemble, and test both direct current and alternating current series, parallel, and series parallel circuits.	Explain the basic operation of a microprocessor / microcontroller.
ELE 11 DC Electronics		I						
Solve basic, direct current, electronic problems involving resistance, current, voltage, and power, as applied to both simple and complex combinations of series and/or parallel circuit components, comprised of resistors, capacitors and coils, in a given network configuration.								
Diagram and discuss the relationship between electricity and magnetism as related to a DC permanent magnet motor, a solenoid or an electromechanical relay.		I						
Describe and contrast the construction, operation, and purpose of resistors, potentiometers, switches, fuses, relays, and batteries.								
ELE 13 AC Electronics		I						
Explain the basic principles of sinusoidal sources of Alternating Current (AC) and solve AC network circuit problems, involving resistors, capacitors, inductors and/or transformers.								
Discuss the purpose and effects of resistors, capacitors, inductors and/or transformers in a given AC network problem, analyze it and diagram the solution to a posed problem by using J-Factors appropriately and accurately.		I						
Take meter and O-scope measurements of a given AC network of components and display and document the results, comparing and contrasting those measurements with predictions that you calculated before-hand. Explain the similarities and/or differences.								
ELE-26 Microprocessors and Microcontrollers		I						I, D, M
Explain the basic operation of a microprocessor / microcontroller.								I, D, M
Describe and control input and output operations.								
Develop a flowchart to define a problem.		I				I		
Develop a flowchart to solve a problem.		I						
Write a program that implements a flow chart for a microprocessor / microcontroller.								I, D, M
ELE/ENE-27 Technical Communications						I, D		
Define technical communications								
Recognize and identify characteristics of technical communications								
Identify the needs of a given audience								
Collect and organize information								
Create technical documents in accordance with conventional formats								
Write descriptive and operational instructions for nontechnical users of technical information						I, D		
Properly integrate graphs, tables, and references into technical reports								
Conduct an informational interview								
Assemble a personal data book; and								
Compose a personal resume with cover letter.								

ENE-51 Blueprint Reading				I, D, M			
Develop basic blueprint reading ability along with a better understanding of prints, specifications, etc., used to in the general field of all industry.							
Establish a systematic approach to recognizing the essential information given on a blueprint.				I, D, M			
Create in the individual a confidence in the ability to approach and analyze even a complex print.							
ENE-60 Math for Engineering Technology					I, D		
Solve arithmetic problems dealing with addition, subtraction, multiplication and division that are typical to the industrial setting.							
Solve formulas by using unknowns and apply this knowledge to solve problems encountered in technological areas and various fields of engineering.					I, D		
Solve problems by use of a scientific calculator.							
MAN-55 Occupational Safety and Health Administration	I, D, M						
Locate and apply OSHA Safety and Health standards, policies and procedures for general industry.	I, D, M						
Utilize OSHA standards and regulations to supplement an ongoing safety and health program.							
Identify common violations of OSHA standards and propose abatement actions.							
Analyze the common causes of accidents and fatalities in hazardous areas of general industry.	I, D, M						
MAN-60 Hydraulics and Pneumatic Systems			I, D, M	I, D			
Demonstrate basic safety procedures when designing and assembling high pressure hydraulic and pneumatic systems.							
Use troubleshooting procedures to diagnose and repair hydraulic and pneumatic systems used in automated processes and robotic assemblies.							
Set-up and operate fluid powered valves, cylinders, controls filters, and actuators.			I, D, M				
Calculate functions and load requirements then design, select components and test complex fluid powered systems in a robotic or industrial environment.							
Recognize fluid power schematic symbols.				I, D			
Demonstrate the installation maintenance and troubleshooting of PLCs and PLC modules.		I					
MAN/ELE-64 Programmable Logic Controllers		I, D, M					
List and discuss advantages and disadvantages of PLCs.							
Describe the functions of the major parts of a PLC system.		I, D, M					
Describe and demonstrate how the parts of the PLC system are connected electrically.		I, D, M					
Analyze problems representative of control system environments using PLC.							
Create ladder logic programs using popular programming software and test for correct operation.							

I=Introduced

D=Developed and Practed with feedback

M=Demonstrated at the Mastery Level Appropriate for Graduation