PIPELINE Project

Competency Model for Advanced Manufacturing

Occupation: Mechatronics

Possible Associated Credentials: Associates Degree, PMMI, IPC, AWS, NIMS, MSSC

Employer-Specific Requirements

Occupation-Specific Competencies

- Assemble Machines to Specifications
- Connect Wires and Components
- Optimize Systems Design
- Preventative Maintenance
- Troubleshooting & Repair
- Install, Set-Up and Adjust as Required
- Mechanical, Electrical and I/O Systems
- Connect PLCs to Electrical Systems/Neworks
- Commission Machines With Auxiliary Equipment and PLC Using Standards and Documentation
- Analysis of Work Processes
- Modify/Document Design of Pneumatic, Hydraulic, Electrical Circuits
- Design/Modify Circuits using Modern Software Tools
- Write/Modify/Update/Troubleshoot Programs to Control a Machine
- Program PLCs Including Digital and Industrial Field Buses
- Configure All Aspects of PLCs and Associated Control Circuitry for Correct Operation
- Test Run Modules and Assembled Systems
- Commission/Install the Assembly to Operational Standards and Respond to Questions
- Documentations of Procedures for the Representation of Work Processes

Industry-Sector Technical Competencies

PLC
Motor Controls, Functions and Components of PLC Systems, Functions of Hydraulics Systems, Components and Applications of Drivers, Schematics, Troubleshooting

Mechanical
Fluid Power, Hydraulics, Pneumatics, Basic Machining (Mill, Lathe, Drilling, Tapping, Hand Tools, Applied Mechanical Theory), Power Transmission, Blueprint Reading, Troubleshooting

Electrical
Functions of Electrical and Electronic Systems, Motor Controls, Electrical Control Circuits, From Outlet to Machines, Blueprint Reading, Schematics, Troubleshooting

Industry-Wide Technical Competencies

- Manufacturing Process Design & Development
- Production / Supply Chain Logistics
- Maintenance, Installation and Repair
- Quality Assurance, Continuous Improvement
- Sustainable and Green Manufacturing
- Health, Safety, Security and Environment
- Computer Applications

Workplace Competencies

- Business Basics
- Teamwork
- Adaptability and Flexibility
- Marketing, Customer Focus
- Planning and Organizing
- Problem Solving, Decision Making
- Working With Tools, Technology
- Checking, Examining and Recording
- Sustainable Practices

Academic Competencies

- Science
- Basic Computer Skills
- Mathematics
- Reading and Writing
- Communication: Listening & Speaking
- Critical & Analytic Thinking
- Information Literacy

Personal Effectiveness Competencies

- Interpersonal Skills
- Integrity
- Professionalism
- Initiative
- Dependability and Reliability
- Lifelong Learning

Based on: Advanced Manufacturing Competency Model Employment and Training Administration, United States Department of Labor, April 2010.