

MANUFACTURING DEGREE PROGRAMS

ELECTRICAL-MECHANICAL

AUTOMATION (EMA)

High Tech assembly systems employ complex automated equipment and handling systems that require high-level skills for the technicians tasked with maintaining this equipment. The EMA program is designed to give students the information and hands-on experience of developing, maintaining, and trouble-shooting these major Electronic and Mechanical manufacturing systems. Some of the course material for this AAS degree (64 credit hours) and Certificate of Completion (33 credit hours) include:



- * Pneumatic systems
- * Programmable Logic Controllers (PLC)
- * Electromechanical devices
- * Electronics
 - AC and DC Circuit Analysis
 - Solid State Devices
 - Electronic Measurements
- * Manufacturing Processes
- * Automated Manufacturing Systems
- * Industrial Automated Systems

ELECTRO-MECHANICAL

MANUFACTURING TECHNOLOGY

This Manufacturing Technology AAS Degree (64 credit hours) and Certificate of Completion (34 credit hours) are designed to provide the graduate with the skills to support a variety of electro-mechanical equipment in a manufacturing environment. EMMT technicians gain skills in:

- * Setting up and trouble-shooting new production lines
- * Maintaining existing complex equipment
- * Supporting new product start-up for production
- * Interfacing with suppliers of equipment, materials, and finished parts
- * Establishing Manufacturing Procedures
- * Initiating test procedures for equipment and products
- * Writing manufacturing control documents such as FMEA & control plans
- * Calculating projected requirements for equipment, people, and materials.



MACHINING & PRODUCT DEVELOPMENT TECHNOLOGY

This program provides students with the skills necessary for working in a Product Development environment in a company or in a job-shop manufacturing setting where custom or short-run products are the norm. Instruction includes manual machining skills emphasizing the translation from Engineering sketches and preliminary drawings to a finished product. Prototype development skills, basic electrical

familiarization, and product assembly are also important elements of this degree. The graduates from this program would be an asset to Tool and Die Shops, Engineering development and prototype labs, and to small volume or custom manufacturing companies. (AAS is 66-68 credit hours, Certificate of Completion in Manufacturing Machining is 33 credit hours)

MANUFACTURING

CNC/CAD/CAM TECHNOLOGY

The Manufacturing CNC specialization prepares students to participate in programming CNC-controlled machine tools and to ensure that the programs are maintained. In addition these technicians assist in the designing of products and translating the designs into finished products through CAD/CAM systems.



The program includes hands-on experience in the manufacturing processes so the student will be familiar with the capabilities of the manufacturing equipment. Students utilize Solidworks and Camworks and other software to develop designs of parts and products to make them ready for use in the high tech CAD/CAM manufacturing equipment. The program leads to an AAS Degree (61 credit hours) or to a Certificate of Completion (30 credit hours)



AUTOMATION AND INDUSTRIAL MANUFACTURING TECHNOLOGY

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Manufacturing Programs



MESA COMMUNITY COLLEGE
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The MCC Manufacturing Programs focus on developing skilled technicians to qualify for engineering and production support positions in manufacturing companies. These technicians must have a broad skill-set of abilities to critically analyze situations, develop a plan, and execute the solutions in a team environment. They are expected to provide meaningful contributions to the planning, development, and maintenance of the equipment and products produced by the company.

Recent studies of the Technical Workforce at companies in Maricopa County and the greater Phoenix area have identified a need for many more skilled Manufacturing Technicians than are currently available. The summary of these studies concludes that the projected need is for as many as 5,000 new technical workers over the next few years. While some of these jobs are to replace retiring workers (about 1,500), the larger number of about 3,500 workers would be needed to fill new jobs and current vacancies.

The employment opportunities where technicians are most in demand are:

Electromechanical Automation Specialists

Electromechanical Assembly Technicians

Machinists – manual machining skills and CNC equipment operators

Job Shop specialty machinists and assemblers for custom products

Equipment Maintenance technicians on all types of equipment – especially electro-mechanical machines and equipment

CAD/CAM/CNC specialists – programmers, product developers

Associate of Applied Science (AAS) Degree

The AAS degrees combine technical core classes with a General Education component. The programs require 60 to 66 credit hours to complete the degrees.

Certificate of Completion (CCL) Programs

Certificates of Completion are focused on the technical core classes for the AAS degree. The CCL gives the student a "fast track" to obtaining the technical skills desired and those classes will apply to an AAS degree when the student continues in the future. The CCL requirement is 29-34 credit hours depending on the program of study.