

# MANUFACTURING TECHNOLOGY

## Certificate

- Advanced Manufacturing, Level I, Certificate of Achievement

### **MFGT 101 Introduction to Advanced Manufacturing 2 Units**

The course will introduce the concepts and standards used in modern advanced manufacturing, including employability soft skills, and careers. Topics include Brief History of Manufacturing, 21st Century Employability Skills, Safety and Hazardous Waste, Manufacturing Processes, Company Organizational Structure, Career Opportunities, Legal Requirements for Manufacturing, Common Manufacturing Standards, Process Control Techniques, Problem Solving, and Automatic Manufacturing. Field trips will be required.

Lecture Hours: 1.5 Lab Hours: 1.5 Repeatable: No Grading: L  
Advisory Level: Read: 4 Write: 4 Math: 3  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None

### **MFGT 102 Math for Manufacturing 2 Units**

This course is a practical approach to mathematics and data analysis. The course will examine how mathematics, fractions, decimals, percentages, algebraic functions, logarithmic calculations, order of operations, units of measurement, practical data analysis, probability, and statistical analysis are used in advanced manufacturing industries.

Lecture Hours: 1.5 Lab Hours: 1.5 Repeatable: No Grading: L  
Advisory Level: Read: 4 Write: 4 Math: 3  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None

### **MFGT 103 Introduction to Assembly 3 Units**

The course will introduce the basic concepts, practices, procedures, and standards used in manufacturing assembly processes. Topics will include: reading mechanical drawings, dimensioning, tolerances; measuring techniques and tools; forming, joining, cutting, and additive methods; understanding connectors, wire routing, soldering; working under a microscope; and torquing techniques. The course emphasizes job-related skills required by the manufacturing industry.

Lecture Hours: 2.5 Lab Hours: 1.5 Repeatable: No Grading: L  
Corequisite: MFGT 102; Recommended: BIS 109 and BUS 060  
Advisory Level: Read: 4 Write: 4 Math: 3  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None

### **MFGT 201 Fundamental Electronics for Manufacturing 3 Units**

The course will introduce basic electrical theory from passive components through simple circuitry with an integrated test methods lab. The course will cover DC circuits and AC circuits, electrical theory, magnetism, Ohm's Law, series and parallel circuits, passive components, semiconductor devices, and basic circuitry. Students learn to calculate and measure voltage, resistance and current, build and test working models of typical electrical circuits using table top components and industry specific simulators, and practice troubleshoot diagnosis on a variety of circuits. Students will also develop an understanding of modern electrical test equipment, such as digital multimeter and oscilloscope, and industry standard troubleshooting and repair procedures. Field trips may be required.

Lecture Hours: 2.5 Lab Hours: 1.5 Repeatable: No Grading: L  
Recommended: BUS 060 and MFGT 102  
Advisory Level: Read: 4 Write: 4 Math: 3  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None

### **MFGT 202 Properties of Materials for Manufacturing 3 Units**

The course will survey material properties, processes, and applications used in the manufacturing industry. The course emphasizes job related skills required by manufacturing industries. Topics will include a brief introduction to the properties of metals, polymers, ceramics, bonding material, and composites. Students will be introduced to common manufacturing standards and processes for testing and applying materials. Students will practice various bonding and assembly techniques using recommended procedures, as well as standard materials characterization techniques. Some labs will be held at different industry sites based on the skill being learned. Field trips will be required.

Lecture Hours: 2.5 Lab Hours: 1.5 Repeatable: No Grading: L  
Recommended: BUS 060 and MFGT 102  
Advisory Level: Read: 4 Write: 4 Math: 3  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None

### **MFGT 203 Data Analytics for Manufacturing and Quality Control 3 Units**

This course introduces data analysis with an emphasis on quality control using applied statistical processes in the manufacturing industry. Students will learn how to collect, analyze, interpret, and present numerical data to make effective decisions. Students will perform data analysis using practical methods, techniques, and standard procedures commonly used in the manufacturing industry. Topics and labs include: reading process control charts, collection and presentation of data, measures of central value and spread, probability, sampling and the sampling distribution of the sample average, use excel to create charts, graphs, and histograms. Field trips may be required.

Lecture Hours: 2.5 Lab Hours: 1.5 Repeatable: No Grading: L  
Corequisite: BUS 060 and MFGT 102 and BIS 109  
Advisory Level: Read: 4 Write: 4 Math: 3  
Transfer Status: None Degree Applicable: AS  
CSU GE: None IGETC: None District GE: None