

# INDUSTRIAL MANUFACTURING TECHNOLOGY (623)

## 623-106 - Quality Tools

Provides students with training in the effective use of various quality improvement and problem-solving tools. Includes a thorough study of Project Planning and Implementation tools, Idea Creation tools, Process Analysis tools, Data Collection and Analysis tools, Cause Analysis tools, and Evaluation and Decision Making tools. All topics are presented with a hands-on, relative-to-industry approach.

3 Credit hours

36 Lecture hours

36 Lab hours

## 623-110 - Technical Print Reading

Develops the ability to read, visualize and interpret industrial prints. Discusses and applies fundamental and standard practices related to orthographic projection, dimensioning, and tolerancing. (Prerequisites: Completion of or concurrent enrollment in 804-107 College Mathematics or 804-118 Intermediate Algebra with Applications or 804-195 College Algebra with Applications)

2 Credit hours

18 Lecture hours

36 Lab hours

## 623-111 - Integrated Manufacturing Planning - Manufacturing Technology

Students complete a project from concept to the point where a product is designed and its manufacturing process is planned. Emphasizes the project management process, teamwork, problem solving and decision making. It is suggested that the student take 623-112 Integrated Manufacturing Production - Manufacturing Technology, in the semester after this course. (Prerequisite: 623-162 Manufacturing Processes)

2 Credit hours

72 Lab hours

## 623-112 - Integrated Manufacturing Production - Manufacturing Technology

Students will simulate a manufacturing environment by building a workcell, producing a product in production and performing quality assurance checks. Emphasizes implementation of a project plan, teamwork, problem solving and decision making. (Prerequisite: 623-111 Integrated Manufacturing Planning – Manufacturing Technology)

2 Credit hours

72 Lab hours

## 623-118 - Gage Calibration and Testing

Provides students with training to effectively set up and perform duties in a gage calibration program. In addition, this course provides students with training to effectively conduct repeatability, reproducibility bias, stability and linearity studies. All topics are presented with a hands-on, relative-to-industry approach. (Prerequisite: 623-191 Basic Metrology)

3 Credit hours

36 Lecture hours

36 Lab hours

## 623-120 - Principles of Lean Manufacturing

Apply the principles of Lean Manufacturing for continuous improvement to the manufacturing setting. Students explore standardized work, workplace organization, visual controls, setup reduction, batch size reduction, point of use storage, quality at the source, workforce practices, and pull systems.

1 Credit hours

18 Lecture hours

## 623-134 - Basic CMM Programming and Operation

Provides hands-on training in Coordinate Measuring Machine (CMM) operation and programming for the purpose of verifying dimensional and geometric requirements in both manual and DCC modes. It is recommended that students have a background in print reading.

3 Credit hours

18 Lecture hours

72 Lab hours

## 623-162 - Manufacturing Processes

Provides training to safely operate commonly used machine tools such as lathes, milling machines and surface grinders while making various hands-on projects. Students learn to use basic measuring equipment such as micrometers and dial calipers. Students also learn basic machining procedures such as calculating speeds and feeds, determining tap drill sizes, and selecting tooling. Several nontraditional machining processes, sheet metal processes, joining processes and plastics processes are also explored.

3 Credit hours

36 Lecture hours

36 Lab hours

## 623-166 - Lean Process and Quality Planning

Provides students with skills and knowledge related to developing a Process Plan and a Quality Plan in a discrete parts manufacturing environment. Lean techniques are also introduced. Job costing and Estimating techniques are introduced. (Prerequisite: 623-162 Manufacturing Processes or dean consent)

3 Credit hours

36 Lecture hours

36 Lab hours

## 623-168 - ISO 9001 and Auditing

Focuses on the interpretation of ISO 9001 standards and develops the ability to audit these standards. Students utilize Quality Assurance manuals in a project-based approach.

2 Credit hours

18 Lecture hours

36 Lab hours

## 623-191 - Basic Metrology

Provides the skills required to utilize various measurement equipment used in metalworking. Includes extensive hands-on exposure to micrometers, calipers, depth gauges, bore gauges, indicators, optical comparators, gage blocks, and instruments for surface analysis.

2 Credit hours

18 Lecture hours

36 Lab hours

**623-196 - Geometric Dimensioning and Tolerancing**

Provides design, manufacturing and quality assurance personnel with the fundamentals and concepts used on engineering drawings to describe form, location and orientation of features for precision parts. The ANSI/ASME Y14.5M-2018 national standard for Geometric Dimensioning and Tolerancing (GD&T) is an international language that consists of symbols, rules, definitions and conventions adopted by the American Society of Mechanical Engineers (ASME) for engineering drawings. A background in print reading is recommended.

3 Credit hours

36 Lecture hours

36 Lab hours

**623-305 - Production Assembly Principles**

Applies safety to OSHA standards, ergonomics to lifting equipment, hand/power tool identification to fasteners, and principles of 6 Sigma Lean Manufacturing. Students will demonstrate the required specifications for safety, the ergonomic position used for lifting equipment and using tools, the selection of tool to fastener fit-up, the dynamics of material flow through the plant, 6 sigma Lean Manufacturing Principles, and interpersonal skills used in working effectively in a team environment.

1 Credit hours

18 Lecture hours

30 Lab hours