



Semester 1

BMM 100 Introduction to Manufacturing

This course provides a comprehensive introduction to the field of manufacturing. It introduces the student to the structure and operations of the well-running manufacturing organization. The lean production process is described, as well as the controls needed to ensure that high-quality products are manufactured at a competitive cost. The importance of meeting customer requirements is stressed. Functions that support the production process such as Quality Management and Logistics and the Supply Chain are evaluated. The role and importance of the suppliers to the company is explored. The efficient use and maintenance of production equipment is explained. Problem-solving techniques are defined and their usage is described. Several inventory techniques are compared. Interpersonal skills used in leadership, teaming and meetings are emphasized. Advanced manufacturing equipment, processes and techniques are introduced.

Credits

3

BMM 140 Principles in Manufacturing Mathematics

This course begins with a review of basic operations of numbers, fractions and decimals. It then covers the practical mathematics that every machinist is expected to use in the shop in the creation of machined parts and maintenance of tools and fixtures. This includes common fraction to decimal and vice-versa conversions, inch to metric and vice-versa conversions, calculating part and feature dimensions and locations, calculating speeds and feeds, calculating tap drill sizes with formulas and charts, converting surface feet per minute to RPM's, calculating tapers for machine set-up, plane geometry calculations, sine bar set-up, measurements of right triangles, angular and simple indexing calculations.

Credits

3

BMM 222 Technical Drawings and Specifications

This course introduces the basic principles of engineering drawings. It addresses line types, orthographic projection, and isometric views that are used in industry standards. The six basic views of parts are designed to acquaint the student with a pictorial vision of a 3D part in a flat pattern view. Areas of study include: line types, orthographic projection, isometric views, fundamental tools of title block information, drawing standards, general and special notes such as quality assurance data, non-destructive testing,

symbology, geometric dimensioning and tolerancing parameters, blueprint drawing abbreviations, linear units of measurement, rules of dimensioning, inclined surfaces, measurement of angles, holes and bolt hole patterns, drawings to scale, blueprint revisions and notes. Upon completion, students should be able to interpret basic prints and visualize the features of a part or system.

Credits

3

Semester 2

BMM 175 CNC Machining

This course focuses on the modern computer numeric control (CNC) operator. Through the use of interactive virtual simulators students learn the essentials of CNC machining. Participants will learn mill, lathe and grinder set-up and operation; tool identification, set-up, use and maintenance; statistical process control (SPC); and the skills operators need. Students will experience lecture, demonstration, and online simulation to prepare for NIMS certification as a CNC operator.

Credits

3

BMM 210 Lean Manufacturing Principles

This course introduces the student to the philosophical background, historical development, and fundamental concepts of lean manufacturing with a focus on the Toyota Production System. Students explore lean strategies around inventory, lead time, and cultural change requirements. Students learn strategies for lean implementation, planning, goal setting and sustaining gains. The course also applies to the application of lean disciplines and concepts to service and support industries. The use and implementation of lean disciplines promote continuous improvement, eliminate waste, reduce operating cost, improve quality, and achieve measurable improvement in customer satisfaction.

Credits

3

BMM 224 Metrology and Calibration

This course focuses on how to develop, implement, and maintain a calibration system. Evaluation of the calibration program is further deepened through continuous improvement efforts. Conformity to ISO 9001 requirements enhances the credibility of calibration systems to ensure reliability and traceability. This course looks at calibration processes such as calibration procedures and records, out of tolerance conditions, calibration schedules and intervals. Students will learn and practice techniques for setting size

blocks to predetermined distances to measure product, develop continuous improvement programs, create training programs and audit the calibration system.

Credits

3

BMM 240 CAM I

The purpose of this course is to review design and manufacturing software and instruct the student on feature-based modeling systems called SolidWorks and Mastercam. Students will learn how to create simple 2-D objects such as lines and arcs to create CAD solid models and add numerical dimensions and geometries. After CAD Models are created in SolidWorks, the files will be loaded into Computer-Aided Manufacturing (CAM) Mastercam for CNC programming.

Credits

3