SUBJECTS AND COURSES

COURSE DESCRIPTIONS - MACHINE TOOL TECHNOLOGY (MTT)

MTT 107 Machining Calculations
This course introduces basic calculations as they relate to machining occupations. Emphasis is placed on basic calculations and their applications in the machine shop. Upon completion, students should be able to perform basic shop calculations. This course is aligned with NIMS certification standards. **3 Credit Hours**

MTT 121 Basic Blueprint Reading
This course covers the basic principles of blueprint reading and sketching. Topics include multi-view drawings; interpretation of conventional lines; and dimensions, notes, and thread notations. Upon completion, students should be able to interpret basic drawings, visualize parts, and make pictorial sketches. This is a CORE course and is aligned with NIMS certification standards. **3 Credit Hours**

MTT 125 Intro to Machining Technology
PREREQUISITE: As determined by college. COREQUISITE: As determined by college. This course introduces precision machining processes as they relate to the metalworking industry. Topics include machine shop safety, precision measuring tools, lathes, drilling machines, saws, milling machines, bench grinders, and layout instruments. Upon completion, students should be able to safely perform basic measurement and layout, drilling, sawing, turning, and milling to make parts and tools.
5 Credit Hours

MTT 127 Metrology
This course covers the use of precision measuring instruments. Emphasis is placed on the inspection of machine parts and use of a wide variety of measuring instruments. Upon completion students should be able to demonstrate correct use of measuring instruments. This is a CORE course and is aligned with NIMS certification standards.
3 Credit Hours

MTT 129 Lathe Operations
This course includes more advanced lathe practices such as set-up procedures, work planning, inner- and outer-diameter operations, and inspection and process improvement. Additional emphasis is placed on safety procedures. Upon completion, students will be able to apply advanced lathe techniques. MTT 134/135 are suitable substitutes for MTT 129. This course is aligned with NIMS standards. **6 Credit Hours**

MTT 136 Milling Operations
This course covers manual milling operations. Emphasis is placed on related safety, types of milling machines and their uses, cutting speed, feed calculations, and set-up and operation procedures. Upon completion, students should be able to apply manual milling techniques (vertical and horizontal/universal) to produce machine tool projects. MTT 137/138 are suitable substitutes for this course. This course is aligned with NIMS certification standards. **6 Credit Hours**

MTT 139 Intro to Comuter Numerical Con
This course introduces the concepts and capabilities of computer numeric control (CNC) machine tools. Topics include set-up, operation, and basic applications. Upon completion, students should be able to develop a basic CNC program to safely operate a lathe and milling machine. This course is aligned with NIMS certification standards.
4 Credit Hours

MTT 140 Computer Integrated Manufactur
This course covers concepts associated with basic programming of a computer numerical control (CNC) turning center. Topics include basic programming characteristics, motion types, tooling, workholding devices, set-up documentation, tool compensations, and formatting. Upon completion, students should be able to write a basic CNC turning program that will be used to produce a part. This course is aligned with NIMS certification standards. **5 Credit Hours**

MTT 141 Basic Num Control Mill Prg I
This course covers concepts associated with basic programming of a computer numerical control (CNC) milling center. Topics include basic programming characteristics, motion types, tooling, workholding devices, setup documentation, tool compensations, and formatting. Upon completion, students should be able to write a basic CNC milling program that will be used to produce a part. This course is aligned with NIMS certification standards. **5 Credit Hours**

MTT 142 Adv Machining Calculations
This course combines mathematical functions with practical machine shop applications and problems. Emphasis is placed on gear ratios, lead screws, indexing problems, and their applications in the machine shop. Upon completion, students should be able to calculate solutions to machining problems. **4 Credit Hours**

MTT 147 Introduction to Machine Shop I
This course introduces machining operations as they relate to the metalworking industry. Topics include machine shop safety, measuring tools, lathes, saws, milling machines, bench grinders, and layout instruments. Upon completion, students will be able to perform the basic operations of measuring, layout, drilling, sawing, turning, and milling. This is a CORE course. **4 Credit Hours**

MTT 148 Intro to Machine Shop I Lab
This course provides practical application of the concepts and principles of machining operations learned in MTT 147. Topics include machine shop safety, measuring tools, lathes, saws, milling machines, bench grinders, and layout instruments. Upon completion, students will be able to perform the basic operations of measuring, layout, drilling, sawing, turning, and milling. This is a CORE course. This course is aligned with NIMS certification standards. **6 Credit Hours**

MTT 149 Intro to Machine Shop II
MTT-147(Introduction to Machine Shop I) with a grade of C or higher
This course provides additional instruction and practice in the use of measuring tools, lathes, milling machines, and grinders. Emphasis is placed on set-up and operation of machine tools including the selection of work holding devices, speeds, feeds, cutting tools and coolants. Upon completion, students should be able to perform intermediate level procedures of precision grinding, measuring, layout, drilling, sawing, turning, and milling. This is a CORE course and is aligned with NIMS certification standards. **4 Credit Hours**

MTT 150 Intro to Machine Sh II Lab
MTT-148(Intro to Machine Shop I Lab) with a grade of C or higher
This course provides additional instruction and practice in the use of measuring tools, lathes, milling machines, and grinders. Emphasis is placed on set-up and operation of machine tools including the selection of work holding devices, speeds, feeds, cutting tools and coolants. Upon completion, students should be able to perform intermediate level procedures of precision grinding, measuring, layout, drilling, sawing, turning, and milling. This is a CORE course and is aligned with NIMS certification standards. **6 Credit Hours**

MTT 171 Intermediate Blueprint Reading
The purpose of this course is for students to further apply knowledge and skills with reading and interpreting blue prints for machining operations. Specific topics include: calculating missing dimensions from drawings, drawing different views of an object, knowledge of features and types of threads and fasteners used in mechanical objects, types of surface requirements on blueprints, and interpreting blueprints for casting and weldments. **NaN Credit Hours**

MTT 218 Computer Integrated Manufact
This course is a basic introduction to concepts related to the computer integrated manufacturing (CIM) process. Students cover the design requirements associated with such a cell (center), how a center is integrated into the full system, and the technician's role in the process improvement of not only the cell but the full CIM system. Related safety and inspection and process adjustment are also covered.
NaN Credit Hours

MTT 219 Computer Num Contrl:turning
This course covers techniques involved in writing a program for a multi-axis computerized numeric control (CNC) turning machine using computer assisted manufacturing (CAM) software. In addition, CNC turning machine set-up, programming, and operation are detailed. Upon completion, the student should be able to set-up, program, and operate a 3-axis CNC turning machine to produce a 2-axis part using CAM software. This course is aligned with NIMS certification standards.
5 Credit Hours

MTT 220 Computer Num Cntrl:milling
This course covers techniques involved in writing a program for a multi-axis computerized numeric control (CNC) milling machine using computer assisted manufacturing (CAM) software. In addition, CNC milling machine set-up, programming, and operation are detailed. Upon completion, the student should be able to set-up, program, and operate a 3-axis CNC milling machine to produce a 2-axis part using CAM software. This course is aligned with NIMS certification standards.
5 Credit Hours

MTT 221 Adv Blueprint Reading for Mach
This course introduces complex industrial blueprints. Emphasis is placed on auxiliary views, section views, violations of true projection, special views, and interpretation of complex parts and assemblies. Upon completion, students should be able to read and interpret complex industrial blueprints. **3 Credit Hours**

MTT 241 Cnc Milling Lab I
This course covers basic (3-axis) computer numeric control (CNC) milling machine setup and operating procedures. Upon completion, the student should be able to load a CNC program and set-up and operate a 3-axis CNC milling machine to produce a specified part. Related safety, inspection, and process adjustment are also covered. **6 Credit Hours**

MTT 242 Cnc Milling Lab II
This course covers advanced (including 4-axis) computer numeric control (CNC) milling machine set-up and operating procedures. Upon completion, the student should be able to load a CNC program and set-up and operate a CNC milling machine (including 4-axis) to produce a specified part. Related safety and inspection and process adjustment are also covered. **6 Credit Hours**

MTT 243 CNC Turning Lab I
This course covers basic computer numeric control (CNC) turning machine set-up and operating procedures (inner diameter and outer diameter). Upon completion, the student should be able to load a CNC program and set-up and operate a CNC turning machine to produce a simple part. Related safety and inspection and process adjustment are also covered. **6 Credit Hours**

MTT 244 CNC Turning Lab II
This course covers advanced computer numeric control (CNC) turning machine set-up and operating procedures. Upon completion, the student should be able to load a CNC program and set-up and operate a CNC turning machine to produce a specified part. Related safety and inspection and process adjustment are also covered. **6 Credit Hours**

MTT 281 Special Topics in MTT
This course is a guided study of special projects in machine tool technology. Emphasis is placed on student needs. Upon completion, students should be able to demonstrate skills developed to meet specific needs. **5 Credit Hours**