MACHINE SHOP TECHNOLOGY (MSP)

MSP 101. BASIC MACHINING TECHNOLOGY. 5 hrs.
This course introduces machining operations as they relate to the metalworking industry. Topics include machine shop safety, measuring tools, lathes, drilling machines, saws, milling machines, bench grinders, and layout instruments. Upon completion, students should be able to safely perform the basic operations of measuring, layout, drilling, sawing, turning, and milling.

MSP 102. INTERMEDIATE MACHINING TECHNOLOGY. 5 hrs.
PREREQUISITE: MSP 101.
This course provides additional instruction and practice in the use of precision measuring tools, lathes, milling machines, and grinder. Emphasis is placed on setup and operation of machining tools including the selection and use of work holding devices, speeds, feeds, cutting tools, and coolants. Upon completion, students should be able to perform basic procedures on precision grinders and advanced operations of measuring, layout, drilling, sawing, turning, and milling.

MSP 104. BASIC MACHINING CALCULATIONS. 2 hrs.
PREREQUISITE: Permission of instructor.
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.

MSP 105. LATHES. 3 hrs.
PREREQUISITE: Permission of instructor.
This course covers the operation and safety practices for engine lathes. Topics include turning, grinding, boring, chamfering, necking, grooving, and threading. Upon completion, students should be able to safely operate engine lathe using appropriate attachments.

MSP 107. MILLING MACHINES. 3 hrs.
PREREQUISITE: MSP 101 or permission of instructor.
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 vertical milling techniques to produce machine tool projects.

MSP 110. HANDBOOK FUNCTIONS. 3 hrs.
This course covers the use of the machining handbook. Topics include formulas, tables and usage. Upon course completion, students will be able to use the machinery handbook in making calculations and setups of machine tools.

MSP 111. INTRODUCTION TO COMPUTER NUMERICAL CONTROL. 2 hrs.
PREREQUISITE: MSP 101, MSP 104.
This course introduces the concepts and capabilities of computer numerical control (CNC) machine tools. Topics include setup, operation, and basic applications. Upon completion, students should be able to develop a basic CNC program to safely operate a lathe and milling machine.

MSP 112. BASIC COMPUTER NUMERICAL CONTROL TURNING. 3 hrs.
PREREQUISITE: Permission of Instructor.
This course introduces the programming, setup, and operation of CNC turning centers. Topics include programming formats, control functions, program editing, part production, and inspection. Upon completion, students should be able to manufacture simple parts using CNC turning centers.

MSP 113. BASIC COMPUTER NUMERICAL CONTROL MILLING. 3 hrs.
PREREQUISITE: Permission of instructor.
This course covers concepts associated with basic programming of a computer numerical control (CNC) milling center. Topics include basic programming characteristics, motion types, tooling, work holding 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.

MSP 121. BASIC BLUEPRINT READING FOR MACHINISTS. 2 hrs.
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.

MSP 127. CAM 2. 6 hrs.
This course serves as an overview and introduction to computer assisted manufacturing (CAM) and prepares students for more advanced CAM courses. Topics covered are basic concepts and terminology, CAM software environments, navigation commands and file management, 2-D geometry, construction modification, and toolpath generation for CAM machining process.

MSP 157. TOOLMAKERS TECHNOLOGY. 3 hrs.
PREREQUISITE: Permission of Instructor.
This course covers the use of precision measuring instruments and interpreting engineering drawings. Emphasis is placed on the inspection of machine parts using a wide variety of measuring instruments and interpreting engineering drawings using modern conventions, symbols, datum, datum targets, projected tolerance zones, and industry specifications and standards. Upon completion students should be able to demonstrate correct use of measuring instruments and display print reading skills in line with NIMS certification standards.

MSP 171. INTERMEDIATE BLUEPRINT READING. 2 hrs.
PREREQUISITE: Permission of instructor or MSP 121.
This course will build on Basic Blueprint Reading for Machinists. Topics include auxiliary and sectional views, tolerancing methods, symbols, and arrangement of views.
MSP 212. COMPUTER NUMERICAL CONTROL LAB. 3 hrs.
PREREQUISITE: MSP 101, MSP 104. COREQUISITE: MSP 111.
This course introduces the programming, set-up and operation of CNC turning centers and CNC machining center. Topics include programming formats, control functions, program editing, parts production, and inspection. Upon completion students should be able to manufacture simple parts using CNC turning centers and CNC machining center.

MSP 293. CO-OP IN MACHINE SHOP TECHNOLOGY. 3 hrs.
PREREQUISITE: Permission of instructor.
Student works on a part-time basis in a job directly related to Machine Shop Technology. The employer and supervising instructor evaluate students’ progress. Upon completion, students will be able to apply skills and knowledge in an employment setting.