COURSES

MACHINING

MAC-114 Introduction to Metrology Lec 2 Lab 0 Clinic 0 Credit 2
This course introduces the care and 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 the correct use of measuring instruments.

Co-Requisites: None
Pre-Requisites: None

MAC-115 Grinding Operations Lec 2 Lab 2 Clinic 0 Credit 3
This course introduces surface and cylindrical grinding in the toolroom. Topics include safety and the basic setup and operation of surface and cylindrical grinding machines. Upon completion, students should be able to grind steps, slots, angles, radii, dress grinding wheels, and square blocks.

Co-Requisites: None
Pre-Requisites: None

MAC-121 Introduction to CNC Lec 2 Lab 0 Clinic 0 Credit 2
This course introduces the concepts and capabilities of computer numerical control machine tools. Topics include setup, operation, and basic applications. Upon completion, students should be able to explain operator safety, machine protection, data input, program preparation, and program storage.

Co-Requisites: None
Pre-Requisites: None

MAC-131 Blueprint Reading-Machining I Lec 1 Lab 2 Clinic 0 Credit 2
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.

Co-Requisites: None
Pre-Requisites: None

MAC-141 Machining Applications I Lec 2 Lab 6 Clinic 0 Credit 4
This course provides an introduction to a variety of material-working processes that are common to the machining industry. Topics include safety, process-specific machining equipment, measurement devices, set-up and layout instruments, and common shop practices. Upon completion, students should be able to safely demonstrate basic machining operations, accurately measure components, and effectively use layout instruments.

Co-Requisites: None
Pre-Requisites: None

MAC-142 Machining Applications II Lec 2 Lab 6 Clinic 0 Credit 4
This course provides instruction in the wide variety of processes associated with machining. Topics include safety, equipment set-up, holding fixtures, tooling, cutting speeds and depths, metal properties, and proper finishes. Upon completion, students should be able to safely demonstrate advanced machining operations, accurately measure components, and produce accurate components with a proper finish.

Co-Requisites: None
Pre-Requisites: None

MAC-143 Machining Applications III Lec 2 Lab 6 Clinic 0 Credit 4
This course provides instruction in the field of advanced machining. Emphasis is placed on creating complex components, close-tolerance machining, precise measurement, and proper equipment usage. Upon completion, students should be able to demonstrate the ability to produce an accurately machined component with a quality finish using the proper machining process.

Co-Requisites: None
Pre-Requisites: None

MAC-151 Machining Calculations Lec 1 Lab 2 Clinic 0 Credit 2
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.

Co-Requisites: None
Pre-Requisites: None

MAC-152 Advanced Machining Calculations Lec 1 Lab 2 Clinic 0 Credit 2
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.

Co-Requisites: None
Pre-Requisites: None

MAC-222 Advanced CNC Turning Lec 1 Lab 3 Clinic 0 Credit 2
This course covers advanced methods in setup and operation of CNC turning centers. Emphasis is placed on programming and production of complex parts. Upon completion, students should be able to demonstrate skills in programming, operations, and setup of CNC turning centers.

Co-Requisites: None
Pre-Requisites: None

MAC-224 Advanced CNC Milling Lec 1 Lab 3 Clinic 0 Credit 2
This course covers advanced methods in setup and operation of CNC machining centers. Emphasis is placed on programming and production of complex parts. Upon completion, students should be able to demonstrate skills in programming, operations, and setup of CNC machining centers.

Co-Requisites: None
Pre-Requisites: None

MAC-229 CNC Programming Lec 2 Lab 0 Clinic 0 Credit 2
This course provides concentrated study in advanced programming techniques for working with modern CNC machine tools. Topics include custom macros and subroutines, canned cycles, and automatic machining cycles currently employed by the machine tool industry. Upon completion, students should be able to program advanced CNC functions while conserving machine memory.

Co-Requisites: None
Pre-Requisites: None

MAC-231 Cam: Computer Numerical Control Turning Lec 1 Lab 4 Clinic 0 Credit 3
This course introduces Computer Numerical Control graphics programming and concepts for turning center applications. Emphasis is placed on the interaction of menus to develop a shape file in a graphics CAM system and to develop tool path geometry and part geometry. Upon completion, students should be able to develop a job plan using CAM software, including machine selection, tool selection, operational sequence, speed, feed, and cutting depth.

Co-Requisites: None
Pre-Requisites: None

MAC-232 CAM: Computer Numerical Control Milling Lec 1 Lab 4 Clinic 0 Credit 3
This course introduces Computer Numerical Control graphics programming and concepts for machining center applications. Emphasis is placed on developing a shape file in a graphics CAM system and transferring coded information from CAM graphics to the CNC milling center. Upon completion, students should be able to develop a complete job plan using CAM software to create a multi-axis CNC program.

Co-Requisites: None
Pre-Requisites: None

MAC-233 Appl in CNC Machining Appl in CNC Machining Lec 2 Lab 12 Clinic 0 Credit 6
This capstone course provides students the opportunity to apply skills learned throughout the curriculum. Emphasis is placed on production of parts and assemblies using modern CNC machine tools. Upon completion, students should be able to manufacture complex parts using a variety of CNC machine tools.

Co-Requisites: None
Pre-Requisites: None

MAC-234 Advanced Multi-Axis Machining Lec 2 Lab 3 Clinic 0 Credit 3

This course includes multi-axis machining using machining centers with multi-axis capabilities. Emphasis is placed on generation of machining center input with a CAM system and setup of pallet changer and rotary system for multi-axis machining fixtures. Upon completion, students should be able to convert CAD to output for multi-axis machining centers, including tooling, setup, and debugging processes.

Co-Requisites: None
Pre-Requisites: None

MAC-234A Advanced Multi-Axis MacHining Lab Lec 0 Lab 3 Clinic 0 Credit 1

This course covers the application of multi-axis machining using machining centers with multi-axis capabilities. Emphasis is placed on generation of machining center input with a CAM system and setup of pallet changer and rotary system for multi-axis machining fixtures. Upon completion, students should be able to convert CAD to output for multi-axis machining centers, including tooling, setup, and debugging processes.

Co-Requisites: None
Pre-Requisites: None