Computerized Machining Tech (MACH)

Courses

MACH 1110 Machine Tool Lab I: 3 semester hours.
Machine Tool Lab I introduces students to the engine lathe and gives them practice on basic setup, safety, operation and maintenance of the machine. It prepares students for operations utilized in the advanced lathe practice labs. Related skills include supporting equipment. PREREQ: Minimum score of 14 on ALEKS or equivalent. COREQ: MACH 1111. F, S

MACH 1111 Machine Tool Theory I: 2 semester hours.
Machine Tool Theory is a study of conventional lathe operations including facing, turning, boring, grooving, knurling, and thread and taper cutting. Related skills include supporting equipment. PREREQ: Minimum score of 14 on ALEKS or equivalent. COREQ: MACH 1110. F, S

MACH 1112 Machine Math I: 3 semester hours.
Basic math principles of fractional and decimal numbers as related to machine shop measuring, blueprint reading, taper turning, threading and cutting speeds and feeds. Course covers basic algebra. PREREQ: Minimum score of 14 on ALEKS or equivalent. F, S

MACH 1115 Applied Machining Geometry: 2 semester hours.
Study of the principles and applications of geometry to solve problems including print interpretation, threads, tapers, chords, arcs, areas, and volumes in a machine shop environment. PREREQ: MACH 1112. F, S

MACH 1120 Machine Tool Lab II: 3 semester hours.
Machine Tool Lab II introduces the student to safety practices, maintenance, and operation of milling machines. In addition, students will receive instruction and practice on supporting equipment. Emphasis is on setup, safety, maintenance, and manipulation of all controls. PREREQ: Minimum score of 14 on ALEKS or equivalent. COREQ: MACH 1121. F, S

MACH 1121 Machine Tool Theory II: 2 semester hours.
Machine Tool Theory II is a study of the various milling machine operations. These include milling machines and the devices that attach to these mills for various operations. Also included is the operation of support equipment. PREREQ: Minimum score of 14 on ALEKS or equivalent. COREQ: MACH 1120. F, S

MACH 1123 Blueprint Reading: 1 semester hour.
Introduction to identifying blueprint information needed to produce a machined part, through the interpretation of lines, symbols, and numbers as shown on two and three view orthographic drawings. PREREQ: Minimum score of 14 on ALEKS or equivalent. F, S

MACH 1131 CNC Mill Setup: 2 semester hours.
Hands-on introductory course in the operation of Computer Numerical Control (CNC) vertical milling centers. Includes the safety practices, maintenance, setup and operation of CNC Mills. PREREQ: MACH 1120. F, S

MACH 1135 Applied Machining Trigonometry: 2 semester hours.
More advanced math course introducing trigonometry which is used in conjunction with geometry to solve machine shop applications such as threading, tapering, measuring, and milling speed/feed problems. PREREQ: MACH 1115. F, S

MACH 1141 CNC Lathe Setup: 2 semester hours.
Hands-on introductory course in the operation of Computer Numerical Control (CNC) lathes. Includes the safety practices, maintenance, setup and operation of CNC lathes. PREREQ: MACH 1110. F, S

MACH 1145 Geometric Dimensioning and Tolerancing I: 1 semester hour.
Introduction to Geometric Dimensioning and Tolerancing symbols and their meaning. PREREQ: MACH 1123. F, S

MACH 1199 Experimental Course: 1-6 semester hours.
The content of this course is not described in the catalog. Title and number of credits are announced in the Class Schedule. Experimental courses may be offered no more than three times with the same title and content. May be repeated.

MACH 2220 CAD and CAM Applications I: 3 semester hours.
A hands-on lab utilizing computers for programming CNC machining centers for production purposes. COREQ: MACH 2221. F, S

MACH 2221 CAD and CAM Theory I: 3 semester hours.
Introductory theory course in the utilization of CAD/CAM systems. COREQ: MACH 2220. F, S

MACH 2230 CNC Mill Operations: 8 semester hours.
Set-up and operation of computer numerically controlled (CNC) vertical milling centers. Build jigs, set tooling, and use pre-written programs to produce CNC parts. PREREQ: MACH 2261. D

MACH 2240 CNC Lathe Operations: 8 semester hours.
Set-up and operation of computer numerically controlled lathes. Set the tooling and use pre-written programs to produce CNC parts. PREREQ: MACH 2261. D

MACH 2245 Geometric Dimensioning and Tolerancing II: 1 semester hour.
Study of geometric symbols and their application on modern blueprints. Also includes dimensioning to geometric tolerancing parameters. PREREQ: MACH 1145. F, S

MACH 2270 CNC Programming Practices I: 6 semester hours.
An introductory course in basic CNC computer skills, programming, set-up, safety practices, operation and maintenance of CNC equipment. F

MACH 2271 CNC Theory/Programming I: 3 semester hours.
CNC theory as well as an introduction to programming are taught: including computer applications of absolute/incremental, EIA/ISO, and conversational address systems. F

MACH 2272 CNC Math I: 3 semester hours.
An advanced math course covering the basic use of geometric/trigonometric principles for identifying and solving all types of machine shop triangulation problems for the purpose of manufacturing parts on conventional and CNC machines. PREREQ: MACH 1135. F, S

MACH 2275 CAD and CAM Theory II: 2 semester hours.
Programming CNC machines utilizing CAD/CAM systems. Course familiarizes the student with applications, theory, and operation of CAD/CAM. PREREQ: MACH 2220 and MACH 2221. F, S

MACH 2280 CAD and CAM Applications II: 4 semester hours.
Application of CAD and CAM II with emphasis on efficient use of CAD/CAM generated programs to set up and operate CNC mills and lathes. PREREQ: MACH 2220. COREQ: MACH 2275. F, S

MACH 2281 CNC Programming Theory II: 1 semester hour.
An advanced course in the programming, set-up and operations of computer numerically controlled machine tools and accessory devices. MACH 2281 is a continuation of MACH 2271. COREQ: MACH 2290. PREREQ: MACH 2271. F, S

MACH 2285 CAD and CAM Theory III: 2 semester hours.
Advanced programming for CNC machines utilizing CAD/CAM systems. Course familiarizes students with theory and application of CAD/CAM to surfacing and multi-axis toolpaths. PREREQ: MACH 2275. COREQ: MACH 2291. F, S

MACH 2290 CNC Machining Practice II: 3 semester hours.
An advanced course in the programming, set-up and operations of the computer numerically controlled machine tools. MACH 2290 is an advanced continuation of MACH 2270. COREQ: MACH 2281. PREREQ: MACH 2270. F, S

MACH 2291 CAD and CAM Applications III: 4 semester hours.
Application of information learned in prior CAD/CAM applications courses. Emphasis on efficient use of CAD/CAM generated programs including surfacing and 4th and 5th axis toolpaths, to setup and operate CNC mills and lathes. PREREQ: MACH 2280. COREQ: MACH 2285. F, S

MACH 2296 Independent Study: 1-8 semester hours.
Addresses specific learning needs of individuals for the enhancement of knowledge and skills within the program area under the guidance of an instructor. May be repeated. Graded S/U, or may be letter-graded. PREREQ: Permission of the instructor. D

MACH 2298 Special Topics: 1-8 semester hours.
Addresses the specific needs of industry, enabling students to upgrade technical skills that are not included in the current program curriculum. May be repeated. Graded S/U, or may be letter-graded. PREREQ: Permission of instructor. D

MACH 2299 Experimental Course: 1-6 semester hours.
The content of this course is not described in the catalog. Title and number of credits are announced in the Class Schedule. Experimental courses may be offered no more than three times with the same title and content. May be repeated.