

MACHINE TECHNOLOGY (MACH)

MACH-150 Machining Technology Theory I **6 Credits**

Lecture: 6 hours per week

Offering: Fall Only, All Years

This course consists of learning machining related terminology, measuring systems, measuring tool usage, cutter types, and cutter geometry. Some of the instruments used are hand tools, mechanical instruments, lathes, mills, and bench grinders. Students will use shop math for problem solving.

Corequisites: MACH-151L, MACH-171

MACH-151L Machining Technology Lab I **6 Credits**

Lab: 18 hours per week

Offering: Fall Only, All Years

This course consists of machining projects designed to promote machining skills on all shop machinery and hand tools. Projects are graded to assure that blueprint tolerances are met. Skills learned in theory sessions are transferred to the lab through projects. Students must acquire their own tools, but may use shop tools temporarily. A tool list is supplied to students at the beginning of the course.

MACH-152L Machining Technology Lab II **5 Credits**

Lab: 15 hours per week

Offering: Spring Only, All Years

This course consists of machining projects designed to promote machining skills on all shop machinery and hand tools. Projects are graded to assure that blueprint tolerances are met. Skills learned in theory sessions are transferred to the lab through projects. Students will use shop math for problem solving. Students must acquire their own tools, but may use shop tools temporarily. A tool list is supplied to students at the beginning of the course.

Prerequisites: MACH-150, MACH-151L, MACH-171, MCTE-105

MACH-153 Precision Measuring **1 Credit**

Lecture: 1 hour per week

Offering: Fall Only, All Years

This course consists of learning terminology, measuring systems, and using measuring tools. Instruments used include hand tools, micrometers, calipers, scales, height gauges, and other measuring devices. Success is dependent on being able to read precision measuring instruments and applying it to real manufactured parts as related to the machining industry.

MACH-160 Manufacturing Processes **4 Credits**

Lecture: 4 hours per week

Offering: Spring Only, All Years

This course covers manufacturing strategies from interchangeability of common parts through various "waves" of production techniques including "Lean Manufacturing" as practiced in the Toyota Production System and others. This course also includes an introduction to Computer Aided Machining (CAM) and Word Address programming.

MACH-171 Blueprint Reading **2 Credits**

Lecture: 2 hours per week

Offering: Fall Only, All Years

This course is an 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. During the discussion of tolerances, geometric dimensioning and tolerancing will be introduced.

MACH-172 Blueprint Reading II **2 Credits**

Lecture: 2 hours per week

Offering: Spring Only, All Years

This course is a continuation of MACH-171 with an emphasis on more complex prints, geometric dimensioning, and tolerancing.

MACH-201 Design for Manufacturing **1 Credit**

Lecture: 1 hour per week

Offering: Spring Only, All Years

This course will expose Computer Aided Design Technology - Mechanical students to basic manufacturing processes, concepts, and principles that will help prepare them with skills needed in the mechanical design industry. Students will be exposed to various manufacturing methods including machining, casting, welding, prototyping, and composites.

MACH-231 Computers in Machining **3 Credits**

Lecture: 3 hours per week

Offering: Fall Only, All Years

This course is designed to provide students with extensive experience with CAD/CAM systems. Students will use PCs to prepare for employment in the computerized manufacturing workplace with the opportunity to become certified in Master CAM Mill. Students will also explore other software applications commonly used in the workplace.

MACH-253L Advanced Machining Lab I **5 Credits**

Lab: 16 hours per week

Offering: Fall Only, All Years

This course is a hands on learning experience using tools and techniques discussed in the first year machining program and MACH-253. Students will gain experience on such machines as CNC lathes, CNC mills, precision grinders, as well as practice on advanced techniques on other manual machines.

Prerequisites: MACH-152L

MACH-254L Advanced Machining Lab II **5 Credits**

Lab: 16 hours per week

Offering: Spring Only, All Years

This course offers hands-on experience under work-like conditions and in depth CNC and manual projects that build on skills acquired in MACH-253L. Upon successful completion of this course, students should have the necessary skills to be employed as an entry level machinist.

Prerequisites: MACH-253L

MACH-273 Intermediate Blueprint Reading

3 Credits

Lecture: 3 hours per week

Offering: Fall Only, All Years

This course will teach students to interpret advanced drawings and blueprints as well as make sketches with dimensions and additional information necessary to complete projects. Study of all types of section views, complex drawings, and unusual methods of drawing parts to better show features will also be completed. Students will receive hands-on experience sketching and interpreting sketches.

Prerequisites: MACH-172

MACH-274 Geometric Dimensioning and Tolerancing

3 Credits

Lecture: 3 hours per week

Offering: Spring Only, All Years

This course introduces students to the concepts used in the machine trades known as geometric dimensioning and tolerancing. It builds on prior knowledge of blueprints and machined parts and applies that knowledge to "geometric toleranced" drawings. Students will learn the terminology and definitions of geometric dimensioning and tolerancing and how to apply its concepts.

MACH-283 Computer Numerical Control Theory I

5 Credits

Lecture: 2 hours per week, **Lab:** 3 hours per week

Offering: Fall Only, All Years

This course introduces students to the standard practices and methods used in CNC machining for the CNC lathe and CNC milling machine. Students will be familiarized with the different types of controls and machines. Students will also learn basic programming, setup, and part production.

Corequisites: MACH-253L

MACH-284 Advanced Machining Processes and Techniques

5 Credits

Lecture: 2 hours per week, **Lab:** 3 hours per week

Offering: Spring Only, All Years

This course will teach students more complex methods and setups as well as be exposed to other types of CNC machines. They will also learn precision grinding and finishing skills, tool and cutter grinding, fixturing, and production planning.

Prerequisites: MACH-283