



Machine Tool Technology

Associate in Applied Science Degree, Career program

Division of Math, Physics, Technology & Engineering Science, Associate Dean: Bradley Cole

Department Chair: John Longwell

Students in the Machine Tool Technology program study that portion of the manufacturing arena that actually produces the parts that go into the products sold throughout the world. Machinists set up and operate a vast variety of machine tools from basic lathes to advanced computer numerically controlled machining centers. In today's highly automated, high precision environment, the machinist needs an intimate knowledge of mathematics, precision measurement, CNC programming, communications and presentation skills. Machinists must understand the working properties of metals such as steel, cast iron, aluminum and the impact heat treating has on their properties. They must be able to read complicated blueprints, translating these images into machined objects.

Graduates will be able to write and edit programs; run parts on a CNC machining center; use basic machining tools; calculate and identify proper tool geometry, feeds, speeds, screw threads, and tapers to machine parts of various materials; design simple jigs and fixtures; read and inspect parts made to drawing specifications; draw parts of various types and process them with MasterCam software; read, print, and set up machine tools; and recognize and use project management techniques.

In today's environment, the machinist is an integral part of a manufacturing team which analyzes processes, estimates costs, schedules production, and programs automated machines which are factors necessary to ensure a continuous refinement and improvement of the manufacturing process. With this involvement comes the knowledge and pride of having an immediate impact on, and control over, quality. Quality and productivity are critical factors in today's global economy.

For program assistance, see an advisor.

High school or equivalent preparation required: Two years of high school mathematics including algebra and either geometry or intermediate algebra. Students who don't have this preparation will be able to get it here, but it may take longer to complete the program.

Program Requirements

English (ENGL 1010 & 1020 or 1030. By placement)*	6	Technical Concentration (MACH 1040, 1250, 1540, 2510, 2380, 2400, 2410; MECH 1050, 1560, 1570; TECH 1030, 1110 ¹ , 1120 ¹)	42
Mathematics (MATH 1230-1240 or higher)*	6	Machine Tool Co-op (MACH 2350)	3
Social Sciences electives	6	Wellness	2
Physics (PHYS 1010)	4	Total hours	70
Technical Report Writing (ENGL 1501)	1		

*Based on placement, students may be required to take ENGL 0950 and/or ENGL 0990 before taking ENGL 1010, and MATH 0960 before taking a math credit course.

Students should take the Orientation to Technology (TECH 1050) course [offered before the semester begins] where their computer skills will be assessed. It may be possible to get credit for TECH 1110, 1120, 1130 via this assessment. If students do not pass sections of the computer assessment, they may be required to take TECH 1110, 1120 or 1130 to make up the deficiency.

Sample Sequence: intended as a guide for academic planning. It need not be followed exactly or completed in four semesters.

First Semester

English	3
Mathematics (MATH 1230 or higher)	3
Precision Machining I (MACH 1040)	5
Engineering Graphics I (MECH 1050)	3
Technical Word Processing and Research (TECH 1110) ¹	1
Spreadsheet Applications in Technology (TECH 1120) ¹	1
Wellness (Awareness/Instructional Component)	1

Third Semester

Social Sciences elective	3
Physics (PHYS 1010)	4
CNC Machining (MACH 2400)	5
MasterCam I (MACH 2380)	3
Technical Report Writing I (ENGL 1501)	1
CNC Lathe Programming (MACH 2510)	3
Wellness (Activity Component)	0.5

Second Semester

English	3
Mathematics (MATH 1240 or higher)	3
Precision Machining II (MACH 1540)	5
CNC Programming (MECH 1560)	3
Dimensional Metrology (MECH 1570)	3
Summer: Machine Tool Co-op (MACH 2350)	3

Fourth Semester

Social Sciences elective	3
Tooling Technology (MACH 2410)	4
Metallurgy for the Machinist (MACH 1250)	3
Manufacturing Methods (TECH 1030)	3
Wellness (Activity Component)	0.5

¹Evening students should substitute BUOT 1062 and CSST 1051.