

Machine Tool Technology

Degree Type

Associate in Applied Science

Type

Career

Division of STEAM

Associate Dean: Bradley Cole

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 (CNC) machining centers. In today's highly automated, high precision environment, the machinist needs a comprehensive knowledge of mathematics, precision measurement, CNC programming, and communication skills. Machinists must understand the working properties of metals such as steel, cast iron, aluminum and the effect 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 equipment and 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.

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. Some required classes are held at off-site locations evenings and weekends. Students must provide their own transportation.

Students must have good working knowledge of WORD (word processing) and EXCEL (spreadsheets and charts) for science and technology courses. If not already required in their program, students who lack these skills should still take TECH 1110 and TECH 1120 to make up the deficiency. Challenge exams for these courses are also available.

Program Requirements

Item #	Title	Credits
ENGL 1110	College Communication	3.0
ENGL 1020	College Composition II	3.0
	MATH 1230 and MATH 1240, or MATH 1310 or higher	6
	Diversity, Equity, Inclusion, Social Justice (DEI/SJ) Course	3
PHYS 1010	Elementary Physics	0.0-4
	Social Sciences or Humanities elective	3
MACH 1040	Precision Machining I	0.0-5
MACH 1540	Precision Machining II	0.0-5
MACH 2510	CNC Lathe Programming	0.0-3
MACH 2380	Mastercam I	0.0-3
MACH 2400	CNC Machining	0.0-5
MACH 2410	Tooling Technology	0.0-4
MECH 1050	Engineering Graphics I	0.0-3
MECH 1560	CNC Programming	0.0-3
MECH 1570	Dimensional Metrology	0.0-3
TECH 1030	Manufacturing Methods	3.0
TECH 1110	Technical Word Processing & Research	1.0
TECH 1120	Spreadsheet Applications in Technology	1.0
MACH 2350	Machine Tool Co-Op	3.0
Total Credits		64

Course Sequencing

First Semester

Intended as a guide for academic planning. It need not be followed exactly or completed in four semesters.

Item #	Title	Credits
ENGL 1110	College Communication	3.0
	MATH 1230 or higher	3
MACH 1040	Precision Machining I	0.0-5
MECH 1050	Engineering Graphics I	0.0-3
TECH 1110	Technical Word Processing & Research	1.0
TECH 1120	Spreadsheet Applications in Technology	1.0

Second Semester

Item #	Title	Credits
ENGL 1020	College Composition II	3.0
	MATH 1240 or higher	3
MACH 1540	Precision Machining II	0.0-5
MECH 1560	CNC Programming	0.0-3
MECH 1570	Dimensional Metrology	0.0-3

Summer

Item #	Title	Credits
MACH 2350	Machine Tool Co-Op	3.0

Third Semester

Item #	Title	Credits
TECH 1030	Manufacturing Methods	3.0
MACH 2400	CNC Machining	0.0-5
MACH 2380	Mastercam I	0.0-3
MACH 2510	CNC Lathe Programming	0.0-3

Fourth Semester

Item #	Title	Credits
	Social Sciences or Humanities elective	3
MACH 2410	Tooling Technology	0.0-4
PHYS 1010	Elementary Physics	0.0-4
	Diversity, Equity, Inclusion, Social Justice (DEI/SJ) Course	3

Footnotes

TECH 1110 and 1120: Evening students should substitute BUOT 1062 and CSST 1051.

* Based on placement, students might be required to take developmental and/or prerequisite classes before taking the required English and Math courses.

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

*Diversity, Equity, Inclusion, Social Justice (DEI/SJ) Course: See General Education Requirements for courses that meet this requirement.

*ENGL 1110: Students may take ENGL 1010 and SPCH 1080 in place of ENGL 1110.