



MTT 1110

Division: Career and Technical Education

Department: Industrial Technology

Course: MTT 1110

Title: Machine Tool I

Catalog Description:

This course is for first semester students. It teaches the manufacture of metal parts using machine tool operations. Students learn the theoretical operations of the engine lathe, drill press, pedestal grinder, and vertical milling machine. The course includes lecture, discussion, and demonstrations.

General Education Requirements: N/A

Semesters Offered: TBA

Credit/Time Requirement: Credit: 5; Lecture: 5; Lab: 0

Clock/Hour Requirements: 75

Offered for Non-Credit: Yes

Prerequisites: N/A

Corequisites: MTT 1125

Justification:

This course teaches students the fundamentals approved by our program advisory committee.

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

- understand the theoretical background of basic machine tool technology
- understand the basic theory, operations, and setups on cut-off saws, engine lathes, drilling machines, and vertical milling machines
- understand the basic cutting tool geometry for drilling tools, lathe tools, and vertical milling machines, including cutting tool speeds and feeds
- understand other related topics, such as layout operations, measuring tools and procedures, general safety, and related hand tool and bench operations
- explore the different career areas available in the machine tool and manufacturing industries.

Content:

Course objectives will be accomplished by providing students with learning experiences in the following subject areas:

- proper safety techniques
- sawing cut-off operations
- power hacksaws
- horizontal band machines
- pedestal and bench grinders
- engine lathe functions
- controls and maintenance
- speeds and feeds
- lathe cutting tools
- lathe tool holders
- center work and setups
- facing and turning operations
- measuring systems
- layout operations
- semi-precision measurement
- precision measurement
- cutting threads on lathe
- tap and die operations
- measuring threads
- vertical milling machines functions, controls, and operations
- vertical milling cutting tools
- speeds and feeds
- drilling machines
- drilling technology
- reaming and countersinking
- counterboring and spotfacing
- keyseat and dovetail milling
- direct and simple indexing
- shoulder turning
- chamfering and grooving
- cut-off operations
- knurling operations
- lathe filing and polishing
- taper turning operations
- taper measuring
- chucks and chucking operations
- lathe drilling operations
- hand tools and operations
- bench operations.

General Education Outcomes:

Applied Education Outcomes:

1) Students will acquire entry-level skills specific to and appropriate for employment in their chosen field of study.

Students will learn the theory of Machining Fundamentals and will learn hands on in the lab with required projects to prepare them for entry level jobs on conventional machines.

3) Students will demonstrate safe practices and awareness of potential hazards in their field of expertise.

Students will participate in a weekly safety meeting where they will take their turn as safety chair. Students will demonstrate safety in the lab of those comparable to industry standards.

Key Performance Indicators:

Student Learning Outcomes will be assessed by two or more of the following Key Performance Indicators:

- safety practices while working in the shop
- written tests
- quizzes
- assignments
- competency in subsequent courses and on projects.

Representative Text and/or Supplies:

- *Tooling University Online*. "Machine Tool I" Module. www.toolingu.com (student login required).

Optimum Class Size: 10

Maximum Class Size: 20

Signatures:

I hereby submit this course syllabus:

Alan Hart, AAS, Instructor

I hereby find this course consistent with the goals and resources of the Industrial Technology Department:

Alan Hart, AAS, Instructor, Chair

I hereby find this course consistent with the goals and resources of the Career and Technical Education Division:

Michael P. Medley, MBA, Assistant Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)