# MTT 122L

**Division:** Career and Technical Education
**Department:** Machine Tool Technology
**Course:** MTT 122L
**Title:** Machine Tool Shop II
**Catalog Description:**

This lab course is for second semester students. It teaches advanced operation of vertical milling machines and introduces operation of horizontal milling machines, grinders, shapers, and turret lathes. The course includes the combining of machine operations for the manufacturing of products and teaches on-call response to customer job demand. The course includes hands-on experience and demonstrations.

**General Education Requirements:** N/A
**Semesters Offered:** TBA
**Credit/Time Requirement:** Credit: 5; Lecture: 0; Lab: 15
**Clock/Hour Requirements:** 225
**Offered for Non-Credit:** No
**Prerequisites:** MTT 112L, MTT 1150

**Corequisites:** MTT 1210

**Justification:**

This course teaches students advanced application and procedures approved by our program advisory committee and is comparable to UVSC MTT 1220.

**Student Learning Outcomes:**

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

- set up and operate a horizontal milling machine for common machine operations, such as gear cutting, facing, slotting, angle milling, and helical milling
- complete a minimum of one project to print tolerances and specifications that require both milling machines and lathes
- complete a minimum of five school or industry jobs that are brought in from outside the machine shop and estimate the time required to finish the work to customer satisfaction
- produce one basic jig or fixture to industrial standards for the production of a minimum of five parts
- complete the machine control EDM and CNC mill operation at an introductory level.

**Content:**

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

- shop safety

- review projects
- develop manufacturing plan for major project
- demonstration - CNC operations
- demonstration - cylindrical grinding
- demonstration - cutter grinding
- demonstration - band welding
- lathe work, major project
- fixture building
- machine gear blank
- machining major project
- demonstration - grind end mill
- cut spur gear.

**General Education Outcomes:**

4) Retrieve, evaluate, interpret, and deliver information through a variety of traditional and electronic media.
Students will research projects through the *Machinery Handbook*, Internet, and company-specific websites. Specifications on material structure, machineability, and other details for a given job will need to be identified, evaluated, and interpreted before being applied to production.

6) Apply computational skills to a variety of contexts.
Previously acquired mathematical skills will be applied in a lab setting. Students will be required to compute details of layout, reverse engineering, and programming as they prepare and complete a given project.

7) Apply scientific reasoning to a variety of contexts.
Through the machining process, students are required to assess problems for possible solutions. Students will be involved in planning, design, and application of concepts they have learned in order to arrive at a quality-controlled product. Students will need to apply these skills to specific projects in order to arrive at the most efficient solution.

**Key Performance Indicators:**

**In class:**

- Students demonstrate safety practices while working in the shop.
- The student s knowledge and skills are tested by the ability to complete assignments with a required 75% minimum accumulated score.

**Following class:**

- Upon completion of the course, competency will be demonstrated in subsequent courses and on projects.

**Representative Text and/or Supplies:**

**Optimum Class Size:** 10
**Maximum Class Size:** 20

**Signatures:**

I hereby submit this course syllabus:

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

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Alan Hart, AAS, Instructor, Chair

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

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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:

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

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Michelle Olsen, MLS, Campus Librarian (Richfield Campus)