

**University of Arkansas - Fort Smith
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General Syllabus

MACH 12364 Machine Technology I

Credit Hours: 4 **Lecture Hours:** 2 **Laboratory or other types of Hours:** 4

Prerequisite(s): None

Effective Catalog: 2021-2022

I. Course Information

A. Catalog Description

Introduces the care and operation of basic manual machine tools and measuring instruments such as drill presses, lathe cutting tools, vertical milling machine tools, and bench grinders. Basic blueprint reading and shop safety procedures are also introduced.

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Operate machines safely and in compliance with safety protocols in the shop environment.
2. Calculate the correct use of speeds and feeds in order to produce a quality product, with an understanding of maximum tool life.
3. Validate machine parts against blueprint specifications.
4. Perform simple set-ups and safely operate an engine lathe.
5. Use a bench grinder to grind and sharpen lathe cutting tools to gages provided.
6. Use a lathe to accurately face lengths, turn diameters, and make threads.
7. Knurl parts within print tolerances.
8. File and polish parts to print specifications.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills: Students will read and interpret blueprints and make the necessary machine adjustments.

Communication Skills (written or oral)

Students will interpret blueprints, apply them to manual machine tool operations, and communicate verbally with other machinists regarding processes

Ethical Decision Making

Students will interpret and follow safety and quality practices based on OSHA requirements and quality standards.

Global and Cultural Perspectives

Students will identify cultural differences, compare and contrast the implications for interacting with people from other cultures in the context of international industry and customer service.

III. Major Course Topics

- A. The Evolution of Machine Tools
- B. Safety
- C. Measurement, Layout, Inspection and Setup of Tools
- D. Machine blueprint reading
- E. Threads and Threading
- F. Tool and Utility Grinder Operation
- G. Band Saw Cutting and Care of Blades
- H. The Drill Press and Drilling Operations
- I. The Lathe and Lathe Operations
- J. Milling Machine Operations
- K. Coated Abrasives
- L. Cutting Action and Cutting Fluids