

**University of Arkansas - Fort Smith  
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### **General Syllabus**

#### **MACH 1554 Computer Numerical Control (CNC) II**

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

**Prerequisite(s):** MACH 1454 Computer Numerical Control (CNC) I

**Effective Catalog:** 2021-2022

#### **I. Course Information**

##### **A. Catalog Description**

Designed to expand the student's knowledge and skills in Computer Numerical Control manufacturing, with attention to job planning, multiple part setups, advanced programming, tool changes within the program, and inspection and control of the manufactured part. The proper use of coolants, spindle speeds and feed rates as applied to Computer Numerical Control (CNC) will also be covered.

#### **II. Student Learning Outcomes**

##### **A. Subject Matter**

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

1. Comply with required safety rules when operating in a machine shop environment, including the use of personal safety protection.
2. Read and interpret machine blueprints.
3. Use Computer Aided Design /Computer Aided Machining software to draw and generate Computer Numerical Control Programs.
4. Transfer programs to and from the Computer Numerical Control machine.
5. Set-up Tool Tables.
6. Install tooling in the Automatic Tool Changer.
7. Set tool lengths.
8. Set-up Fixtures.
9. Use Run to operate the Computer Numerical Control machine.

##### **B. University Learning Outcomes**

This course enhances student abilities in the following areas:

**Analytical Skills**

**Critical Thinking Skills:** Students will create and edit Computer Numerical Control programs using linear interpolation, feed rate, spindle speed and absolute programming.

**Ethical Decision Making**

Students will identify implications of producing and allowing defective components to be used.

**III. Major Course Topics**

- A. Safety
- B. Manual data input (MDI) – turn spindle on/off, set tool lengths, set absolute position preset
- C. Data Table I (tool nomenclature)
- D. Data Table II (tool wear, chip load, tool material)
- E. Tool drum set-up and tool holders
- F. Edit (set tool length program)
- G. Machine operations
- H. Program management (Program, Save, Program Load)
- I. Computer Aided Machining Advanced 3-D machining