Course Information

Description
This course provides students with continuing opportunities to work with CNC programming, building on what was learned in the previous programming course. Additional material includes alternative work holding and advanced tooling set-up and operation for production of an advanced project. (Prerequisite: MTT 2120).

Total Credits: 4
Total Hours: 96

Types of Instruction

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Pre/Corequisites
MTT 2120

Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. **Demonstrate proper coolant maintenance**
   - Learning Objectives
     - Describe how to check coolant viscosity
     - Describe how to top up or top down coolant viscosity

2. **Demonstrate ability to initiate machine maintenance**
   - Learning Objectives
     - Demonstrate checking oil level
     - Demonstrate checking air pressure
3. **Discuss program stop**
   Learning Objectives
   - Use feed hold
   - Describe emergency stop

4. **Describe program override**
   Learning Objectives
   - Use spindle override
   - Use feedrate override

5. **Describe fourth axis**
   Learning Objectives
   - Describe fourth axis
   - Demonstrate fourth axis setup

6. **Demonstrate indicating part**
   Learning Objectives
   - Demonstrate indicating part for flatness
   - Demonstrate indicating a diameter

7. **Demonstrate proper tool holder use**
   Learning Objectives
   - Explain tool holder taper
   - Explain the different collet tapers

8. **Identify different types of cutters**
   Learning Objectives
   - Use carbide endmills
   - Use roughing endmills
   - Use carbide inserted tooling

9. **Utilize mid-program start**
   Learning Objectives
   - Describe mid-program start
   - Discuss setting parameters for mid-program start

10. **Develop CNC code with Mastercam**
    Learning Objectives
    - Describe NC code format
    - Describe NC upload and editing of program

11. **Demonstrate CNC programming of 2-dimension toolpaths**
    Learning Objectives
    - Use 2d high speed toolpaths
    - Use circle toolpaths (C-Mill, Slot Mill, Helix Bore)

12. **Demonstrate CNC programming of 3-dimension toolpaths**
    Learning Objectives
    - Use surface rough and finish toolpaths
    - Use surface high speed toolpaths

**SCC Accessibility Statement**

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