MOHAWK VALLEY COMMUNITY COLLEGE

UTICA-ROME, NY

INTRODUCTION TO CNC TURNING CENTERS MT 294

# COURSE OUTLINE

1. CATALOG DESCRIPTION

**MT294 Introduction to CNC Turning Centers C-2, P-6, Cr-4**

This course introduces fundamental concepts of CNC Turning centers. Topics include safety, blueprint reading, Geometric Dimensioning and Tolerancing (GD&T), machining a work piece to drawing specification, introduction to CAM programming software, use of CAD to create drawings, introduction to CNC programming for lathes, use of CNC lathe, proper tooling and work-holding methods, and how to determine sequential machining operations of complex parts.

Corequisite: MT 292 Introduction to CNC Milling

### MATERIAL

Scientific Calculator

Industrial grade safety glasses or goggles (for use in lab)

1. STUDENT LEARNING OUTCOMES:
2. The student will demonstrate knowledge and understanding of engineering blueprints.
3. The student will demonstrate knowledge and understanding of how and why Geometric Dimensioning and Tolerancing is applied to engineering blueprints.
4. The student will demonstrate the understanding of cutting speeds and feed rates for CNC Lathes.

3. The student will demonstrate the selection of tooling for different types of machining operations for a CNC Lathe.

4. The student will demonstrate work piece setups on a CNC Lathe.

5. The student will demonstrate the safety procedures required to use both machine tools and hand tools.

6. The student will demonstrate the application and the conversion of the Metric System.

7. The student will demonstrate basic CAD techniques and use of CAD as a CNC programming tool.

8. The student will demonstrate the understanding of line types, layers, title blocks, and two dimensional design in the use of CAD.

9. The student will demonstrate the ability to complete a mechanical drawing in CAD.

10. The student will demonstrate basic CAM programming techniques.

11. The student will demonstrate the ability to write a simple program for a CNC lathe.

12. The student will demonstrate his/her overall knowledge and ability in CNC Lathe, programming, set-up, and safe operation.

13. The student will demonstrate his/her knowledge and ability in the use of measuring and inspection tools.

##### 14. The student will demonstrate the ability to complete the Group Project to blueprint specifications.

# IV MAJOR TOPICS:

# Shop safety

# Blueprint reading

# Shop math

# Measurement & Inspection

# Bench work

# Metal cutting theory

# CNC Lathe tool selection and set-up

# Workshift and tool dimensions on CNC turning center

# CNC Lathe Programming

# CNC Turning center set-up and operation

1. CAD

# CAM

# Group Project

# **COURSE NAME:\_\_\_\_\_MT 294 Introduction to CNC Turning Centers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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## **DATE DATE FACULTY NAME CHANGE INPUT MEASUREMENT ASSESSMENT ACTION**

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| **1/11/11** | **B.Alguire** | **Eliminated header, disability statement, and grading policies per Middle States** | **MVCC faculty** | **Standardize outlines college wide** |  | **None** |
| **1/27/14** | **B.Alguire** | **Update Course Outline** | **MVCC faculty** | **Standardize outlines**  **College wide** |  | **None** |
| **10/9/19** | **B. Alguire** | **Changed credit hours from 5 to 4** | **MVCC faculty** | **Update outline** |  | **None** |
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