MOHAWK VALLEY COMMUNITY COLLEGE

UTICA-ROME, NY

 ADVANCED CNC TURNING CENTERS MT 295

# COURSE OUTLINE

1. CATALOG DESCRIPTION

**MT295 Advanced CNC Turning Centers C-2, P-6, Cr-4**

This course introduces advanced concepts of CNC Turning centers. Topics include safety, blueprint reading, live tools, C axis programming, soft Jaws, machining a work piece to drawing specifications, CAM programming software, use of CAD to create drawings, manual programming for lathes, set-up of CNC lathe, proper tolling and work-holding methods and how to determine sequential machining operations of complex parts.

Corequisite: MT294 Introduction to CNC Turning Centers

### 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 the understanding of cutting speeds and feed rates for CNC Lathes.
4. The student will demonstrate the selection of tooling for different types of machining operations for a multi-axis CNC Lathe including live tooling.
5. The student will demonstrate work piece setups on a multi-axis CNC Lathe.
6. The student will demonstrate the safety procedures required to use both machine tools and hand tools.
7. The student will demonstrate the ability to complete a mechanical drawing in CAD.
8. The student will demonstrate CAM programming techniques.
9. The student will demonstrate the ability to write advanced programs for a CNC lathe.
10. The student will demonstrate his/her overall knowledge and ability in CNC Lathe, programming, set-up, and safe operation.
11. The student will demonstrate his/her knowledge and ability in the use of measuring and inspection tools.
12. The student will demonstrate the ability to start designing projects, while considering, order of operations, tooling selection, and part setup.

# 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 Multi-axis CNC turning center

# Soft Jaws

# Live Tooling

# CNC Lathe C axis Programming

# CNC Turning center set-up and operation

1. CAD

# CAM

#

# **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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