



## Industrial Technology/Manufacturing

# CNC Machinist Certificate CIMA-3010

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This short-term training program for CNC Machining explores the basics of machining, hand tools, safety, maintenance, drawings, manual machines, and layout. Students will learn manual and CNC milling practices and CNC lathe turning practices, as well as utilize applied mathematics, teamwork, critical thinking, and problem solving. Hands-on experience and practical applications are included. By the end of the course, students will take an exam to earn a National Incident Management System (NIMS) credential.

Ready to learn more? Complete our information form at [www.kirkwood.edu/ce\\_certificatesform](http://www.kirkwood.edu/ce_certificatesform) or contact a student advisor today at [ceadvising@kirkwood.edu](mailto:ceadvising@kirkwood.edu) or 319-398-5529.

### **Course List:**

Measurement, Materials, and Safety; Job Planning, Benchwork, and Layout; CNC Milling (Operator) Level 1; CNC Lathe (Operator) Level 1

### **Delivery Method:**

Classroom

### **Length of Program and CEU Credits:**

256 hours, 30.72 CEUs

### **Entrance Requirements/Prerequisites:**

None

### **Other Items to Know About this Course:**

Students must dress appropriately for shop work days. Jeans and closed-toe shoes are required, and long sleeves are prohibited. Standard ANSI/OSHA approved safety glasses are highly recommended.

### **Program Completion Requirements:**

This program is a pass/fail certificate based on attendance, satisfactory exam scores, and project completion. At least 75 percent attendance is required for each class in the program, and students must pass the respective NIMS exams per class. Students are also expected to complete two projects for Job Planning, Bench Work, and Layout as well as three projects for both the CNC Milling Operator and CNC Lathe Operator courses.

### **Industry Credentials Earned:**

National Institute of Metalworking Skills (NIMS) Credential

### **Pathway to Credit Program:**

MFG-291 CNC Milling (Operator) Level 1; MFG-292 CNC Lathe (Operator) Level 1; MFG-286 Job Planning, Benchwork, and Layout; MFG-259 Measurement, Materials, and Safety

### **Tuition Assistance:**

Yes

### Course Objectives:

- Identify milling machine features and demonstrate various milling techniques, such as pocket and angular, focusing heavily on safety protocol.
- Demonstrate work-holding techniques and alignment of devices.
- Define cutter types found on milling machines and explain cutting tools and materials, along with proper cutter storage.
- Perform and calculate speed and feed operations, machining time, and rotary table operations.
- Identify the principle operations of a lathe and its functions, parts, and features.
- Differentiate between universal-type and independent-type chucks.
- Explain the functions and applications of three-jaw and four-jaw independent chucks.
- Apply various types of lathe centers, collets, mandrels, and other related equipment.
- Identify and explain the applications of a steady rest and follower rest.
- Explain the relationship between cut depth, cut diameter, and hole-making procedures.
- Describe the purpose and process of knurling.
- Learn thread terminology and parts of a thread, differentiating between left-hand and right-hand threads.
- Identify and describe the different classes of fit.
- Locate thread reference data from given charts and perform calculations required for thread cutting and measurement.
- Utilize taps and dies to cut threads on a lathe.
- Define a taper and demonstrate understanding by applying taper specification methods, performing taper calculations, and understanding setup procedures.
- Understand safety precautions and other protocol to prepare for the NIMS Certification Exam.

### Learning Outcomes:

The skills, knowledge and NIMS certifications gained in this program will allow students to be employed as a computerized machining center operator.

### Careers:

Source: Career Coach 2018, Kirkwood Community College region.

#### **Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic**

Average hourly earnings: \$21.85

Starting hourly earnings: \$13.86

Projected job openings (2018 – 2023): 16

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#### **Layout Workers, Metal and Plastic**

Average hourly earnings: \$24.62

Starting hourly earnings: \$14.89

Projected job openings (2018 – 2023): 10

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#### **Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic**

Average hourly earnings: \$20.00

Starting hourly earnings: \$15.41

Projected job openings (2018 – 2023): 46

### Related Information:

NA

### LEARN MORE

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**Continuing Education**  
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