

Schoolcraft College

Course Cover Sheet



**M-CAM Training Area:**

CNC/Machining Multi-Skilled Mechatronics Production Operation Welding/Fabrications

**Program(s):** CNC Operator Boot Camp

**Course:** CESB 6280 - CNC Operator Boot Camp Level II

**Course Description:** Participants will gain additional skills and knowledge of a CNC operator, including basic programming position in a CNC machining environment. The skills learned in this course address the CNC basic requirements in the aerospace, automotive, and defense industries. Students will have the opportunity to complete the NIMS tests for the Measurement, Materials and Safety & Job Planning, Bench Work & Layout Credentials.

**Date Created:** May 4, 2015

**Faculty Developer(s)/Instructional Designers(s):** Gene M. Keyes, Tammy Thomson, Sandra Miller

**Employer/Industry Partner:** Loc Performance

**College Contact:** Tammy Thomson

Phone: 734-462-4349

Email: tthomson@schoolcraft.edu

**Additional Information/Comments:**

As part of our TAACCCT grant and in guidance with our industry partner, Loc Performance, the CNC Operator-Level II Training course was created. The National Institute for Metalworking Skills credentials were incorporated along with the CNC simulation training, Immerse2Learn.

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## CONTINUING EDUCATION & PROFESSIONAL DEVELOPMENT CLASS PROPOSAL FORM

*By submitting this completed form, you agree that in order to maintain an ethical and impartial learning environment, you will not promote any specific product, service, or source in the classroom, nor solicit contact information from the students.*

<b>Proposal Prepared By:</b>			
<b>Biography:</b> Please provide information on your background as it relates to the class you are proposing. Please also provide a résumé.			
<b>Suggested Class Title:</b>			
<b>Prerequisite/Skills Required:</b>			
<b>Total Class Hours:</b>			
<b>Maximum Enrollment:</b>			
<b>Type of Supplies:</b>			
<b>Supply Fee: \$</b>			
<b>Class Highlights (We will use this to create a class description. If there is copy that should <i>not</i> be changed, please indicate.)</b>			
<b>Type of Classroom &amp; Equipment Required</b>			
<b>Textbook(s):</b>	Required <input type="checkbox"/>	Optional <input type="checkbox"/>	Handout Material <input type="checkbox"/>
<b>Book Title, Author, Publisher</b>			
<b>Comments:</b>			

**TARGET AUDIENCE:** This class is designed for whom?

**COMPETITION:** Where else is this class or a similar class being offered?

**MARKETING SUGGESTIONS:** Professional associations, specific publications etc.

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**COMPETENCIES: (These competencies must be related to class outline.)**

Use numbers to list objectives & periods at the end of the objectives.

Example: *1. Demonstrate the basic functions of a computer.*

**A successful student should be able to do the following at the end of this class:**

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**LEARNING ACTIVITIES:**

Use numbers to list activities & periods at the end of the activities. Example: *1. Lecture.*

**The class will have the following distinct activities:**

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**METHODS OF EVALUATION:**

Use numbers to list evaluation methods & periods at the end of evaluation methods.

Example: *1. Class assignments.*

**In addition to attendance and participation the following criteria may be used:**

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*continued on next page*

**CLASS OUTLINE (Please indicate projected time devoted to each content area.)**

Capitalize the first word of each division. Use Roman numerals with periods, then capital letters with periods, numbers with periods, and finally lowercase letters with periods if necessary. Please use lowercase hour abbreviation and decimal time notation.

# ARE YOU MECHANICALLY INCLINED?

## ARE YOU LOOKING TO BEGIN A NEW CAREER NOW?



## BEGINNING WINTER 2017

### 5 WEEK CNC OPERATOR TRAINING COURSE

- Company-Driven Training Program
- Nationally Recognized Certifications
- Personalized Career Preparation including mock interviews, resume writing, and job skill development

**JANUARY 9-FEBRUARY 10, 2017**  
**8:00 am-2:00 pm** | (no class January 16)

#### CNC OPERATOR COURSE WITH OSHA 10: \$1,500

##### Successful completers of Level I will receive:

- 90 hours of industry-led training
- Certificate of Completion from Schoolcraft College
- NIMS LEVEL 1 Certification Exams: Measurement, Materials & Safety; Job Planning, Benchwork & Layout
- Guaranteed interviews upon completion of the course
- 16 Hours Personalized Career Preparation including mock interviews, resume writing and job skills development
- OSHA 10 Certification
  - This training covers a variety of general industry safety and health hazards which a worker may encounter.
  - Training will emphasize hazard identification, avoidance, control and prevention of hazards.

#### WHAT IS A CNC OPERATOR?

The CNC Operator operates computer numerical control (CNC) machines to perform machine functions such as boring, turning, facing, and threading parts of metallic work pieces such as castings, forgings and bar stock.

#### JOB OPPORTUNITIES IN METRO DETROIT

##### Benefits vary but may include:

- Full Time Positions Available
- Starting Pay \$10-14/hour
- Competitive Benefits Package: Medical, Dental, Life, Disability, 401(k)
- Bonus Incentives
- Potential for Advancement and Further Education
- Consistent Scheduling
- Two Shifts
- Veteran Friendly

**ASK ABOUT JOB TRAINING FUNDS TO HELP PAY FOR THIS TRAINING.**

For more information, please contact:

Sandy Miller | [smiller@schoolcraft.edu](mailto:smiller@schoolcraft.edu) | 734-462-4680 OR Karen Maxton | [kmaxton@schoolcraft.edu](mailto:kmaxton@schoolcraft.edu) | 734-462-4787



**Schoolcraft**  
College



# CNC OPERATOR COURSE CURRICULUM

## Blueprint Reading, GD&T

### Shop Math

Fractions to decimal conversion  
Metric to English conversion  
Feed and speed formulae, Depth of cut, Drill point calculations  
Threading, Tap drill size using formula

### Perform basic machine tool operations

Power up, upload G&M code programs  
Set and load tools into magazine  
Simulate programs, first piece run and inspection

### Identify CNC Mill Tools used for CNC machining

Helix, Number of flutes  
Solid Carbide and Indexable inserts  
High Speed Tools  
TiC, TiN, and Al<sub>2</sub>O<sub>3</sub> coatings and the effect on CNC machining  
Coolants and use of the refractometer

### Identify CNC Lathe Tools used for CNC machining

ANSI & ISO tool holders and inserts  
Setting Lathe tooling offsets  
Setting Home position  
Soft Skills training

### Inspect basic components

Use inspection tools such as micrometers, dial calipers, gage blocks and gage pins  
Bore gages and inside micrometers

## Develop CNC 2 and 3 axis Mill

### G&M code programs

Face, profile, chamfer, engrave, drill and tap  
Employ Cutter Diameter Compensation  
Employ peck drilling

## Develop CNC 2-axis Lathe

### G&M code programs

OD tuning and facing and the use of parting tools

### Setup and define work offsets and tool length offsets

### Debug and edit G&M code programs on the shop floor

XYZ adjustments as necessary  
Feed and speed adjustments as necessary  
Inspect and replace tooling as required

### Setup machines for production runs

Load work holding vices  
Indicate vices and straight edges square  
Pick up dowel pins and round parts using an indicator

### Career Readiness

Resume preparation  
Interviewing skills and practice  
Financial literacy  
Workplace habits for success

## OSHA Topics include:

- Introduction to OSHA
- Walking and Working Surfaces, including fall protection
- Exit Routes, Emergency Action Plans, Fire Prevention Plans, and Fire Protection
- Electrical
- Personal Protective Equipment
- Hazard Communication
- Hazardous Materials
- Materials Handling
- Machine Guarding
- Introduction to Industrial Hygiene
- Bloodborne Pathogens
- Ergonomics
- Safety and Health Program
- Fall Protection
- General Industry Hazards and Policies

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### Subject Matter Expert (SME) Course Review Summary

College: Schoolcraft College

M-CAM Training Area:  CNC/Machining  Multi-Skilled/Mechatronics  Production Operation  Welding/Fabrication

Degree Program Name: CNC Operator Boot Camp

Title of Course: CESB 6280 CNC Operator Boot Camp Level II

#### Subject Matter Expert (SME) Reviewer Information

Name: Floyd Peterson

Title: President

Phone: 248-349-0840

Email: [admin@eccotool.com](mailto:admin@eccotool.com)

Organization/Affiliation: Ecco Tool/Schoolcraft College Advisory Board Member

Attach Resume or provide credentials (showing years of experience and work experience that is relevant to course content):

<http://www.eccotool.com/index.php>

Synopsis of Findings:

*Very in depth*

Reviewers Signature

*Floyd Peterson*

Date:

*2-2-17*

**Michigan Coalition for Advanced Manufacturing  
Subject Matter Expert Course Review**

1. Course Overview and Objectives	Exceptional	Satisfactory	Ineffective
The goals and purpose of the course is clearly stated.	X		
Prerequisites and/or any required competencies are clearly stated.	X		
Learning objectives are specific and well-defined.	X		
Learning objectives describe outcomes that are measurable.	X		
Outcomes align to occupational focus (industry skills and standards).	X		
Comments or recommendations:			
2. Material and Resources	Exceptional	Satisfactory	Ineffective
The instructional materials contribute to the achievement of the course learning objectives.			
The materials and resources meet/reflect current industry practices and standards.			
The instructional materials provide options for a variety of learning styles.			
Resources and materials are cited appropriately. If applicable, license information is provided.			
Comments or recommendations: <i>did not see this</i>			
3. Learning Activities	Exceptional	Satisfactory	Ineffective
Provide opportunities for interaction and active learning.	X		
Help understand fundamental concepts, and build skills useful outside of the learning object.	X		
Activities are linked to current industry practices and standards.	X		
Comments or recommendations: <i>I know this because I sat on the advisory board</i>			



**Michigan Coalition for Advanced Manufacturing  
Subject Matter Expert Course Review**

4. Assessment Tools/Criteria for Evaluation	Exceptional	Satisfactory	Ineffective
The course evaluation criteria/course grading policy is stated clearly on syllabus.	X		
Measure stated learning objectives and link to industry standards.	X		
Align with course activities and resources.	X		
Include specific criteria for evaluation of student work and participation.	X		
Comments and recommendations:			
5. Equipment/Technology	Exceptional	Satisfactory	Ineffective
Meets industry standards and needs.	X		
Supports the course learning objectives.	X		
Provides students with easy access to the technologies required in the course/module.	X		
Comments and recommendations:			

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Started in 1955 by Elmer Peterson and Charlie Bowman, ECCO Tool got our name from the first letters of their names: **Elmer Charlie CO.** Now run by Elmer's son, Floyd Peterson, this family business now has three of Floyd's children working with us. Still growing strong, ECCO Tool Company specializes in manufacturing Highspeed and Carbide Cutting tools.

What sets us apart from competitors is our fast turnaround time and very competitive prices. If your company ordered parts from us years ago, we are able to perfectly replicate it. In fact, ECCO manufactures replacement tools to be exactly the same, enabling you to take one tool out of your machine and place the next tool in – and be up and running without costly down time between tool changes.

ECCO Tool Company is committed to quality. In fact, ECCO was one of the first companies in 1986 that Ford Motor Company approached with its Q101 program. In 1989, ECCO was awarded a Q101 rating by Ford. The same year, the Hydra-Matic division of General Motors presented ECCO with its Quality of Excellence award. In 1994, ECCO became the only dovetail form shop to obtain the Ford Q1 Rating.



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#### ECCO Manufacturers a Wide Variety of Tools for Key Industries:

- Fittings
- Brass Fittings
- Medical
- Aerospace
- Automotive
- Agriculture
- Plumbing

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