MET - 2010 - CNC Machining and Inspection
(18-19)
<table>
<thead>
<tr>
<th>Course Type:*</th>
<th>Mechanical Engineering Technology</th>
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<tbody>
<tr>
<td>Course Title:*</td>
<td>CNC Machining and Inspection</td>
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<tr>
<td>Transcript Course Title:*</td>
<td>CNC Machining and Inspection</td>
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<tr>
<td>Equivalent/ Crosslisted?</td>
<td>Equivalent☑ Crosslisted☐</td>
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<tr>
<td>List all equivalent courses:</td>
<td>MET 290D</td>
</tr>
<tr>
<td>List all crosslisted courses:</td>
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Check All That Apply:*  
- [ ] Required for Major  
- [ ] Required for Minor  
- [X] Required for Concentration  
- [ ] Specified Elective  
- [ ] Elective

To receive Title IV financial aid funds, all institutions of higher education must comply with the
To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

**Federal Credit Hour Definition:** A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:

1. one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or
2. at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward to the award of credit hours. 34CFR 600.2 (11/1/2010)

### Credit Hours:

| Credit Hours:* | 3 |

### Distribution of Credit Hours

| (2 + 2) |

### Schedule Type:

| Lecture/Lab |

### Grade Mode:

| Letter |

### Lecture:

| 30 |

### Lab:

| 45 |

### Internship:

### Practicum:

### Other:

| 60 |

### Additional Student Work Hours per course:

### Variable topics umbrella course:

| ☐ No ☑ Yes |

### If yes, number of credits/ repeats allowed

Department of Engineering and Engineering Technology

Once this Proposal is approved, submit Variable Topic AP.

### Specified repeatable course:

| ☐ No ☑ Yes |

### If yes, number of credits/ repeats
Prerequisite(s):*
MET 1010 or IND 2830, MET 1200 or IND 1450 or CET 1215, MTH 1120 with grades of "C-" or better

Corequisite(s):* none

Prerequisite(s) and/or Corequisite(s):* none

Banner Enforced Prerequisite(s): MET 1010 or IND 2830, MET 1200 or IND 1450 or CET 1215, MTH 1120

Minimum passing grade for Banner enforced prerequisite course(s): C-

Banner Corequisite(s):

Minimum Passing Grade for Banner enforced corequisite course(s):

Banner Prerequisite(s) and/or Corequisite(s):

Minimum Passing Grade for Banner enforced pre/corequisite courses:

Registration restrictions (optional):

<table>
<thead>
<tr>
<th>Level</th>
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<tr>
<td>Class</td>
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<td>Major</td>
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<tr>
<td>Other Registration Restrictions</td>
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Catalog Course Description:* This course introduces computer numerical control machine tools. Topics include CNC programming for machine setup, operation, and basic applications along with machined part inspection. Upon completion, students should be able to explain a CNC program, data input, and machine tool operation. Student will be able to compare dimension of physical components against technical drawings for quality control.
Required Reading and Other Materials will be equivalent to:


Specific, Measurable Student Behavioral Learning Objectives:

1. Identify the basic programming codes.
2. Create geometry and toolpaths from the specifications on a blueprint for simple parts manually and using CAM software.
3. Identify and define the functions of the CNC machine control.
4. Operate CNC machining center and manufacture simple parts.
5. Compare actual dimension of machined parts with their specification using inspection tools

Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship:

1. Introduction
   1. Definition and historical perspective
   2. Types of CNC machine control and co-ordinate system

2. Basic principles of computer numerical control and operations
   1. Programming terms and procedures
   3. Write G and M codes and load the program to CNC machine control
   4. Specialized machine programming (EDM, Laser and Water Jet)

3. Inspection
   1. Basics of Measurement, design features and blueprint reading
   2. Inspection tools, methods and QC report generation

Evaluation of Student Performance:

Homeworks, Exams, Laboratory Projects and Quizzes