Program Planning Guide

Computer-Integrated Machining, Certificate (C50210)

Program Length: 2 semesters
Career Pathway Options: Associate in Applied Science in Computer-Integrated Machining with an Emphasis on Tool, Die and Mold Making (Higher entrance standards required); Diploma computer Integrated-Machining.
Program Sites: Lee Main Campus – Day/Evening Program; Harnett Main Campus – Day/Evening Program

### Suggested Course Schedule:

<table>
<thead>
<tr>
<th>Suggested Course Schedule</th>
<th>HOURS</th>
<th>Grade</th>
<th>Semester</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class</td>
<td>Lab</td>
<td>Credit</td>
<td></td>
</tr>
<tr>
<td><strong>1st Semester (Fall)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPR 111 Blueprint Reading</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MAC 111 Machining Technology I</td>
<td>2</td>
<td>12</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>MAC 171 Measure/Material &amp; Safety</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MAT 110 Math Measurement &amp; Literacy</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MEC 142 Physical Metallurgy</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>20</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td><strong>2nd Semester (Spring)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPR 121 Blueprint Reading: Mechanical</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MAC 124 CNC Milling</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Total Semester Hours Credit: 18

**Course Descriptions:**

**BPR 111 Blueprint Reading**
1-2-2
This course introduces the basic principles of blueprint reading. Topics include line types, orthographic projections, dimensioning methods, and notes. Upon completion, students should be able to interpret basic blueprints and visualize the features of a part.

**BPR 121 Blueprint Reading: Mechanical**
1-2-2
Prerequisite: BPR 111 or MAC 131
This course covers the interpretation of intermediate blueprints. Topics include tolerancing, auxiliary views, sectional views, and assembly drawings. Upon completion, students should be able to read and interpret a mechanical working drawing.

**MAC 111 Machining Technology I**
2-12-6
This course introduces machining operations as they relate to the metalworking industry. Topics include machine shop safety, measuring tools, lathes, drilling machines, saws, milling machines, bench grinders, and layout instruments. Upon completion, students should be able to safely perform the basic operations of measuring, layout, drilling, sawing, turning, and milling.

**MAC 112 Machining Technology II**
2-12-6
Local Prerequisite: MAC 111
This course provides additional instruction and practice in the use of precision measuring tools, lathes, milling machines, and grinders. Emphasis is placed on setup and operation of machine tools including the selection and use of work holding devices, speeds, feeds, cutting tools, and coolants. Upon completion, students should be able to perform basic procedures on precision grinders and advanced operations of measuring, layout, drilling, sawing, turning, and milling.

**MAC 124 CNC Milling**
1-3-2
This course introduces the manual programming, setup, and operation of CNC machining centers. Topics include programming formats, control functions, program editing, part production, and inspection. Upon completion, students should be able to manufacture simple parts using CNC machining centers.

**MAC 171 Measure/Material & Safety**
0-2-1
This course introduces precision measuring instruments, process control and adjustment, inspection, material handling and workplace safety. Topics include properly identifying and handling various measurement instruments and materials, process control, adjustment and improvement, personal protective equipment (PPE) and OSHA safety regulations. Upon completion, students should be able to safely demonstrate effective measurement techniques, identify and handle various materials, and explain safe industry practices.
MAT 110  Math Measurement & Literacy  2-2-3
Prerequisite: Take one set: Set 1: DMA 010, DMA 020, and DMA 030  Set 2: DMA 025; Set 3: MAT 003
Local RISE corequisites: Take one group: 1) MAT 010; 2) MAT 003; 3) DAM 010, DMA 020, DMA 030; 4) MAT 060; 5) DMA 025
This course provides an activity-based approach that develops measurement skills and mathematical literacy using technology to solve problems for non-math intensive programs. Topics include unit conversions and estimation within a variety of measurement systems; ratio and proportion; basic geometric concepts; financial literacy; and statistics including measures of central tendency, dispersion, and charting of data. Upon completion, students should be able to demonstrate the use of mathematics and technology to solve practical problems, and to analyze and communicate results.

MEC 142  Physical Metallurgy  1-2-2
This course covers the heat treating of metals. Emphasis is placed on the effects of hardening, tempering, and annealing on the structure and physical properties of metals. Upon completion, students should be able to heat treat materials.