South Central College

CIM 1202  CNC Programming II

Common Course Outline

Course Information

Description: This course prepares students to become an introductory CNC machine operator. The topics include machine safety, proper tool setup, tool/work offsets, and CNC controller layout. This also includes a basic introduction to Mastercam. (Prerequisites: CIM 1102 CNC Programming I)

Total Credits: 3.00
Total Hours: 64.00

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Credits/Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>2/32</td>
</tr>
<tr>
<td>Lab</td>
<td>1/32</td>
</tr>
</tbody>
</table>

Pre/Corequisites

Prerequisite: CIM 1102 - CNC Programming I

Institutional Core Competencies

Analysis and inquiry: Students will demonstrate an ability to analyze information from multiple sources and to raise pertinent questions regarding that information.

Critical and creative thinking: Students will develop the disposition and skills to strategize, gather, organize, create, refine, analyze, and evaluate the credibility of relevant information and ideas.

Course Competencies

1 Demonstrate CNC Mill and CNC Lathe safety.
   Learning Objectives
   Demonstrate basic OSHA requirements.
   Demonstrate proper chip handling and maintenance.
   Exhibit general shop safety.

2 Demonstrate safe CNC start up procedures.
   Learning Objectives
   Conduct proper machine power up restart.
   Execute use of moving machine axis.
   Conduct proper and safe machine shut down procedures.

3 Describe CNC machine types
Learning Objectives
Identify CNC mill and CNC Lathe.
Identify Wire and Sinker EDM.

4 Edit CNC program.
Learning Objectives
Modify CNC lathe and mill program content.
Modify CNC lathe and mill offsets.

5 Use machine controls
Learning Objectives
Demonstrate offset adjustments.
Enter tool diameters.

6 Interpret CNC program.
Learning Objectives
Describe units of measure.
Demonstrate proper spindle speeds, feedrates, and coolant use.
Describe positioning system, axis destination movement, and end of program code.

7 Demonstrate program uploading.
Learning Objectives
Execute program simulation to verify program.
Execute upload or transfer of program to the CNC control.

8 Use CNC control.
Learning Objectives
Describe machine control modes.
Adjust wear offsets to produce accurate part dimension.

9 Discuss Mastercam.
Learning Objectives
Explain Master Cam usage in metalworking.
Explain Master Cam abilities.

10 Create basic shapes in Mastercam.
Learning Objectives
Illustrate ways to create geometry using lines, arcs, and splines.
Identify icon locations, screen layout, and drop down menus.

11 Create basic toolpaths in Mastercam.
Learning Objectives
Select proper machine definition.
Identify milling, drilling, and surfacing toolpaths.
Explain proper file management.

SCC Accessibility Statement
If you have a disability and need accommodations to participate in the course activities, please contact your instructor as soon as possible. This information will be made available in an alternative format, such as Braille, large print, or cassette tape, upon request. If you wish to contact the college ADA Coordinator, call that office at 507-389-7222.

Disabilities page [http://southcentral.edu/academic-policies/disability-rights.html](http://southcentral.edu/academic-policies/disability-rights.html)