Revised: Fall/16

CAD 226
Computer Aided Machining

COURSE OUTLINE

Prerequisites:

CAD 111, MEC 119 or approval from instructor

Course Description:

CAD 226 teaches use of software to create numerical machine code to drive CNC milling machines or lathes. Introduces software and techniques to create, edit and produce CAD drawings, tool paths, and the numerical code for a CAM machine. Includes history, applications, hardware and software requirements, terminology, limitation and future trends. (Credit will not be awarded for both CAD 226 and DRF 226.) Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

Semester Credits: 3 **Lecture Hours: 2 Lab/Recitation Hours: 2**

VIRGINIA WESTERN COMMUNITY COLLEGE
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Computer Aided Machining (CAD 226)

Course Outcomes

At the completion of this course, the student should be able to:

• For each mill used on the job, determine workpiece specs such as weight, length, tolerances, or feature complexity for the capability of the mill.
• For each lathe used on the job, determine workpiece specs such as weight, length, diameter, tolerances, or feature complexity for the capability of the lathe.
• Prove out a program for a new part on the lathe, adjusting the program as necessary.
• Translate a new part characteristic from a print into a program, incorporating tool and machine moves on the lathe.
• Prove out a program for a new part on the mill, adjusting the program as necessary.
• Translate a new part characteristic from a print into a program, incorporating tool and machine moves on the mill.
• Program and run a peck drilling canned cycle; program and run a boring canned cycle.
• For a lathe, convert manufacturer-recommended variables such as sfm and ipr into rpm and ipm; for a mill, convert manufacturer-recommended variables such as sfm and ipt into rpm and ipm.

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Required Materials:

Safety glasses, calculator, PC

Textbook:

Tooling University, online access

Topical Description: (Outline chapters, sections and timeline to be covered in the book)

Section		Topics	Suggested Timeline
Week	1	History and Definition of CNC 100	
Week	2	Mechanics of CNC 110	
Week	3	Basics of the CNC Turning Center 120	
Week	4	Basics of the CNC Machining Center 130	
Week	5	Basics of the CNC Swiss-Type Lathe 135	
Week	6	CNC Coordinates 140	
Week	7	Part Program 150	
Week	8	CAD/CAM Overview 160	
Week	9	CNC Manual Operations 200	
Week	10	CNC Offsets 210	
Week	11	CNC Specs for the Mill 220	
Week	12	CNC Specs for the Lathe 225	
Week	13	Creating a Turning Program 280	
Week	14	Turning Calculations 285	
Week	15	Creating a Milling Program 290	
		Milling Calculations 295	
		Canned Cycles 310	
Week	16	EXAM	

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Program SLO's Covered:

1. Understand the role of electrical, mechanical and control components in complex mechatronic system and subsystems. 2. Maintain mechatronic (electrical, mechanical and computer) control systems

General Education SLO's covered (if applicable):

Enter General Education SLO's here.

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