

Virginia Western Community College

CAD 226

Computer Aided Machining

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.)

Semester Credits: 3 Lecture Hours: 2 Lab/Clinical/Internship Hours: 2

Required Materials

Textbook:

Tooling University Online Access

Other Required Materials:

Safety glasses, calculator, PC

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.

Topical Description

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