
COURSE PREFIX/NO:	MTT 254
COURSE TITLE:	CNC Programming I
LEC HRS/WK:	2.0
LAB HRS/WK:	3.0
CREDIT HRS/SEMESTER:	3.0

[Distance Learning Attendance/VA Statement](#)
[Textbook Information](#)

COURSE DESCRIPTION

This course is a study of CNC Programming, including machine language and computer-assisted programming.

COURSE COMPETENCIES

Module 1- Introduction to CNC Machining

- Discuss 3D Coordinate System
- Introduction to the machine and control
- Discuss Control Key Functions
- Demonstration of machine capability
- Discussion of G and M Codes
- Illustrate G00 Rapid Tool Movement, G01 Linear Cutting Tool Movement, G02 Clockwise Tool Cutting Movement, and G03 Counter-Clockwise Tool Cutting Movement Code Format

Module 2- Machine Operation

- Demonstrate EDIT Function
- Uploading and downloading Programs
- Explain Trigonometry and how to use Trig to Calculate part Critical Points
- Demonstrate MDI (Manual Data Input) Operation Mode
- Demonstrate MANUAL Operation Mode

Module 3- CNC Machining

- Discussion of Machining Cycle Types
- Demonstrate calculation of Speeds and Feeds
- Demonstrate Setting PRZ (Program Reference Zero) Point
- Demonstrate Setting TLO's (Tool Length Offsets)
- Machine Step Plug Project

Module 4- Advanced Machine Operations

- Discuss TNR Compensation (Tool Nose Radius)
- Demonstrate/Discuss Threading
- Explain Canned Cycles and Machining Parameters
- Explain Sub Programs

Module 5- Machining Projects

- Write program to machine O.D. Thread
- Write program to use Roughing and Finish Profile Canned Cycles to machine piece part
- Write program to machine a piece part using a sub-program to machine piece part
- Write a program to use TNR Compensation to machine piece part

MINIMAL STANDARDS/PERFORMANCE OBJECTIVES

Assignments must be completed as designated in “Evaluation Strategies/Grading.” Criteria for minimal acceptable performance will be provided by the instructor.

REQUIREMENTS

Attendance Policy

The college attendance policy as stated in the college handbook will be honored.

Academic Honesty

Students are expected to adhere to the college policy regarding student conduct as stated in the college handbook.

Assignments

Students are expected to complete all assignments and any supplementary exercises designated by the instructor.

Projects

Students are expected to complete all labs and any supplemental exercises designated by the instructor.

EVALUATION STRATEGIES/GRADING

Students will be expected to complete written tests and projects as specified by the instructor. Minimum average score of 70% will be required on tests, projects, and homework.

The final grade for MTT 254 will be determined as follows:

Module 1	12% of final grade
Module 2	12% of final grade
Module 3	12% of final grade
Module 4	12% of final grade
Module 5	12% of final grade
Lab Projects	25% of final grade
Work Attitude	10% of final grade
Cleanup	5% of final grade

Work Attitude is defined as:

Participation	Responsibility
Cooperation	Professionalism
Appearance	Attendance

Grading Scale will be:

A = 90-100

B = 80-89

C = 70-79

D = 60-69

F = 0-59

CRITERIA FOR LAB PROJECTS

A = Student completes all projects correctly and without assistance.

B = Student completes all projects correctly with minimal assistance from the instructor.

C = Student completes all projects correctly and with constant assistance from the instructor.

D = Student does not complete all projects with or without assistance.

F = Student does not attempt to complete projects with or without assistance.

EVALUATION CRITERIA FOR LAB PROJECTS

Projects must be machined within specified tolerance.

Projects must be neat in appearance.

Projects must be free of burrs.

ENTRY LEVEL SKILLS

The student **MUST** have basic Manual Machining Skills and be able to read, write, and do simple arithmetic.

PREREQUISITES: RDG-031, MTT-215, and MTT-216 OR Equivalent

CO-REQUISITES: None

Disabilities Statement: Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.