

COURSE INFORMATION

COURSE PREFIX/NO: **MTT 253**

COURSE TITLE: **CNC Programming and Operations**

LEC HRS/WK: 1.0

LAB HRS/WK: 3.0

CREDIT HRS/SEMESTER: 3.0 [DL ATTENDANCE/VA STATEMENT](#) [TEXTBOOK INFORMATION](#)

COURSE DESCRIPTION:

This course is a study of the planning, programming, selecting tooling, determining speeds and feeds, setting up, operating, and testing of CNC programs on CNC machines.

COURSE COMPETENCIES:

Upon successful completion of this course, the student should be competent to perform the following tasks:

- create part programs from engineering drawings using the flexowriter or manual data input
- set up tooling in the proper sequence to meet specifications
- select the proper speed and feeds to perform internal and external machining
- demonstrate safety and good housekeeping at all times

MINIMAL STANDARDS/PERFORMANCE OBJECTIVES:

A. Given a piece of aluminum (3 inches long, 1 inch diameter) and proper equipment, the student will machine it to dimensions of 1 1/8 inches long and diameter of .750 inches with a chamfer on the end of dimensions 1/16 x 450.

B. Given the machined piece in "A" above, the student will machine a 3/4-10 thread on the turned diameter.

C. Given the machined piece in "B" above, the student will program the CNC lathe and cut the piece to 1 1/4 inches long.

D. Given lectures, demonstrations and equipment, the student will program the machine to return to the zero position.

E. Given materials, equipment and blueprints, the students will machine each part to specifications.

F. Given guidelines of acceptable work behavior by the instructor, the student will exhibit proper work attitudes at all times as identified in the guidelines. See instructor for specific details.

COURSE REQUIREMENTS

The student should adhere to the attendance policy set forth in the York Technical College Student Handbook. "Students must attend 80% of the hours assigned the class for a quarter to receive credit for the course." In case a student does miss a class he/she is responsible for obtaining the material that was covered during the absence.

If a student is aware that he/she will miss class, then the student should notify the instructor at the earliest possible date.

If a student misses a test because of illness or urgent emergency, then he/she should do the following:

Notify the instructor prior to the class period, or at the earliest possible date. At that time a new date for a make-up test will be scheduled.

Student with unexcused absences during test time will be allowed to take a make-up test at the instructor's discretion.

The student has the burden of making sure that some arrangement was made with the instructor to take a make-up test.

ACADEMIC HONESTY

"York Technical College adheres to the South Carolina TECH Student Code, approved by the State Board for Technical and Comprehensive Education on March 13, 1974 (revised last April 25, 1984). Copies of this code are available in the Library and from Student Services. Any student caught cheating or involved in any other academic dishonesty will be given a grade of zero and will be subject to further disciplinary action".

PARTICIPATION IN CLASS DISCUSSION

COMPLETING ASSIGNED READING, LAB DEMONSTRATIONS, AND TESTS

CLASSROOM AND SHOP PROCEDURES

- Roll will be called at the beginning of each class.
- Students are responsible for assigned reading on steel and its alloys and heat treating.
- Tools and equipment that are used will be returned to their proper place.
- At the end of each class the student will be responsible for cleaning his/her work area. Brushes, brooms, and mops will be provided for this purpose.
- Shoes and safety glass must be provided by the student.

LAB REQUIREMENTS

During the lab, students may work in pairs or individually. The instructor must see the completed project. A performance test will be given to ascertain if the student can successfully make the project.

EVALUATION STRATEGIES/GRADING:

Students will be expected to complete two written tests, four lab projects/reports and assigned homework questions. Minimum score of 70% will be required on each test, project, reports and homework. Students who score below 70% may request a retest, at instructor's discretion. Maximum retest score will be 80%.

The grading scale is as follows:

Grade Points

A 90 - 100
B 80 - 89
C 70 - 79
D 60 - 69
F 00 - 59

Evaluation Method

The final grade for MTT 253 will be as follows:

Tests 20%
Projects 50%
Work attitude 30%

ENTRY LEVEL SKILLS:

Student should have machining skills or permission of instructor.

PREREQUISITES:

None

CO-REQUISITES:

None

TOPIC/CONTENT OUTLINE:

- A. Creation of part programs from engineering drawings
- B. Accuracy and editing of programs
- C. Tool arrangement
- D. Setting axes and offsets
- E. First cuts
 - 1. Prevention of crashes
 - 2. Emergency stops

METHODS OF INSTRUCTION

Classroom instruction will include lectures and discussions.

Alternate instructions: If extra help is desired by the student, he/she should:

1. Ask the instructor for additional help in the shop.
2. Review units in the textbook.