

**NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
MEC 118 - AUTOMATED MANUFACTURING TECHNOLOGY (3 CR.)**

Course Description

Studies computer numerical control (CNC) systems and related software. Includes application of numerical control (NC) to standard machine tools, numerical control systems, NC coordinate systems, APT systems, two-dimensional machine process, flexible manufacturing role of robotics in automated manufacturing. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

General Course Purpose

The purpose of the course is to give the student a basic understanding of numerical control (NC) programming and Computer Numerical Control (CNC) and its use and application to manufacturing processes. The course also addresses the important aspects of manufacturing environment safety, and safe use of manufacturing equipment. Students will also learn the use of precision measurement instruments in manufacturing. The student will be exposed to the different applications of CNC in manufacturing, using lathe and mill machines. The student will also acquire hands-on skills through writing the CNC programming codes to fabricate simple parts, including parts “graphic” simulation. The course also addresses the most important aspects of manufacturing environment safety.

Course Prerequisites/Corequisites

None

Course Objectives

Upon completion of the course the student will be able to:

- Observe factory floor safety requirements learned in the machine shop lab
- Measure components and stock materials using micrometers and/or vernier calipers
- Create Computer Numerical Control programs to fabricate parts
- Relate the computer graphics layouts to machine codes for cutting of parts
- Run parts “graphic” simulation of CNC program for verification prior to fabrication
- Use CNC lathe and CNC milling machines to fabricate simple parts

Major Topics To Be Included

- Machine shop safety requirements
- Introduction to Computer Numerical Control Technology
- Introduction to Computer Numerical Control Systems
- Writing numerical control programs
- Parts verification using “graphic” simulation
- Use of 2D and 3D axes CNC machines
- Applications in computer aided, computer integrated, and automated manufacturing