**Oakton Community College**

**Advanced CNC Programming**

**I.     Course Prefix/Number:** MFG 145

**Course Name:** Advanced CNC Programming

**Credits:** 4 (4 lecture; 0 lab)

**II.    Prerequisite**

MFG 144 – Introduction to CNC Programming

**III.   Course (Catalog) Description**

This hands-on course is a follow-up to MFG 144 and allows greater depth in the design and production of CNC programs. Advanced programs are simulated off-line and run on CNC machine tools. Canned cycles, cutter compensation, macro programming, and subroutines are covered in detail. CAM software is introduced and used for planning and simulation.

**IV.   Learning Objectives**

After successful completion of this course, the student shall be able to:  
  
1. Construct and simulated advanced NC programs.  
2. Implement CAN cycles to become more productive  
3. Incorporate macros and subroutines to modularize code  
4. Have a working knowledge of CAM software

**V.    Academic Integrity**

Students and employees at Oakton Community College are required to demonstrate academic integrity and follow Oakton's Code of Academic Conduct. This code prohibits:  
  
• cheating,   
• plagiarism (turning in work not written by you, or lacking proper citation),   
• falsification and fabrication (lying or distorting the truth),   
• helping others to cheat,   
• unauthorized changes on official documents,   
• pretending to be someone else or having someone else pretend to be you,   
• making or accepting bribes, special favors, or threats, and   
• any other behavior that violates academic integrity.   
  
There are serious consequences to violations of the academic integrity policy. Oakton's policies and procedures provide students a fair hearing if a complaint is made against you. If you are found to have violated the policy, the minimum penalty is failure on the assignment and, a disciplinary record will be established and kept on file in the office of the Vice President for Student Affairs for a period of 3 years.   
Details of the Code of Academic Conduct can be found in the Student Handbook.

**VI.   Sequence of Topics**

• Advanced CNC programming techniques  
• Programming with cutter compensation  
• Canned cycles for drilling, boring, tapping, and other operations  
• Macro programming techniques  
• Subroutine calls and procedures  
• Mirror imaging, polar rotation, and helical interpolation  
• Preparing a job plan and off-line simulation using CAM  
• Introduction to CAM programming

**VII.  Methods of Instruction**

Lecture, Demonstrations, and Laboratory Work.  
Course may be taught as face-to-face, media-based, hybrid or online course.

**VIII. Course Practices Required**

**IX.   Instructional Materials**

**Note:** Current textbook information for each course and section is available on Oakton's Schedule of Classes.  
  
Textbook: The CNC Workbook  
An Introduction to Computer Numerical Control.  
Frank Nanfara, Tony Uccello, Addison Wesley Publishing Co.

(same s MFG 144)

**X.    Methods of Evaluating Student Progress**

Written and hands-on examination and quizzes.

**XI.   Other Course Information**

Numerical Control is an industrial technique that utilizes automatic controls to reproduce/replace the human functions/manipulations of various devices. This concept and technology covers many areas of the manufacturing process. It is the objective of this course to provide the student with the advanced competencies needed to function in this type of industrial environment.  
  
If you have a documented learning, psychological, or physical disability you may be entitled to reasonable academic accommodations or services. To request accommodations or services, contact the Access and Disability Resource Center at the Des Plaines or Skokie campus. All students are expected to fulfill essential course requirements. The College will not waive any essential skill or requirement of a course or degree program.

**XII. Instructor:**

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Chair, Manufacturing and CAD Technology

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