PIKES PEAK STATE COLLEGE
Machining Technology

Master Course Syllabus
MAC 2005: Introduction to CNC Milling Operations

Purpose of Document
This document contains important information about this course's objectives. It may be helpful for you to retain a copy for your records, along with the class specific syllabus. This document will be especially helpful if you decide to later change your course of study.

Pikes Peak State College and the Colorado Department of Higher Education have determined that graduates should have a broad range of learning skills as well as discipline related skills. Both types of skills are detailed below.

Course Description
Introduces basic creating and editing of CNC mill programs. Introduction to G&M codes, math, speeds and feeds, production processes including process controls, and documentation associated with manufacturing will be covered.
Credit Hours: 3
Contact Hours: 45 (Lecture)

Required Course Learning Outcomes
1. Demonstrate basic proficiency to write and edit CNC mill programs.
2. Reproduce offsets and machine coordinate systems.
3. Describe the documentation associated with milling tools, set-up, inspection, and process controls.
4. Illustrate basic proficiency in calculating speeds and feeds for material and tooling used in CNC milling operations.
5. Explain the beginning selection and proper use of multiple tool and work holding systems associated with CNC milling operations.
6. Manufacture simple parts using CNC milling machine tools.

Required Topical Outline
I. Programming CNC milling machine tools
   a. Basic program format
   b. Basic program sequence
   c. Basic program headers and footers
   d. Sub-programs
   e. Editing programs
II. CNC management

a. Simple tool offsets
b. Simple part offsets

III. CNC documentation
a. Tooling sheets
b. Set-up sheets
c. Basic process control sheets
d. Simple inspection process

IV. Speeds and feeds
a. SFM (surface feet per minute)
b. Feeds
c. Chip loads
d. Tool life
e. Material removal rates

V. Milling tool selection
a. Tool materials
b. Coatings
c. Tool types
d. Basic tool holding
e. Basic work holding

VI. Manufacturing parts
a. Basic set-up of CNC mill
b. Basic operation of CNC mill
c. Inspection of parts
d. Maintain dimensional accuracy