PIKES PEAK STATE COLLEGE
Machining Technology

Master Course Syllabus
MAC 2006: CNC Milling Operations II

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
Further develops skills in writing and editing advanced CNC mill programs. G&M codes, math, speeds and feeds, production processes including multi-part, process controls, and documentation associated with manufacturing will be covered.
Credit Hours: 3
Contact Hours: 45 (Lecture)

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

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

III. CNC documentation
    a. Tooling sheets
    b. Set-up sheets
    c. Process control sheets
    d. 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. Tool holding
    e. Work holding
VI. Manufacturing parts
    a. Set-up CNC mill
    b. Operate CNC mill
    c. Inspection of parts
    d. Maintain dimensional accuracy