Course Objectives/Course Outline
Spokane Community College

Course Title: CNC Operation and Setup
Prefix and Course Number: APM 123

Course Learning Outcomes:
By the end of this course, a student should:

- Apply safe work practices
- Use problem solving skills in setting up a machine
- Analyze and compare different work holding techniques when making a selection for a setup
- Manipulate tools to achieve proper setup when working on a machine
- Create a series of machine code to evaluate their setup

Course Outline

I. **Week One**
   A. Introduction to CNC
   B. Basic CNC Machine Safety
II. **Week Two**
   A. The CNC Control Unit
   B. CNC Motion Control
   C. Coordinate & Positioning Systems
   D. Parts of a CNC Program
III. **Week Three**
   A. Types of CNC Milling Machines
   B. Toolholding
   C. Process Planning
   D. Code Introduction
   E. Coordinate Positioning for Milling
   F. Types of Motion for Milling
IV. **Week Four**
   A. Machining Operations
   B. Cutter Radius Compensation
V. **Week Five**
   A. Workholding Setup
   B. Machine and Work Coordinate Systems
   C. Work Offset Setting
   D. Cutting Tools Program Entry
   E. Machine Operation
VI. **Week Six**
   A. Mill Test
VII. **Week Seven**
   A. Open Lab Time
VIII. **Week Eight**
   A. Types of Turning Machines
   B. Tool Mounting

    C. Workholding

    D. Process Planning

IX. <u>Week Nine</u>

    A. Coordinate Positioning for Turning

    B. Types of Motion for Turning

    C. Non-Axis Motion Commands

    D. Machine Operations

    E. Canned Cycles

X. <u>Week Ten</u>

    A. Project/Lab

XI. <u>Week Eleven</u>

    A. Open Lab Time

XII.   <u>Week Twelve</u>

    A. Lathe Test