Course Objectives/Course Outline
Spokane Community College

Course Title:	**Computer Aided Design and Manufacturing**
Prefix and Course Number:	**PMF 204**

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

— Demonstrate basic computer skills utilizing the Microsoft Windows operating system
— Demonstrate professionalism, critical thinking, and teamwork during in-class discussions and hands-on activities
— Explain the role and process of computer-aided design and manufacturing (CAD/CAM) in the metal fabrication industry
— Create and edit parametric, 3-dimensional solid part models with a CAD software program
— Create and manipulate assemblies in a CAD software program
— Create and edit part and assembly drawings in a CAD software program using best industry drafting practices and standards
— Create and apply sheet-metal parameters to sheet-metal parts in a CAD software program
— Apply vector geometry principles to create 2-D wireframe and 3-D solid models in a CAM software program
— Create part geometry utilizing line, circle, and arc entities in a CAM software program
— Apply methods of modifying geometry in a CAM software program
— Create and evaluate toolpaths for machining and metal fabrication in a CAM software program

Course Outline:
A. *NOTE:* This course schedule is subject to change at the discretion of the instructor.

I. **Week 1**
   A. CAD/CAM Overview
   B. Introduction to Microsoft Windows
   C. Introduction to CAD/Solidworks
II. **Week 2**
   A. Geometry, Features, and Parts
   B. Creating a Basic Part
III. **Week 3**
   A. Orthographic and Isometric Views
   B. Making Changes to a Part
   C. Linear and Circular Sketch Patterning
IV. **Week 4**
   A. Creating Assemblies
V. **Week 5**
   A. Sheet Metal Functions
   B. Creating Sheet Metal Parts
VI. **Week 6**
   A. Drafting Techniques and Guidelines
   B. Drawing Templates, Formats, and Title Block
   C. Creating a Drawing
VII. **Week 7**
   A. Midterm Exam

VIII. **<u>Week 8</u>**
    A. CAM and Vector Geometry
    B. Mastercam Interface
    C. Creating Geometry in Mastercam

IX. **<u>Week 9</u>**
    A. Geometry: Part Model Types
    B. Circle and Arc Entities
    C. Creating Geometry in Mastercam (continued)

X. **<u>Week 10</u>**
    A. Trim, Divide, and Transform (Xform) Functions
    B. Setting up Stock
    C. Creating Geometry in Mastercam (continued)

XI. **<u>Week 11</u>**
    A. Toolpaths
    B. Evaluation and Postprocessing
    C. Geometry Nesting

XII. **<u>Week 12</u>**
    A. Final Exam