PIKES PEAK STATE COLLEGE
Machining Technology

Master Course Syllabus
MAC 1001: Introduction to Machine Shop

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
Covers safety procedures, use of bench tools, layout tools, power saws, drill presses, precision measurement tools, and various hand tools related to the machine shop. Also included are sharpening drill bits and general-purpose turning tools for the lathe and determining speeds and feeds for both the lathe and the milling machine.
Credit Hours: 3
Contact Hours: 67.5 (Lecture/Lab Combination)

Required Course Learning Outcomes
I. Demonstrate effective shop safety skills.
II. Perform basic shop measurements.
III. Explain the operation of shop measuring equipment.
IV. Discuss layout tools and procedures.
V. Explain the purpose and operation of hand and bench tools.
VI. Demonstrate knowledge and understanding of cutter geometry and purpose of cutting fluids.
VII. Explain the purpose, use, and operation of metal cutting saws.
VIII. Explain the purpose, use, and operation of drilling machines.
IX. Demonstrate the process for sharpening drills.
X. Explain the purpose, use, and operation of lathes.
XI. Demonstrate the process for sharpening a lathe tool bit.
XII. Explain the purpose, use, and operation of milling machines.
XIII. Calculate speeds and feeds for the lathe and milling machines.

Required Topical Outline
I. Shop safety
    A. Purpose of shop safety

B. Shop safety requirements

II. Measurement
   A. Basic measurement
   B. Squares and surface plates
   C. Micrometers
   D. Vernier calipers
   E. Inside, depth, and height measuring instruments
   F. Gages and gage blocks
   G. Angular measurement
   H. Comparison measurement
   I. Coordinate measuring system
   J. Surface finish measurement

III. Layout tools and procedures
   A. Layout materials, tools, and accessories
   B. Semi-precision layout
   C. Precision layout

IV. Hands tools and benchwork
   A. Holding, striking, and assembling tools
   B. Hand-type cutting tools
   C. Thread-cutting tools and procedures
   D. Reaming, broaching, and lapping tools

V. Metal-cutting technology
   A. Physics of metal cutting
   B. Machinability of metals
   C. Cutting tools
   D. Cutting fluids

VI. Metal-cutting saws
   A. Types of metal saws
   B. Bandsaw parts, accessories, and operations

VII. Drilling machines
   A. Drill presses
   B. Drilling operations
   C. Cutting speeds and feeds

VIII. Lathes
   A. Lathe safety
   B. Engine lathe parts and accessories
   C. Engine lathe operations

IX. Milling machines
   A. Milling machine safety
   B. Milling machine parts and accessories
   C. Milling machine operations