

Course Objectives/Course Outline
Spokane Community College

Course Title: Precision Machining

Prefix and Course Number: IMMA 103

Course Learning Outcomes:

By the end of this course, a student should:

- Describe machine tools, machining processes, and their applications
- Demonstrate the ability to interpret documentation (work orders, engineering drawings, and bills of materials) and apply the information to a machining project
- Create a job plan for a machining project
- Create a layout for a machining project using measuring and layout tools
- Apply the proper speeds and feeds for materials and machine tools
- Describe and apply proper tool selection and work holding techniques for a machining project
- Create a workpiece utilizing hand tools and manual machine tools: saw, mill, lathe, drill, drill press, grinder, threading and finishing processes
- Evaluate completed work pieces for quality using inspection techniques and measuring tools
- Demonstrate proper safety techniques when handling shop materials and operating equipment
- Demonstrate professionalism, critical thinking, and teamwork during in-class discussions, presentations, and hands-on activities

Course Outline:

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

I. Week One

- A. Precision Machining Overview
- B. Machining and Shop Safety, PPE
- C. Measuring & Math Review
- D. Preventative Maintenance
- E. Lab: Safety, Tour, Lockout/Tagout, Preventative Maintenance

II. Week Two

- A. Job Planning, Layout, Drawings Review
- B. Tools and Workholding Saws
- C. Lab: Job Plan for Plumb Bob, Saws

III. Week Three

- A. Lathe Operation and Safety
- B. Tools, Workholding and Toolholding
- C. Lab: Lathe and Boring Bar Demo; Plumb Bob Project

IV. Week Four

- A. Drilling, Tapping, Threading, Reaming
- B. Hand-Drilling and Drill Press Operation, Safety
- C. Lab: Job Planning, Drill and Taps Demo, Layout and Drill C-Clamp

V. Week Five

- A. Milling Machine Setup, Operation, Safety
- B. Tools, Toolholding, Workholding
- C. Speed and Feeds
- D. Lab: Mill Demo, Mill C Clamp; continue Plumb Bobs

VI. Week Six

- A. Surface Finishing
- B. Offhand Grinding
- C. Precision Grinding
- D. Lab: Tool Sharpening
- E. Continue work on C Clamp and Plumb Bob Projects

VII. Week Seven

- A. Midterm Exam covers skills learned in Weeks 1 - 6
- B. Lab: Continue work on C Clamp and Plumb Bob Projects

VIII. Week Eight

- A. Lab: Continue work on C Clamp and Plumb Bob

IX. Week Nine

- A. Lab: Continue work on C Clamp and Plumb Bob

X. Week Ten

- A. Lab: Continue work on C Clamp and Plumb Bob

XI. Week Eleven

- A. Lab: Finish work on C Clamp and Plumb Bob

XII. Week Twelve

- A. Project Peer Review
- B. Final Project Inspection