

Course Objectives/Course Outline

Spokane Community College

Course Title: Advanced Machining Technology

Prefix and Course Number: APM 223

Course Learning Outcomes:

By the end of this course, a student should:

- Describe Lean Manufacturing and its applications
- Describe advanced setup and inspection techniques
- Outline the function and use of Coordinate Measuring Machines (CMM) and machine probes
- Explain machine calibration technologies
- Explain the role of Live Tooling
- Program Automatic Pallet Changers (APC) machines
- Identify program considerations for tombstones
- Describe the operation of Cell systems
- Explain laser cutting
- Describe Electrical Discharge Machining (EDM) machining
- Describe waterjet machining
- Explain the use of laser stereolithography and its production applications
- Competently read and understand a variety of machine manuals
- Describe the machining considerations of composites
- Outline the safety considerations when machining composites
- Explain composite delamination

Course Outline:

Manufacturing Theory and Advanced Setup Technology

I. Week One

- A. Safety
- B. Introduction
- C. Machine Doc's

II. Week Two

- A. Lean Manufacturing

III. Week Three

- A. Renishaw Probe
- B. Calibration

IV. Week Four

- A. Review
- B. Test (weeks 1-3)
- C. Advanced Setup

V. Week Five

- A. Live Tooling
- B. Pallet Changers
- C. Tombstones
- D. Cell Systems

VI. Week Six

- A. Wire EDM
- B. Water Jet
- C. Laser Stereolithography

VII. Week Seven

- A. Review
- B. Test (Weeks 5-6)
- C. Guest Speaker – Advanced Machining

VIII. Week Eight

- A. First Aid-CPR

IX. Week Nine

- A. Composite Safety
- B. Composite Properties
- C. Composite Cutters
- D. Machining Composites

X. Week Ten

- A. Composite Delamination & Inspection
- B. 3D Printing

XI. Week Eleven – field Trip

- A. Field Trip-Composite Machining

XII. Week Twelve

- A. Final Exam (weeks 1-11)

Weeks 5 – 8: Advanced Machining Technology

Week Five

Live Tooling
Pallet Changers
Tombstones
Cell Systems

Week Seven

Review
Test (Weeks 5 – 6)
Guest Speaker – Advanced Machining

Week Six

Wire EDM
Water Jet
Laser Stereolithgraphy

Week Eight - Field Trip

Field Trip – Advanced Machining

Weeks 9 – 12: AMT and Composite Machining

Week Nine

Composite Safety
Composite Properties
Composite Cutters
Machining Composites

Week Eleven - Field Trip

Field Trip – Composite Machining

Week Ten

MTU Visit –
Composite Delamination &
Inspection
3D Printing

Week Twelve

Test (Weeks 1 – 11)