



## Master Course Syllabus MAC 1011: Intermediate Engine Lathe

### 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

Teaches students to prepare single point external and internal unified screw threads to a Class 3 fit, generate angles with the compound rest within one degree, ream holes concentric within .001 inches, determine cutting speeds, and perform facing and turning operations.

Credit Hours: 3

Contact Hours: 67.5 (Lecture/Lab Combination)

### Required Course Learning Outcomes

- I. Explain the process of lathe chip formation.
- II. Explain the result of tool breakdown chips and surface finish.
- III. Explain the difference between oil and water based cutting fluids.
- IV. Differentiate between the cooling and lubrication function of cutting fluids.
- V. Demonstrate cutting external threads.
- VI. Demonstrate cutting internal threads.
- VII. Explain the settings necessary to produce UNC and UNF threads.
- VIII. Demonstrate the use of:
  - A. The three-jaw chuck
  - B. The four-jaw chuck
- IX. Demonstrate the use of mandrels.
- X. Demonstrate the use of face plates.
- XI. Demonstrate the use of lathe dogs.
- XII. Demonstrate setting of the compound slide in chamfering.
- XIII. Demonstrate the use of the compound slide in cutting tapers.
- XIV. Differentiate between feeds and speeds used in reaming as compared with drilling.
- XV. Explain the amounts of stock removal in reaming.
- XVI. Explain the surface finishes to be expected from reaming.
- XVII. Demonstrate the use of grooving tools.
- XVIII. Demonstrate the use of cutoff tools.

## Required Topical Outline

- I. Chip formation: The mechanics of lathe chip formation
- II. Cutting fluids: Knowing the types and function of cutting fluids
- III. Threading on the lathe: cutting external and internal threads
- IV. Work holding devices: the use of work holding devices
- V. Use of the compound slide: The compound slide
- VI. Reaming: the use of reamers for accurate finishing of holes
- VII. Grooving and cutoff tools: the use of grooving and cutoff tools