



# Pima Community College

## Course Syllabus

**Campus/Center:** Tucson High School,

**Room Number:** TBA

**Course Number:** MAC 100 **Course Title:** Introduction to Machine Tool

**CRN:**

**Course Description:** Introduction to basic machine shop practices. Includes safety, lathes, vertical milling machines, and grinding machines.

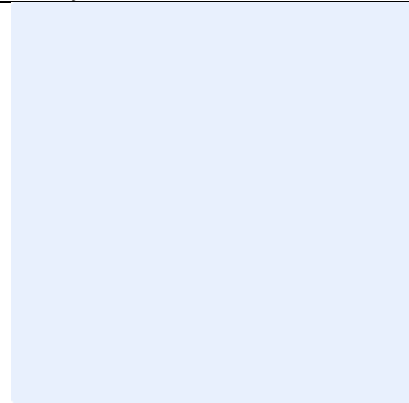
**Course Prerequisites:** MAC 100 and 110 may be taken concurrently.

**Course Co-requisites:** None

**Required Textbook(s):**

**Other Course Materials:**

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[MyPima.pima.edu](http://MyPima.pima.edu) – MyPima is a course tool used as means of communication and/or for accepting course work. Your instructor will guide you in how it may be used in your course. Through MyPima you can also register and pay for classes, check your financial aid, access your student email, view your schedule, and read college-wide announcements.

**Instructor:**

**Office Location:**

**Office Hours:** Monday – Friday 8:00am-4:00pm

**Instructor Phone:**

**Instructor Email:**

**Start Date:**

**End Date:**

**Website:** Pima.edu

**Class Meeting Days:** Monday - Friday

**Class Meeting Time:** Monday 9:05-10:50am

Wednesday – 8:00am-8:49am Thursday/Friday –  
8:00-9:00am

**Final Exam or Final Activity Date:** This will be  
posted in Synergy student view.

## Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. Discuss possible career paths in manufacturing.
2. Discuss types and applications of machine tools.
3. Comply with shop safety practices.
4. Discuss materials manufacture, identification, and handling.
5. Interpret technical drawings and plan the work processes.
6. Describe the use of machine shop measuring tools.
7. Discuss the procedures and use of layout tools.
8. Discuss the principles of metal cutting.
9. Identify common machine shop hand tools.
10. Discuss the use of cut-off saws.
11. Identify and discuss common drill press operations.
12. Discuss the use of abrasive machines.

## Outline:

- I. Careers in Manufacturing
    - A. Trade opportunities
    - B. Types of machine shops
  - II. Machine Tool History
    - A. Evolution and the industrial revolution
    - B. Types and applications
  - III. Safety
    - A. General safety guidelines
    - B. Causes of accidents
  - IV. Materials
    - A. Manufacture of iron and steel
    - B. Metals, their properties, identification
  - V. Manufacturing Process Planning
    - A. Technical drawings and prints
    - B. Machining procedures
  - VI. Measurement
    - A. Measurement systems
    - B. Micrometers
    - C. Vernier calipers
    - D. Inspection tools
  - VII. Layout Tools and Procedures
    - A. Types of layout tools
    - B. Layout tools and their applications
  - VIII. Principles of Metal Cutting
    - A. Reading chips
    - B. Cutting fluid
  - IX. Bench and Hand Tools
    - A. Typical shop hand tools
    - B. Cutting hand tools
  - X. Power Saws
    - A. Cut-off saws
    - B. Contouring saws
  - XI. Drill Presses
- 2

- A. Types Of drill presses
  - B. Twist drills
  - C. Producing and finishing holes
- XII. Abrasive Machines
- A. Bench and pedestal grinders
  - B. Abrasive belt machines

### Course Grade Determination

### Grading and Learning Criteria:

**Note: Above average grades, require an above average amount of time and effort!!!**

Each learning station has (4) parts that you are responsible for completing **in the following order:**

**1st**-Learning and Practicing the information and tasks taught at the learning station until all videos are completed and you mastered the content.

**2nd**-Complete Homework assignments with a minimum of 75% proficiency

**3<sup>rd</sup>**-Complete the Written Exam with a minimum of 75% proficiency

**4th**-Complete the Hands-On Test with a minimum of 100% proficiency

You may retake the 2<sup>nd</sup>, 3<sup>rd</sup>, or 4<sup>th</sup> requirement (listed above), one time only! **Failure after a second attempt to obtain the required proficiency constitutes failure of the learning station** and you will be moved on to a different learning station.

You **may only retest or redo** an assignment to be turned in for a grade, **(24) hours later** or your next scheduled lab! Do not retest or redo until you are absolutely sure you have mastered the content and tasks!

Note: The **above grading and learning criteria supersedes any previous written procedures** such as listed on existing work orders.

#### Grade system:

**A-Superior, (4)** learning stations mastered. **Including Homework and Written Passing**

**B-Above average, (3)** learning stations mastered. **Including Homework and Written Passing**

**C-Average, (2)** learning stations mastered. **Including Homework and Written Passing**

**D-Below average (1)** learning stations mastered. **Including Homework and Written Passing**

**F-Failure, No Stations Completed**

**I-Incomplete**-Requested by student, in writing to the Instructor of record 5-days before the last official day of the semester.

Requires a minimum of 60-hours lab time recorded on your timecard and 60% of the learning stations (all 4-parts) completed.

#### **Course Policies and Procedures**

**There are no excused absences!** If you miss time, it must be made up. Notify an instructor if you are going to be absent and schedule your make up time. Failure to notify an instructor of your absence could result in your card being removed from the rack and you will have to speak with an instructor before returning. Students, who **fail to show up for two weeks (minimum of 6 hours)** or more prior to the 45<sup>th</sup> day, and have not contacted the instructor listed on this syllabus, may **be withdrawn** from the class. Those who miss two weeks or more after the 45<sup>th</sup> day will **receive an "F"** (unless you grade is higher) for the course. If you are dropping the class it is your responsibility to go to registration and submit a drop form. You must **attend each course every week** for approximately (4) hours each (**minimum of 3 hours each**). If you are going to be more than a half hour late, or absent, you must call us and ask us to either hold your station available a little longer, or to document on your card that you will be absent. If you are absent, **you must make up the time** the same week or following week. AUT 122- is the only course that is an exception, since its schedule is different. Students **arriving more than one hour after** the class begins **will not be allowed** to attend class for that period!

Before being assigned to a learning station, the **student must complete the Automotive Technology program Orientation/Briefing**, which includes personal and environmental safety. Some courses require student assignment to specific learning stations-check with the lab personnel.

You are required to read the assigned chapter(s) and complete the homework for every learning station prior to completing the required tests, as outlined in the learning station descriptions listed below. You will answer all of the questions at the end of the chapter(s), in writing (A,B,C,D, answers are OK for the multiple choice questions) to be turned in for grading and documentation on your time card and work order, **after completing the learning portion** of the learning station.

### Course Schedule

Monday	1 <sup>st</sup> period 9:05-10:50
Tuesday	no class
Wednesday	8:00-8:49
Thursday	8:00-9:00
Friday	8:00-9:00