

# MEC 225: Fundamentals of Machining Practices

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## **Instructors:**

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Office: CEAS Machine Shop

**Location:** Old Engineering Room 009 / Student Machine Shop

## **Course Description:**

*“Hands-on experience in the fundamentals of machining including metrology tools and devices, saw, sheet metal working, drilling, reaming, tapping, turning, boring, milling, ~~welding, and rapid prototyping.~~ This course has an associated fee. Please see [www.stonybrook.edu/coursefees](http://www.stonybrook.edu/coursefees) for more information.*

*Pre- or Co-requisite: MEC 203*

*Prerequisite: MEC major or Permission of Instructor”*

**Required Course Materials and Fees:** The laboratory fee for this course is \$50, paid as part of your tuition and fees. Students are expected to purchase the following items for use in class:

1. Impact Resistant Safety Glasses. Must be ANSI Z87 compliant. *Estimated cost \$2 - \$5.*
2. Dial or Digital Caliper, 6 Inches. *Estimated cost \$20 - \$50.*

## **Attendance Policy:**

Attendance for this course is mandatory. Attendance includes attending class, participating in class work, and cleaning up at the end of class time. Lateness or lack of clean up shall result in half of attendance grade being deducted for the class day. A student who has missed time amounting to 20% of the course will be given a grade of “F”. During a full semester this is 3 Classes. There will be no make ups available for missed class time or lateness.

## **Behavior Policy:**

The Instructor reserves all rights and privileges to dismiss the student from the classroom at any time for any reason. Grounds for dismissal include, but are not limited to, failure to follow the Instructor’s directions, disrespect for lab equipment, and unruly behavior. A dismissal of this kind will result in a grade of zero for that day’s work. There will be no make ups available for class time or assignments missed due to this policy.

## **Grading Policy:**

Attendance: 30%

Term Projects & Shop Performance: 70%

- Welding 10%
- Sheet Metal Work 10%
- Mill Work 25%
- Lathe Work 25%

### **Course Learning Objectives:**

1. Understand and develop the habit of following all safety rules.
2. Use and read calipers and gages for dimensional accuracy.
3. Ability to appropriately select hand tools such as hacksaw, files, scribes, hand drills, reamers, etc.
4. Ability to perform basic operation of a vertical milling machine.
5. Ability to perform basic operation of an engine lathe.
6. Ability to use a bandsaw and drill press.
7. Ability to perform basic operation of a welder.
8. Ability to use a sheet metal shear and brake.

### **Lecture/Lab Schedule:**

<b><u>Class 1</u></b>	<ul style="list-style-type: none"><li>● Review of Syllabus</li><li>● Introduction to Course</li><li>● Overview of General Safety Practices &amp; Housekeeping</li></ul>
<b><u>Class 2</u></b>	<ul style="list-style-type: none"><li>● Lecture on Metrology, Machine Shop Math, &amp; Blueprint Reading</li><li>● Job Planning &amp; Layout</li><li>● Sheet Metal Working</li><li>● Welding</li></ul>
<b><u>Class 3</u></b>	<ul style="list-style-type: none"><li>● Finish Sheet Metal Working</li><li>● Finish Welding</li></ul>
<b><u>Class 4</u></b>	<ul style="list-style-type: none"><li>● Introduction to Mill &amp; Demonstration of Mill Project</li></ul>
<b><u>Class 5</u></b>	<ul style="list-style-type: none"><li>● Machining on the Mill</li></ul>
<b><u>Class 6</u></b>	<ul style="list-style-type: none"><li>● Continued Machining on the Mill</li></ul>
<b><u>Class 7</u></b>	<ul style="list-style-type: none"><li>● Last Session Machining on the Mill</li></ul>
<b><u>Class 8</u></b>	<ul style="list-style-type: none"><li>● Introduction to the Lathe, Demonstration of the Lathe Project</li></ul>
<b><u>Class 9</u></b>	<ul style="list-style-type: none"><li>● Machining on the Lathe</li></ul>
<b><u>Class 10</u></b>	<ul style="list-style-type: none"><li>● Continued Machining on the Lathe</li></ul>
<b><u>Class 11</u></b>	<ul style="list-style-type: none"><li>● Last Session Machining on the Lathe</li></ul>
<b><u>Class 12</u></b>	<ul style="list-style-type: none"><li>● Finishing Processes, Polishing, Final Assembly</li></ul>
<b><u>Class 13</u></b>	<ul style="list-style-type: none"><li>● Open Lab</li><li>● Collection of Projects</li></ul>

### **EOS 029 Machine Shop Safety Course:**

EOS 029 is an online safety course offered through blackboard that a student must pass before they can work in the student machine shop. The student must read through all included materials, pass the quiz, and print the *My Grades* page; signing and submitting it as proof of course completion. Additionally, the student must sign and submit the last page of the Machine Shop Safety Agreement.

### **Enrolling and Completing EOS029:**

All users of the machine shop are expected to take the Environmental Health and Safety Machine Shop Safety Course. The course takes approximately 15 minutes.

*To access the course through blackboard:*

1. Log into Blackboard.
2. Click on "Courses".
3. Under Course Catalog click "Environmental Health and Safety".
4. Mouse over "eos029machineshopsafety".
5. Click grey arrow that appears.
6. Click "Enroll".
7. Click "Submit".
8. Click "Ok."
9. Click through all items on left side in order, starting with "Announcements". Follow all directions.
10. Print Copy of Final Grade.
11. Print Copy of "Machine Shop Safety Rules and Agreement".
12. Sign both documents and return to instructor or shop manager.

**Cell phone and electronic device policy:** Cellular phones or other communication devices are not permitted in lectures or labs, and are especially prohibited from exams. If you are found to be in possession of such a device during an exam, you will be ejected from the exam and will receive a grade of zero. Audio or video recording or photography during lectures is strictly prohibited, and anyone found in violation will be ejected from the course with a failing grade. Students may not use personal electronic devices during lectures, exams, or lab sessions – this includes but is not limited to cell phones, laptop computers, cameras, music devices, etc

**DISABILITY SUPPORT SERVICES (DSS) STATEMENT:** If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room 128, (631) 632-6748. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential. Students requiring emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information, go to the following web site: [www.stonybrook.edu/dss](http://www.stonybrook.edu/dss)

**ACADEMIC INTEGRITY STATEMENT:**

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>

**CRITICAL INCIDENT MANAGEMENT:**

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn.