



Precision m

Title: **Advanced Machine Theory/Lab**

Catalog Number: **MACH-165**

Pre Requisites: MACH-115

Co Requisites:

Credit Hours: **7**

Total Contact Hours: **180 lab/60 lecture**

Instructors: **Thomas Narciso**
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Course Syllabus

Course Description

This course is a continuation of theory/ lab work in MACH-115 or Manufacturing Institute courses. Students will apply advanced skills for higher tolerance precision measuring, turning, drill press, grinding and milling operations. Development of best work practices, safe work habits and time management will be emphasized. Students will complete a series of Lab Projects as required to meet NIMS national credentials.

Course Objectives:

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

1. Observe and practice safe work habits.
2. Perform mathematical calculations required for complex machining operations.
3. Interpret blueprints and maintain tolerances.
4. Utilize various measuring tools efficiently to verify product accuracy.
5. Perform complex milling operations on the Trac Mill.
6. Perform complex turning operations on the Trac lathe.
7. Perform electrical discharge machining.
8. Perform tool grinding and advanced grinding techniques and machines.
9. Design, build and use jigs, fixtures and specialized tooling.
10. Perform basic CNC operations on the CNC Milling Centers.
11. Perform basic CNC operations on the CNC Turning Centers.

Outline of Instruction

1. Lathes
2. Milling
3. Electric Discharge Machining (Ram Type)
4. Grinding
5. Tools, Jig and Fixtures Construction
6. Production Processes
7. Quality Control
8. CNC Operations

Course Requirements

Students are responsible for the material covered in lecture and the laboratory. Students are expected to maintain a clean and safe laboratory. In addition, students are expected to complete related projects assigned by instructors. Students are expected to manufacture their own projects within this facility for evaluation and grading.

Basic Tool Kit:

Sharpie marker any color

Pencil and Pen

6 inch machinist scale (3r type)

0-1 micrometer

6 or 8 inch dial or digital caliper

Metric and standard Allen wrench sets up to 10 mm and 3/8 inch

Optional and additional tools will be discussed

Student Evaluation and Grading:

Projects	30%
Tooling U	30%
Patterns of Professionalism	20%
Final Exam	20%

NOTE: All tests will be online and MUST be completed within the specified time. No Assignments will be accepted after the due date.

Attendance Policy: Attendance models Workplace standards.

- Students are expected to attend scheduled lab classes.
- Exceeding 4 Days Absents an (AF) Attendance **CAN** be issued.
- (2) Tardy days will = 1 Absents.
- Exceptions will be submitted in writing and considered on an individual basis.

Attendance is mandatory. NO admittance into lecture after 5 minutes after the class begins without prior approval from the instructor. Leaving a lab early will be treated as a tardy. Communicate issues with your instructor!

*In the event of a late start time due to a weather ect, related delay, class will meet at the delayed start time and end at regular time. If the scheduled end time is after the delay, class will not be held.

Textbooks and Supplies:

Precision Machining Technology, Cengage Learning (Delmar ISBN-13:978-1-4354-4767-7)

Shop Reference for Students and Apprentices Industrial Press

Scientific Calculator (required not your cell phone)

Tooling U Subscription SMCC bookstore preorder or ToolingU direct purchase (see instructor for promotional discount code)

Geo-Metric and Geo-Metrics II Reference

3 ring binder

End-of-Course Evaluation

Students complete evaluations for each course attended at SMCC. Evaluations are submitted online and can be accessed through the student portal. Students can access the course evaluations beginning one week before the end of classes. The deadline for submission of evaluations occurs Monday at 5 PM following the last day of the class. You will receive an email to your student email account when course evaluations are available.

ADA STATEMENT

Southern Maine Community College is an equal opportunity/affirmative action institution and employer. For more information, please call 207-741-5798. If you have a disabling condition and wish to request accommodations in order to have reasonable access to the programs and services offered by SMCC, you must register with the Disability Services Coordinator, Sandra Lynham, who can be reached at 741-5923. Further information about services for students with disabilities and the accommodation process is available upon request at this number. Course policies about online testing are modified to suit each individual's accommodations.

SMCC Pay-for-Print Policy**Per Page Costs**

Each semester students receive a \$20 printing credit. The balance resets at the end of the semester and any remaining credits are removed. The cost varies depending upon page size and whether printing is done in black and white or color.

- a. There is a \$0.10 per page fee for standard 8.5" by 11" black and white documents.
- b. The reverse sides of duplex (double-sided) documents are free.
- c. There is a \$.50 per page fee for standard 8.5" by 11" color documents.
- d. There is a \$.20 per page fee for 8.5" by 14" (legal) or 11" by 17" (tabloid) black and white documents.
- e. There is a \$1.00 per page fee for 8.5" by 14" (legal) or 11" by 17" (tabloid) color documents.

Duplex charges (printing on both sides of a page) work in the following fashion: One page is \$0.10, two pages are \$0.10, three pages are \$0.20, and four pages are \$0.20, etc. The flipsides are free, but another sheet of paper is \$0.10. Please be aware that a document with any color at all (when printed to a color printer) will by default be printed in color. You are responsible for setting the print job to print black and white if you do not need color. For directions, please go to the IT Help tab in My SMCC.

How does it work?

The College's pay-for-print system monitors printing on all printers (including those in general access labs, library printers, the Academic Achievement Center, Noisy Lounge and technology labs). Students can check the number of pages they have printed by using the Printing Balance tool available on SMCC computers (located in the lower right corner of the screen, near the clock). Departments with work study students who need to print documents for the department should contact the Help Desk at 741-5696 to have a special account set up.

Refunds

Print jobs are eligible for a refund in the event of mechanical or electronic error on the part of the printer, print server, or software used to submit the job. Jobs are not eligible for a refund in cases where the job was not set up correctly, was submitted multiple times, or the student is not satisfied with the result. To request a refund, please bring the offending print to the IT Department in the basement of the Ross Technology Center. Refunds will be granted in the form of a credit to the student's account.

Why is SMCC charging for printing?

The pay-for-print system is an effort to control escalating printing costs. Charging for printing helps offset the increasing cost of supplies and encourages students to conserve resources. To find ways to reduce your printing charges, please go to the IT Help tab on My SMCC. If you have questions about the pay-for-printing policy or your printing charges, please contact the Help Desk at 741-5696 or send an email to helpdesk@smccme.edu.

Be sure to log OUT of the system when you've finished your printing, to prevent unauthorized access to your account.

Add-Drop Policy

Students who drop a course during the one-week "add/drop" period in the fall and spring semesters and the first three days of summer sessions receive a 100% refund of the tuition and associated fees for that course. Please note any course that meets for less than the traditional semester length, i.e., 15 weeks, has a pro-rated add/drop period. There is no refund for non-attendance.