



Precision Machining and Manufacturing

Title: **Introduction to CNC Machining (Theory and Lab)**

Credit Hours: **7**

Pre-Requisites: **MACH-155 or MACH-165**

Instructors: **John Bolduc
Robert Brydon**

Cat No: **MACH-215-01**

Contact Hours: **240**

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Course Syllabus

Course Description:

This course is divided into two units of study, including Introductory CNC Machining Theory and Introductory CNC Machine Operations. Students will develop the skills required to produce precision CNC machined parts. Students will explore several machine platforms including, Proto TRAK milling and turning; Fanuc, Haas, Okuma and Mitsubishi controllers.

Particular emphasis is placed on NIMS national credentialing and safe CNC machine operations and manual programming."

Course Objectives:

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

1. Understand the design, application and efficient use of various cutting tool machines.
2. Understand the design, construction and use of Proto TRAK lathes and milling machines.
3. Understand the design, construction and use of PC Controlled CNC machines.
4. Understand the design, construction and use of Fanuc Controlled CNC machines.
5. Operate safely and efficiently all above CNC machines.

Topical Outline of Instruction:

1. CNC Safety
2. Manual CNC Programming
3. CNC Production Processed
4. CNC Machine Set-up
5. CNC Operations on Proto TRAK, Fanuc, Haas and other controls

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 projects assigned by instructors. Students are expected to manufacture their own projects within this facility for evaluation and grading.

Student Evaluation and Grading:

• Assignments, Tooling U Test	30%		
• Lab Projects and Assignments	30%		
		Dimensional Accuracy	40%
		Documentation	40%
		QC Report	10%
		Total	100%
• 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.

Textbooks and Supplies:

- Machinery's Reference, Industrial Press
- Scientific Calculator
- Tooling U Subscription
- Geo-Metric and Geo-Metrics II Reference
- Harig Speed Feed Calculator
- CNC Programming Handbook
- A basic measuring tool kit is required. A detailed list is in the first semester laboratory guide.

Attendance Policy:

- Students are expected to attend all scheduled lab classes.

Exceeding 4 Days Absent, an (AF) Attendance Failure can be issued.

- (3) tardy days will = 1 Absent.
- Exceptions will be submitted in writing and considered on an individual basis.
- Late Start:

In the event of a late start due to adverse weather, etc., classes scheduled to begin earlier than the late start time but which run past that time will start late but will meet. For example if the College has a 10:00 a.m. late start, a class scheduled to meet from 8 AM until noon will now meet from 10 AM to noon.

NOTE:

- **IT IS THE STUDENTS RESPONSIBILITY TO MONITOR ALL ABSENTS.AND TARDIES.**

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 p.m. following the last day of the class. You will receive an e-mail to your student e-mail account when course evaluations are available.

ADA Syllabus 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

Each semester students receive a \$20 printing credit. The balance resets at the end of the semester and any remaining credits are removed. The College's pay-for-print system monitors printing on all printers (including those in general access labs, library printers, Tutoring Services, Campus Center Lounge and technology labs). Be sure to log OUT of the system when you've finished your printing, to prevent unauthorized access to your account. 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. 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 e-mail to helpdesk@smccme.edu.

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.

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.

Withdrawal Policy

A student may withdraw from a course only during the semester in which s/he is registered for that course. The withdrawal period is the second through twelfth week of the Fall and Spring semesters and the second through ninth week of twelve-week Summer courses. This period is pro-rated for shorter-length courses, usually 75 percent of course meeting times; please check with the Registration Office. To withdraw from a course, a student must complete and submit the appropriate course withdrawal form, available at the Registration Office. This process must be completed either in person or by using SMCC e-mail accounts.

Plagiarism Statement

If an instructor suspects that a student has knowingly committed a violation defined in the Maine Community College System Policy on Student Grade Appeals and Academic Misconduct, the instructor has the authority to review the alleged misconduct and determine the grade that the student should receive for the assignment and the course. The instructor may assign a failing grade for the assignment or course and may require the student to complete additional work for the course. The instructor may consult with the department chair and/or the College's chief academic officer prior to making such decisions. If a student seeks to challenge an instructor's determination, the student should submit a grade appeal. Grade appeal forms are available in the Advising Office on the South Portland Campus or in the administrative offices in the Learning Commons on the Midcoast Campus. An instructor may also refer the matter to the College's disciplinary officer for review under the procedures of the MCCS Student Code of Conduct