



Precision Machining and Manufacturing

Title: **Advanced CNC Machining and Programming with Mastercam**

Cat No: **MACH-265-01**

Credit Hours: **7**

Contact Hours: **240**

Pre-Requisites: **MACH-155 or MACH-165 and MACH-215**

Instructors: **John Bolduc
Robert Brydon**

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Course Syllabus

Course Description:

This course is divided into three units of study: including Advanced CNC Machining operations, Advanced CAD-CAM programming and develop professional business performance standards.

The Advanced Programming Units consisting of (Cad Cam) Computer Numerical Control (CNC) operations and programming, Quality Control (QC), an integration of various CAD Computer Aided Design with Solidworks, and CAM (Computer Assisted Manufacturing) programs using Mastercam for programs.

Advanced lab Units will apply to advanced, set-up, operations and cutting strategies required to manufacture assigned projects to industry standards.

Students will participate in a senior capstone project that will demonstrate all the technical skill required in today's professional workplace. The completed capstone will include a validation of the technical, documentation and interpersonal skills attained in the program. The professional development unit will explore continuing education options, Professional / Trade organizations, and employment opportunities.

Course Objectives:

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

1. Understand the design, application and efficient use of various advanced CNC's.
2. Operate safely set-up and efficiently operate CNC machines.
3. Manual review and edit CAM produced CNC Programs.
4. Develop advanced CNC machining processes.
5. Correctly Set-up and use multi axis attachments.
6. Quality inspection reporting awareness.
7. Develop patterns of professionalism that reflect industry expectations.

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:

• Tooling U Assignments and 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.**

Course Evaluation

Students may evaluate the instructor online and anonymously by going to "Resources for Current Students" at the SMCC homepage and choosing "Evaluate Your Courses."

ADA Statement

Southern Maine Community College is an equal opportunity/affirmative action institution and employer. For more information, please call [207-741-5798](tel: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.