

Western University
Faculty of Engineering
Department of Mechanical & Materials Engineering

MME 9513 – Computer Numerically Controlled (CNC) Machining

COURSE OUTLINE 2013-2014

OBJECTIVES: Computer Numerical Control (CNC) is a modern precision machining technology for manufacturing high-quality mechanical parts. This course aims at developing students' knowledge and understanding of common CNC machining operations and their limitations/challenges. Students will be trained in CNC part programming and advanced subjects in CNC machining through lectures and a series of two course projects and a presentation

PREREQUISITES: Graduate standing in MME or permission from the instructor

ANTIREQUISITES: MME 4459a/b, the former MME 459a/b

TOPICS:

1. Introduction to Computer Numerical Control Systems
2. Word Address Programming
4. Milling Operations
5. Shop Activities
6. CNC Machining Centers
7. CNC Position and Motion Control Systems
8. Modern Computer-Aided Part Programming

CONTACT HOURS: 2 lecture hours and 2 laboratory hours per week, half course

TEXTBOOK(S): None

REFERENCES:

1. Introduction to Computer Numerical Control (CNC), J.V. Valentino, J. V. and J. Goldenberg, Pearson, 5th Edition, 2013
2. Edgcam 11.0 for Manufacturers, S. Tickoo, CAD/CIM Technologies, 2007

EVALUATION: The final course grade will be determined as listed below:
Deadline dates for assignments, projects, presentations, and examinations are determined according to the **tentative** schedule as follows:

Projects

1. **CAM Demo Project:** Demonstrate the features and capabilities of Edgcam software through computer-assisted G-code generation for a particular geometry
Deliverables: on-screen demonstration, written tutorial/report outlining the steps involved in G-code generation
2. **CNC Machining Project:** Use the G-code generated in CAM Demo Project to machine the geometry on a three-axis Tormach CNC machine
Deliverables: practical demonstration, project report outlining machining setup procedures involved, machined part
3. **Presentation:** Review of selected topics involving modern and advanced concepts in CNC machining. A list of suggested topics and associated references will be provided
Deliverables: class presentation and slides

Evaluation Method	Effort	Weight	Assigned	Due
CAM Demo Project	Team	20%	Week of Sep. 30	Week of Oct. 28
CNC Machining Project	Team	20%	Week of Oct. 14	Week of Dec. 2
Presentation	Individual	20%	Week of Oct. 28	Week of Nov. 25
Final Examination	Individual	40%	Date TBA	

Final Examination

Closed book, Questions and problems covering entire course material

Only non-programmable calculators allowed

Written at the same time as MME 4459a

If a minimum of 50% is not obtained on the final examination, the student cannot receive a final mark greater than 48%

INSTRUCTOR:

Professor R. Tutunea-Fatan

Office: SEB 2063A; Tel. 519-661-2111, ext. 88289

Email: rtutunea@eng.uwo.ca

Office Hours: by appointment or drop in

ATTENDANCE:

Any student who, in the opinion of the instructor, is absent too frequently from class or laboratory periods in any course, will be reported to the Associate Dean (Graduate) (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Associate Dean (Graduate), the student will be debarred from taking the regular examination in the course

CONDUCT:

Students are expected to arrive at lectures on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others.

SICKNESS:

Students should immediately consult with the instructor or Associate Chair (Graduate) if they have problems that could affect their performance in the course. The student should seek advice from the Instructor or Associate Chair (Graduate) regarding how best to deal with the problem. Failure to notify the Instructor or the Associate Chair (Graduate) immediately (or as soon as possible thereafter) will have a negative effect on any appeal.

ACCESSIBILITY:

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation

PLAGIARISM/

ACADEMIC OFFENCES: Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage of text from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence. Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_grad.pdf

NOTICES:

Students are responsible for regularly checking their Western email and notices posted on Instructors' doors.

NOTE:

The above topics and outline are subject to adjustments and changes as needed.