

Course Outline

1. COURSE INFORMATION

Session Offered	Fall 2013	
Course Name	Manufacturing Systems	
Course Code	PROC TECH 4MS3	
Program Name	Process Automation Technology	
Calendar Description	This course examines manufacturing and production systems, material selection and design process, measurement and quality assurance. Plastics, steels, and ceramics manufacturing, environmental and safety management, asset management and reliability.	
Instructor	Dr. Mohammed Tauhiduzzaman	Phone: 905-525-9140x26450 Email: zamanmt@mcmaster.ca Office hours and location: TBA
	Patrick Hale	Phone: (905) 517-7196 Email: halep@mcmaster.ca

2. COURSE SPECIFICS

Course Description	This course examines manufacturing and production systems, manufacturing processes, material selection and design process, measurement and quality assurance. Topics also include plastics, steels, and ceramics manufacturing, environmental and safety management in plants, plant asset management, and reliability centered maintenance. Student will also learn using CNC simulator software to simulate and verify their own CNC G-codes.		
Instruction Type	Code	Type	Total Hours
	C	Classroom Instruction	36
	L	Laboratory, workshop or fieldwork	12
	T	Tutorial	
	DE	Distance Education	
	TOTAL HOURS		48
Resources	ISBN	Textbook Title & Edition	Author & Publisher
	ISBN: 9780470924679	Materials and Processes in Manufacturing	DeGarmo, E. Paul, Black, Wiley & Sons
	Other Supplies	CNC simulator	
Prerequisite(s)	PROC TECH 2CA3, 2EC3, 4MT2		
Corequisite(s)			
Antirequisite(s)			
Course Specific Policies	<ul style="list-style-type: none"> - Late assignments will not be graded. - All work must be shown to get full credit. 		
Departmental Policies	Students must maintain a 3.5/12 GPA to continue in the program. In order to achieve the required learning objectives, on average, B.Tech. students can expect to do at least 3 hours of "out-of-class" work for every scheduled hour in class. "Out-of-class" work includes reading, research,		

	<p>assignments and preparation for tests and examinations.</p> <p>The use of cell phones, iPods, laptops and other personal electronic devices are prohibited from the classroom during the class time, unless the instructor makes an explicit exception.</p> <p>Announcements made in class or placed on Avenue are considered to have been communicated to all students including those individuals that are not in class.</p> <p>Instructor has the right to submit work to software to identify plagiarism.</p> <p>Instructor is permitted to enforce a preference to shut off all electronic devices during class.</p>
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3. SUB TOPIC(S)

Week	Description	Chapter
Week 1	Introduction to Manufacturing Process and Systems Fundamentals of Machining Process	1, 2, 20, 21
Week 2	Numerical control and G-Codes	26, Notes
Week 3	Machining Process: Turning	22
Week 4	Machining Process: Milling	24
Week 5	Test# 1 Fundamentals of Metal Casting	11, 12, 13
Week 6	Fundamentals of Metal Forming	15, 16, 17
Week 7	Fundamentals of Joining CAD/CAM integration in machining- EdgeCAM	30, 31, 32, 33, 34
Week 8	Other metal removal processes Special Topic: Ultra-precision machining, micro machining and MEMS fabrication	22, 23, 27, 28, 29, Notes
Week 9	Test# 2 Selection of materials	10
Week 10	GD & T	Notes
Week 11	Metrology, Testing and Inspection	10, Notes
Week 12	Reliability Project presentation	Notes
Week 13	Project presentation	

FINAL EXAMINATIONS will be scheduled, conducted and invigilated by the Office of the Registrar. All students entering the examination room must produce a McMaster photo identification card. No other identification will be accepted. In addition, for classes that allow you to use a calculator, you must use the "CASIO FX 991" during all tests and exams. The CASIO FX991 is the only calculator allowed in the exam rooms.

Note: this structure represents a plan and is subject to adjustment term by term. The instructor and the university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes.

4. ASSESSMENT OF LEARNING **Weight**

Assignments and lab reports	10%
Term Project	15%
Midterm	15%
Test #1	15%
Test #2	15%
Final Exam	30%
TOTAL	100%

Percentage grades will be converted to letter grades and grade points per the University calendar.

5. LEARNING OUTCOMES

1. Understand and explain a manufacturing system
2. Define and classify manufacturing processes
3. Define and explain (with examples) the following processes: primary forming processes, deforming processes, removing processes, joining processes, material properties modification processes
4. Describe common machine tools and manufacturing equipment
5. Explain reasons for introducing automation in a manufacturing system
6. Describe basic principles of numerical control
7. Understand how manufacturing systems can be designed and integrated for low cost, high quality and on-time delivery
8. Explain the role of quality engineering in manufacturing and production systems
9. Describe the manufacturing processes for the production of steels, plastics and ceramics
10. Explain the concepts and role of reliability-control maintenance process in a manufacturing environment
11. Understand the role of environmental and safety management in plants
12. Explain the concepts related to and the role of plant asset management in a manufacturing environment

6. POLICIES

Anti-Discrimination

The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.

<http://www.mcmaster.ca/policy/General/HR/Anti-Discrimination%20policy.pdf>

Academic Integrity

Attention is drawn to the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office. Any student who infringes one of these resolutions will be treated according to the published policy.

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at: <http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf>

Requests for Relief for Missed Academic Term Work (Assignments, Mid-Terms, etc.)

The McMaster Student Absence Form is a self reporting tool for **Undergraduate Students** to report absences that last up to 5 days and provides the ability to request accommodation for any missed academic work. Please note, this tool cannot be used during any final examination period. You may submit a maximum of 1 Academic Work Missed requests per term. It is YOUR responsibility to follow up with your Instructor immediately regarding the nature of the accommodation.

If you are absent more than 5 days or exceed 1 request per term you MUST visit your Associate Dean's Office (Faculty Office). You may be required to provide supporting documentation.

This form should be filled out immediately when you are about to return to class after your absence.

<http://www.mcmaster.ca/msaf/>

E-Learning Policy

Consistent with the Bachelor of Technology's policy to utilize e-learning as a complement to traditional classroom instruction, students are expected to obtain appropriate passwords and accounts to access Avenue To Learn for this course. Materials will be posted by class for student download. It is expected that students will avail themselves of these materials prior to class. Avenue can be accessed via

<http://avenue.mcmaster.ca>

Communications

It is the student's responsibility to:

- Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- Use the university provided e-mail address or maintain a valid forwarding e-mail address.
- Regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.
- To check their McMaster/Avenue email and course websites on a regular basis during the term.

Turnitin (Optional)

This course will be using a web-based service (Turnitin.com) to reveal plagiarism. Students will be expected to submit their work electronically to Turnitin.com and in hard copy so that it can be checked for academic dishonesty. Students who do not wish to submit their work to Turnitin.com must still submit a copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, etc.). To see the Turnitin.com Policy, please go to

<http://www.mcmaster.ca/academicintegrity/turnitin/students/index.html>

Protection of Privacy Act (FIPPA)

The Freedom of Privacy of Information and Protection of Privacy Act (FIPPA) applies to universities. Instructors should take care to protect student names, student numbers, grades and all other personal information at all times. For example, the submission and return of assignments and posting of grades must be done in a manner that ensures confidentiality.

<http://www.mcmaster.ca/univsec/fippa/fippa.cfm>

Academic Accommodation of Students with Disabilities Policy

Student Accessibility Services (SAS) is committed to the continuous improvement of accessibility for students with disabilities. Students are encouraged to contact SAS as early as possible before each term starts to become familiar with the services offered and to confirm their accommodations.

Students must forward a copy of the SAS accommodation to the instructor of each course and to the Program Administrator of the B.Tech. Program immediately upon receipt. If a student with a disability chooses NOT to take advantage of a SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. <http://sas.mcmaster.ca>

Student Code of Conduct

The Student Code of Conduct (SCC) exists to promote the safety and security of all the students in the McMaster community and to encourage respect for others, their property and the laws of the land.

McMaster University is a community which values mutual respect for the rights, responsibilities, dignity

and well-being of others. The purpose of the Student Code of Conduct is to outline accepted standards of behavior that are harmonious with the goals and the well-being of the University community, and to define the procedures to be followed when students fail to meet the accepted standards of behavior. All students have the responsibility to familiarize themselves with the University regulations and the conduct expected of them while studying at McMaster University.

<http://studentconduct.mcmaster.ca/pdf/SCC.pdf>

<http://www.mcmaster.ca/policy/Students-AcademicStudies/StudentCode.pdf>