

ENGG*3070 Integrated Manufacturing Systems F(3-2) [0.5] Fall 2016



[School of Engineering](#)

(Revision 0: August 30, 2016)

1 INSTRUCTIONAL SUPPORT

1.1 Instructor

Instructor: Dr. Ibrahim Deiab, Ph.D., P.Eng.

Office: THRN 2415, ext. 58391

Email: ideiab@uoguelph.ca

Office hours: Monday and , Wednesday 10:30 -11:30, via email or by appointment

1.2 Lab Technician

Technician: **Mr. Barry Verspagen**

Office: THRN 1138, ext. 58821

Email: baverspa@uoguelph.ca

1.3 Teaching Assistants: [Check course link for TA office hours and location](#)

2 LEARNING RESOURCES

2.1 Course Website

Course material, news, announcements, and grades will be regularly posted to the ENGG*2180 Course link site. You are responsible for checking the site regularly. Also a Facebook page was created and will be used during the course (<https://www.facebook.com/ENGG2180/>) please add yourself

2.2 Required Resources

- Groover, M., Automation, Production Systems, and Computer Integrated Manufacturing, 4th edition, 2015, Pearson.
- Handouts and instructor notes, Check Course link regularly.

2.3 Recommended Resources

2.4 Additional Resources

Lecture Information: All the lecture notes will be posted on the web page.

Please note that power point presentations are not comprehensive of all materials covered.

Lab Information: The handouts for all the lab sessions are within the lab section. All types of resources regarding tutorials, links to web pages can be found in this section.

Assignments: Assignments handouts and due dates will be posted on Course link

Tentative Out-of-class Assignments:

- HW # 1
- HW # 2
- HW # 3
- HW # 4
- HW # 5

Exams: see section 3. The instructor reserve all the rights on setting exam rules, allowed materials and use of calculators, seating of students, allowing electronic devices, e.g smart phones. It is the students responsibly to strictly follow instructor instructions. If a student fails to follow instructions he will be asked to leave the exam hall and get a zero with no makeup option.

- **Sharing of calculators, formula sheets, if applicable, or use of smart phones as calculators is not allowed.**

Miscellaneous Information:

2.5 Communication & Email Policy

Please use lectures and lab help sessions as your main opportunity to ask questions about the course. Major announcements will be posted to the course website. **It is your responsibility to check the course website regularly.** As per university regulations, all students are required to check their university of Guelph e-mail account regularly: e-mail is the official route of communication between the University and its students.

3 ASSESSMENT

3.1 Dates and Distribution*

Quizzes: (10%) Sep. 30 / Oct. 21/Nov 4 /Nov 25

Home works: (5%) assignments problems will be posted on Course link, Homework grade is based on attempting all assigned problems and grade may be assigned based on the grading of a randomly selected problem. (Tentative HW release dates: Monday Sep. 21/Oct. 5/Oct. 19/Nov 9/Nov 23)

Labs and project: (15%) See section 5.3

Midterm Exam(s): 30% (15% each)

Monday October 17 2016 and Monday November 14 2016

Please note: the instructor will form project and lab groups, as much as possible students' preferences will be entertained.

Final EXAM (40%) Friday December 9th 2016 from 2:30 -4:30 PM **Room TBA.**

Final exam date and time is set by registrar office, in case of discrepancy the registrar set date and time supersedes the information in this course outline

The instructor, at his discretion, may entertain requests by the class to adjust assessment dates, except final exam, with the unanimous consent of the class.

3.2 Course Grading Policies

Missed Assessments: If you are unable to meet an in-course requirement due to medical, psychological, or compassionate reasons, please email the course instructor. See the undergraduate calendar for information on regulations and procedures for Academic Consideration:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Accommodation of Religious Obligations: If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor at the start of the semester to make alternate arrangements. See the undergraduate calendar for information on regulations and procedures for Academic Accommodation of Religious Obligations:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml>

Passing grade: In order to pass the course, Student must obtain a grade of 50% or higher on the exam portion (final exam and midterms) of the course in order for the laboratory write-up portion of the course to count towards the final grade. If you fail the exam portion your final grade will be 45% or less.

Missed midterm tests: If you miss a test due to grounds for granting academic consideration or religious accommodation, the weight of the missed test will be added to the final exam and/or other exams at the discretion of the instructor. There will be no makeup midterm tests or exams.

Lab Work: You must attend and complete all laboratories no make up for missed labs. If you are to miss a laboratory due to grounds for granting academic consideration, or if you are to miss a lab for religious accommodation, arrangements must be made with the teaching assistant apriori.

Late Lab Reports: Late submissions of lab reports will not be accepted.

4 AIMS, OBJECTIVES & GRADUATE ATTRIBUTES

- 4.1 Calendar Description: Common production machines and manufacturing systems are dealt with, particularly automated systems, robotics, computer control and integration techniques, materials handling, inspection processes and process control. The course addresses societal and environmental issues related to manufacturing

Prerequisite(s): ENGG*2120,

4.2 Course Aims

This course is designed to help the student:

- Understand the aspects of production automation.
- Understand the role of computer in integrated manufacturing systems.
- Learn about different integration strategies and technologies.
- Know the different components of manufacturing systems.
- Learn the basics of process planning.
- Learn the basics of quality control.

Learning Objectives

At the successful completion of this course, the student will have demonstrated the ability to:

1. understand the role of automation and integration for manufacturing
2. Recognize the different components of an integrated manufacturing system and how it functions.
3. Recognize basic automation equipment.
4. Ability to program processing of different parts for machining.
5. Understand and apply basics of process planning.
6. Practice basics of production planning and control.
7. Recognize modern trends in manufacturing.
8. Apply principles of quality assurance and statistical quality control to manufacturing processes.

4.3 Graduate Attributes

Successfully completing this course will contribute to the following CEAB Graduate Attributes:

Graduate Attribute	Learning Objectives	Assessment
1. Knowledge Base for Engineering	1, 2	Quizzes, Exams
2. Problem Analysis	-	Quizzes, Exams,
3. Investigation	3	Labs/Project
4. Design	4	Labs/Project
5. Use of Engineering Tools	4	Labs,/Project
6. Communication	6	Labs,/Project

7. Individual and Teamwork	-	Labs/projects
8. Professionalism	-	-
9. Impact of Engineering on Society and the Environment	7	Labs/Project
10. Ethics and Equity	-	-
11. Environment, Society, Business, & Project Management	8	Labs/ Project
12. Life-Long Learning		-

4.4 Instructor’s Role and Responsibility to Students

The instructor’s role is to develop and deliver course material in ways that facilitate learning for a variety of students. Selected lecture notes will be made available to students on Course link but these are not intended to be stand-alone course notes. During lectures, the instructor will expand and explain the content of notes and provide example problems that supplement posted notes. Scheduled classes will be the principal venue to provide information and feedback for tests and project.

4.5 Students’ Learning Responsibilities

Students are expected to take advantage of the learning opportunities provided during lectures and tutorials. Students, especially those having difficulty with the course content, should also make use of other resources recommended by the instructor. Students who do (or may) fall behind due to illness, work, or extra-curricular activities are advised to keep the instructor informed. This will allow the instructor to recommend extra resources in a timely manner and/or provide consideration if appropriate.

4.6 Relationships with other Courses & Labs

Previous Courses:

Follow-on Courses:

5 TEACHING AND LEARNING ACTIVITIES

5.1 Timetable

Lectures: LA Room 204 Monday, Wednesday and Friday 11:30 -12:20

Laboratory: **check your lab section.**

You are only allowed to attend the section you are registered in,

Section 0101 Thursday 12:30 -2:20(Room Rich 2510)

Section 0102 Tuesday 10:30- 12:20 (Room Rich 2510)

Section 0103 Thursday 10:30 -12:20 (Room Rich 2510)

Section 0105Tuesday 2:30 -4:20 (Room Rich 2510)

5.2 Lecture Schedule

Weeks	Lecture Topics**	References***	Learning Objectives
0.5	Introduction	Chapter 1,3	1
1	Basics of automation	Chapter 4	1
.75	Hardware components for automation and process control	Chapter 6	2
1.	Numerical control	Chapter 7	3
1.5	Industrial robots, PLC	Chapter 8,9	4
1.	Materials handling	Chapter 10	5
1.75	Intro to manufacturing systems/Cellular/FMS systems	Chapter 13,18,19	6-7
1.5	Quality control and inspection practices	Chapter 21	8
1.	Process planning and concurrent Engineering	Chapter 24	6
1.	Production planning and control systems	Chapter 25	6
1.	Review and Evaluation		

*Tentative, length of coverage and order of topics may be changed, Check course link for covered chapters and sections of each chapter.

** Basics of optimization and its applications will be introduced through different topics as deemed appropriate.

*** check course link for other materials and handouts.

5.3 Lab Schedule

Week	Topic*	Due
1	Introduction to Lab Equipment and Safety Training	
<p>Lab sessions will be designed to cover topics covered in lectures. It may include tutorials on software and use of different pieces of equipment related to the course. Experiments will be presented as mini projects where students work on designing and conducting the experiments. Labs are used for group meetings and meeting with instructor and GTAs. Check course link for Groups and schedule.</p>		

5.4 Other Important Dates

Fortieth class day –Last day to drop semester courses: Friday Nov. 4 2016.

Important dates can be found here:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/2016-2017/c03/c03-fallsem.shtml>

6 LAB SAFETY

There is zero tolerance for violating lab safety rules. Please refer to Safety information tab on ENGG3070 course link page. This is in addition to SOE lab manual and lab specific safety instructions. **In case of doubt, always ask.**

7 ACADEMIC MISCONDUCT

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member.

7.1 Resources

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

A tutorial on Academic Misconduct produced by the Learning Commons can be found at:

<http://www.academicintegrity.uoguelph.ca/>

Please also review the section on Academic Misconduct in your [Engineering Program Guide](#).

The School of Engineering has adopted a Code of Ethics that can be found at:

<http://www.uoguelph.ca/engineering/undergrad-counselling-ethics>

8 ACCESSIBILITY

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability for a short-term disability should contact the Centre for Students with Disabilities as soon as possible

For more information, contact CSD at [519-824-4120](tel:519-824-4120) ext. 56208 or email csd@uoguelph.ca or see the website: <http://www.uoguelph.ca/csd/>

9 RECORDING OF MATERIALS

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

10 RESOURCES

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs:
<http://www.uoguelph.ca/registrar/calendars/index.cfm?index>