Carleton University

Faculty of Engineering & Design

ECOR1010 Introduction to Engineering

Fall 2015 – Course Outline

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Course Description (from Undergraduate Calendar):
ECOR 1010 [0.5 credit]
Introduction to Engineering
Technology, society and the environment. Graphical design communication: sketching, graphical projections, CAD; Managing data: statistical methods; spreadsheets. Design analysis: matrix programming software; symbolic computer algebra systems. Design process: proposals; reports; presentations; reporting software.
Lectures four hours per week, laboratories two hours per week.

Textbook (required):
Introduction to Engineering, 7th edition (ISBN 10: 1-256-36271-9 ISBN 13: 978-1-256-36271-5)
Available at the bookstore.

Course Objectives/Learning Outcomes:
By the end of this course, students should be able to:

- explain engineering measurements and errors, and convert engineering units
- perform calculations accounting for measurement errors
- analyse data using engineering statistics
- describe the engineering design process
- implement the engineering design process
- (re)design a simple object to meet specified needs under given constraints
- implement 3D printing techniques
- interpret standard engineering drawings
- create engineering models and drawings using CAD software
- implement various engineering software tools (including spreadsheets, matrix programming, symbolic computer algebra)
- generate engineering reports and design documentation
- describe the roles and responsibilities of professional engineers (professionalism, ethics, health and safety, protection of the public and the public interest)
- describe the impact of engineering/technology on society and the environment

Course Structure:
The course consists of two interrelated series of lectures, laboratory assignments, a design project, a health and safety module, midterm and final exams, and an optional (bonus) workshop series. Carleton University's Learning Management System (cuLearn) will be used to deliver much of the course content, some assignment submission, and for communication. A week-by-week course schedule with deadline dates is available on the ECOR1010 cuLearn course page (Crosslist ECOR1010ABC [31879:31880:31881] Introduction to Engineering (LEC) Fall 2015).

1010 Lectures

- two 1.5-hour lectures each week (Tuesdays and Thursdays); in 2200RB or 2000MC
- introduce engineering knowledge required for weekly laboratory assignments and design project
- weekly readings from textbook chapters (and perhaps additional readings from time-to-time) will need to be independently studied
- lectures will be posted on cuLearn

Technology, Society, and the Environment (TSE) Lectures

- one 1-hour lecture each week (Fridays); in 2200RB or 2000MC
- presentations related to TSE; some may be delivered by guest lecturers
- additional readings may be assigned
- selected TSE lectures will be posted on cuLearn

Laboratory Assignments

- one 2-hour laboratory each week; in 4301CB
- nine (9) laboratory assignments – ~~seven~~ six of nine (~~7~~ 6 of 9) must be completed
- laboratory grade will be average of best 7 labs submitted
- if only 6 labs are submitted, the laboratory grade will be: (6 lab grades out of 10 + 0)/7
- if less than 6 labs are submitted, the course grade will be FND
- will be posted on cuLearn the week prior to being assigned
- teaching assistants (TAs) will be available for consultation during your scheduled laboratory sections the week the laboratory is assigned
- laboratory assignments are (normally) due thirty (30) minutes after the start of your next laboratory period and are to be submitted electronically by uploading to cuLearn (Crosslist ECOR1010L1-L18 Electronic Assignment Submission (LAB) Fall 2015)

Reverse Engineering Design Project

- small-group design project
- involves reverse engineering a small and simple part, redesigning the part to improve it, creating a 3D solid model and 3D print of the improved part, and generating an engineering design report and drawings to describe your improved part
- the Reverse Engineering Project report (printed copy) is due Nov. 27 at 16:30 in the ECOR 1010 slot of the filing cabinet in the hall outside 3135ME (the Mech and Aero Departmental office)

WorkSmart Campus

- www.worksmartcampus.ca
- an important component of engineering is safety – as such, this module was created to help students "learn occupational health and safety principles and the importance of effective management of safety in the workplace" [WorkSmart Campus]
- enroll with Campus ID: MEVT2747, E-mail: firstlast@cmail.carleton.ca, Student ID: 100XXXXXX, Institution & Faculty: Carleton|Engineering, Course: ECOR1010A (or B or C)
- the modules are located in the My Learning tab: Knowledge of Electrical Hazards, Health & Safety 101, SafeSmart, and Passport to Safety
- a score of 100% on a 10 question quiz is required to move on after Health & Safety 101 and SafeSmart
- the Passport to Safety test is 4 parts, 25 questions each – these can be done only once and a grade will be assigned based on your responses
- once the Passport to Safety test has been completed, copies of the transcript can be printed
- an electronic version (pdf or image file) must be submitted electronically by uploading to cuLearn – the deadline for this is Dec. 4 at 16:30

Learning and Support Services (LSS) Incentive Program (Bonus)

- this course has been registered in the study skills Incentive Program offered LSS
- workshops at LSS are designed to help students develop and refine their academic skills for a university environment
- up to 5 bonus points (1 for each workshop) can be earned by completing one or more of the following online workshops: Academic Integrity, Academic Reading, Note-Taking, Test & Exam Preparation, Time Management
- access via LSS website: http://carleton.ca/lss/lss-online/online-workshops-2/
- workshops must be completed by Dec. 1st to receive credit for the Incentive Program

Exams

- in-class midterm exam (closed book, formula sheet provided, no calculators)
  - Thursday, Oct. 8
  - if the midterm exam will be (or is) missed, you must contact Prof. Saari ASAP
- final exam during exam period (closed book, formula sheet provided, no calculators)
  - will be during the final exam period (Dec. 9-21, 2015)
  - schedule released Oct. 9, 2015 – no accommodation for travel plans will be made
  - the final exam is for assessment purposes only and will not be returned to students

Grading:		
	best 7 of 9 Laboratory Assignments	25 %
	Reverse Engineering Design Project	10 %
	WorkSmart Campus	5 %
	Midterm Exam	10 %
	Final Exam	50 %
	LSS Workshops (Bonus)	+5 %

Important Note Regarding Laboratory Assignments, Design Project, WorkSmart Campus:

- late submission of assignments and design project deliverables will NOT be accepted
- late submission of the WorkSmart Campus transcript will NOT be accepted – no excuse of any kind will be accepted for failure to submit the transcript on time
- ALL deliverables must be submitted on time; deliverables NOT submitted will result in a grade of "FND"
- students must abide by Carleton University's Academic Integrity Policy (https://carleton.ca/studentaffairs/academic-integrity/)

How we will Work Together to Achieve the Course Objectives/Learning Outcomes:
Learning requires active participation of both the instructor and the student. Thus, a student's ability to achieve the learning objectives will depend on the student and instructor (and TAs, support staff, etc.) to work towards that goal. Therefore, the following is a draft of the respective responsibilities:

To give you the best opportunity to fulfill the learning objectives of this course, I WILL MAKE MY BEST EFFORT TO:

- Organize the course to facilitate the achievement of the learning objectives
- Foster an engaging and interactive learning environment
- Respond to electronic communication in a timely manner (usually within 24 hours, depending on circumstances)
- Prepare evaluations that fairly asses your ability to engage with the content of the course
- Seek appropriate feedback about the course and its content, and reflect and act upon this feedback to improve the course where appropriate

To give you the best opportunity to fulfill the learning objectives of this course, YOU SHOULD MAKE YOUR BEST EFFORT TO:

- Complete readings and preparations in advance whenever possible
- Attend class regularly and minimize distractions in class in order to maximize your ability to interact and engage with the material, fellow students, and the instructor
- Ask questions in person or electronically when you are having difficulty understanding the material
- Manage your schedule to ensure you have time to prepare for class and complete assignments
- Ensure that all of the work that you submit for evaluation is your own and that you provide proper attribution where required
- Take responsibility for your own education by taking your courses seriously and devoting the time and energy required to succeed

Accommodation Statement:

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:
Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://www.carleton.ca/equity/
Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://www.carleton.ca/equity/

Academic Accommodations for Students with Disabilities: The **Paul Menton Centre** for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your ***Letter of Accommodation*** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (*if applicable*) at http://www.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at http://www.carleton.ca/equity/

Nov. 24 –rev1: yellow highlighting