

# ECOR 1010

# Introduction to Engineering

## Lecture 1

Glenn McRae PhD, P.Eng.

# Who am I? (besides your instructor)

- Glenn McRae, Ph.D. (UBC), P.Eng.
- Joined Mech & Aero Eng. Dept. at Carleton in July 2009
- Previously worked at
  - Jet Propulsion Laboratory (Caltech) for 3 yrs
  - Atomic Energy of Canada Ltd. for 22 yrs.
- Current Research:
  - Cracking of metals used in nuclear reactors
  - New methods to image bone cancers
  - Calibration source for SPECT imaging
  - Targets for linear accelerators (LINACS)
  - Methods to predict end-of-life of liners inside beer cans, et al.
  - Corrosion of rebar in concrete
  - New methods to develop fingerprints on brass
  - Laser isotope separation

Also teach: MAAE 2400 Thermodynamics & Heat Transfer;  
MAAE 4906C Corrosion;  
MAAE 4906E Nuclear Engineering

Carleton University  
Faculty of Engineering & Design  
**ECOR 1010: Introduction to Engineering**  
**Fall 2013 – Course Outline**

**Fall Term:** Lectures 4 hours per week, laboratory 2 hours per week  
**Faculty Instructor:** Glenn McRae  
**Laboratory TA Manager:** (TBD)  
**Reverse Engineering Project TA:** (TBD)  
**3D Print Manager:** Stephan Biljan – 2230ME

**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.

#### **Course Structure**

A week-by-week lecture schedule, laboratory assignments, and important deadline dates are available on the ECOR 1010 CULearn web site.

As indicated on the Lecture & Laboratory Schedule (available on the ECOR 1010 CULearn web site) each lecture will be presented by Prof. G. McRae and various guest lecturers.

The course consists of two interrelated series of lectures. The two 1.5-hour lectures each week will introduce the engineering knowledge required for the weekly laboratory assignments. However, the corresponding textbook chapters (as indicated on the Lecture & Laboratory Schedule) will have to be independently studied to successfully complete most of the laboratory assignments. The one 1-hour lecture each week (the green lines on the Lecture & Laboratory Schedule) is devoted to presentations related to Technology, Society and the Environment (TSE). Several Guest Lectures will present many of the TSE lectures. The mid-term and final exams will include questions from all lectures.

**Textbook:** “Introduction to Engineering”, 7<sup>th</sup> edition ISBN# 1256362719

## Course Outline:

Available on **cuLearn**

Shown here is only  
the first page. Go to  
**cuLearn** and read the  
complete updated  
course outline  
carefully !

# cuLearn

- Access via link on <https://carleton.ca/culearn/>
- Login: same as your **cmail account**
  - Password is set by student upon registration
- Online help available
- Provides access to cuLearn postings for all courses
- For ECOR 1010:
  - Lecture slides
  - Support materials
  - Laboratory assignments (9)
  - Project assignment (1)
  - Marks

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Tim Pychyl explores connection between the New Year and personal renewal.



André Plourde talks to Postmedia about Canadian oil export capacity.



Jim Davies: The New Year is a great time to strengthen your willpower.



Frances Woolley ignites online discussion about the macroeconomics of Middle Earth.

 Newsroom

 Upcoming events


**Tuesday, January 8, 2013**  
English Grads Book Club

**Tuesday, January 8, 2013**  
Getting Involved in Research (Workshop)

**Wednesday, January 9, 2013**  
"An Examination of Gendered Agricultural Policy in Tanzania and Ethiopia"

**Wednesday, January 9, 2013**  
Alternatives to Medical School Presentation

 Events Calendar

 Did you know?

Carleton was founded in 1942 and granted its first degree in 1946.

 Spotlight on

**SCHOOL OF ARCHITECTURE**  
Carleton grad Raymond Chu shortlisted for Graduate Architecture Award.



**LIVE MUSIC**  
Israeli musicians Michael and Shimrit Greilsammer to perform at Carleton.



**RIDEAU CANAL**  
NCC urges pedestrians and skaters not to venture onto the Rideau Canal.



**GRAD ORIENTATION**  
Grad students and TAs starting this January, register now for Winter Orientation.



# cmail Account

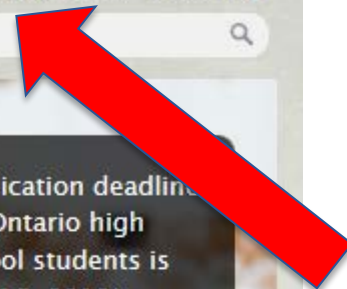
- Must acquire a “cmail” account to access cuLearn
  - Should have it already
- Visit: [www.carleton.ca](http://www.carleton.ca)
  - Click on **MyCarleton** button and sign up
- Help is available at the campus help desk:  
[ccs\\_service\\_desk@carleton.ca](mailto:ccs_service_desk@carleton.ca)
  - or Tel: 613-520-3700

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# MyCarleton Portal

MyCarleton is Carleton University's portal providing access to information and multiple services that students, faculty, staff and other members of the University community use frequently.

## Student Login

Login from the [Current Students homepage](#) »

- Login using your [Student Computing Account](#).
- [Activate your Student Computing Account or change your password here.](#)

## Faculty/Staff Login

Login from the [Faculty and Staff homepage](#) »

- Login using your [MyCarletonOne credentials](#) or [Faculty Computing Account](#).
- [Change your password here.](#)

Please note: This is a temporary page that, in the coming weeks, will automatically point to the Current Students landing page.

Students, you are encouraged to go directly to the [Current Students website](#) to login to the MyCarleton Portal..

Faculty and Staff, please bookmark the [Faculty and Staff website](#) as this will be your new MyCarleton Portal login page.



### Information for:

### Admissions:

### Academics:

### Popular:



# Current Students

Use this site to **login** to the portal, get student **news**, find important **links**, learn about upcoming **events** and to **connect** with CU online.



MyCarleton Portal Login	Username	.....	Login	Password Reset / Activation

**Having trouble logging in?**  
 If you have activated your Carleton Email and MyCarletonOne account, your **new account name** will most likely be **firstnamelastname** (unless you have a common name or your full name exceeds 20 characters). You can find out your username from within **Carleton Central** (click on the 'MyCarletonOne Account information and Carleton Email address' link).

Haven't set up your new account yet? Login to **Carleton Central** to activate your Carleton Email and MyCarletonOne account now!

Library	Carleton A-Z	CU Phonebook	Campus Map
Prospective Students	New & Current Students	Alumni	Faculty/Staff

## Carleton Central

- Login to Carleton Central
- View Public Class Schedule
- Registrar's Office
- Admissions
- Graduate Studies
- Human Resources
- Registration Instructions
- Fees
- Awards
- MyCarleton (Connect)
- Student Academic Success Centre
- Contact Us

### Online Services

Carleton Central provides online services for students and employees at Carleton University.

**Students** will find everything you need to review your admission application, register for courses, change your address, view your student record, and more.

**Employees** will find information on payroll, benefits, and more.

- [Login to Carleton Central](#)
- [Public Class Schedule](#) - Access class schedule information without logging into Carleton Central.

Carleton Central contains secure information. Unless otherwise noted, any information you enter or change will become effective immediately. You are responsible for any changes made using your ID. Please verify the success of your activities after changes have been made. All personal data is to remain confidential and you should not share your PIN with others.

## User Login

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Please enter your User ID (Nine digit number - 100XXXXXX, Faculty & staff without a nine-digit ID add an "E" to your employee number EXXXXX) and your PIN. When finished, select **Login**. If you have forgotten your PIN, enter your User ID and press **Forgot PIN** to reset it yourself.

*For your first login only, your PIN is your date of birth (in YYMMDD format). You will then be prompted to designate a new 6-digit PIN number.*

**Please note that your PIN is a 6 digit number (e.g. 123456). Do not use letters, special characters, or punctuation when defining a new PIN.**

Should you wish to change your PIN, login and click the "Change PIN for login" link under the "Personal Information" menu.

User ID:

PIN:

Login

Forgot PIN?

# Carleton Central

- Registration Services
- Your Timetable
- Student Accounts
- Course Grades
- Mailing Information
- University Records

# cmail Accounts

- You are provided with a Carleton University email address
  - Emails to instructors must only be done with your university email account (no Hotmail, Gmail, etc.)
- You need a cmail account to use computer labs and printers
  - The old connect accounts will not work in the labs

# ECOR 1010: Course Objectives

**Calendar Description:** 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.

- To introduce “engineering”
- 5 major components to ECOR 1010:
  - Professional Practice
  - Health and Safety
  - Engineering Analysis
  - Engineering Design
  - Technology, Society and the Environment (TSE)

# ECOR 1010: Lectures and Labs

## ([Course Outline](#) on cuLearn)

- **Lectures:**
  - Two 1.5 h lectures per week (25 Lectures)
    - Professional Practice & Health and Safety
    - Engineering Analysis
    - Engineering Design
  - One 1 h lecture per week (10 Lectures)
    - Technology, Society & Environment (TSE)
- **Labs:**
  - Two hours per week (9 Labs plus the Project)

# Lecture & Lab Schedule:

## ECOR 1010 Lecture & Laboratory Schedule – Fall Term 2013

Revision 1 – September 5

Available on cuLearn

Look at Due Dates

Reading Assignments

The TSE lecture topics after the midterm will be made available later: check cuLearn for updates

If there are any discrepancies between the due dates listed in the schedule and elsewhere, the due dates in the schedule are to be taken as correct. Please ask if you are not sure of the due dates.

Date (Lecture)	Lecture	Lecturers	Topic	Read Chapters	Laboratories & Due Dates*
Sept. 5 (1.5 h)	Lect. 1	McRae	Course Intro - Design Project	1 to 3	
Sept. 6 (1 h)	TSE† 1	"	What Will You Do To Help Society?		
Sept. 10 (1.5 h)	Lect. 2	"	Engineering Introduction		Week of Sept 9
Sept. 12 (1.5 h)	Lect. 3	"	Engineering Reporting & Measurements	10	Lab Zero: Orientation
Sept. 13 (1 h)	TSE 2	"	Energy & Sustainability	9	
Sept. 17 (1.5 h)	Lect. 4	"	Measurements, Units & Errors	11	Week of Sept 16
Sept. 19 (1.5 h)	Lect. 5	"	Engineering Graphics - 1	12	Lab. 1 Engineering Reporting
Sept. 20 (1 h)	TSE 3	"	Engineers & Sustainability		
Sept. 24 (1.5 h)	Lect. 6	"	Engineering Graphics - 2	13	Week of Sept. 23
Sept. 26 (1.5 h)	Lect. 7	"	Engineering Graphics - 3	14	Lab. 2 Units, Dimensions & Sig. Figs
Sept. 27 (1 h)	TSE 4	"	Problems without Technical Solutions		
Oct. 1 (1.5 h)	Lect. 8	"	Design & IntellCAD	15	Week of Sept 30
Oct. 3 (1.5 h)	Lect. 9	"	Design, Pro/E, 3D Printing & Rapid Prototyping	16 & 17	Lab. 3 IntellCAD & 2D Drawing
Oct. 4 (1 h)			No Lecture		
Oct. 8 (1.5 h)	Lect. 10	"	Review for Mid-Term		Week of Oct. 7
Oct. 10 (1.5 h)			Mid-Term: Material from Lect. 1 to 9 & TSE 1 to 4		Lab. 4 Pro/E Solid Modelling & STL File Preparation – 3D Printing 2230ME
Oct. 11			No Lecture		
Oct. 15 (1.5 h)	Lect. 11	"	Engineering Statistics I: Measures of central tendency, histograms	11 & 18	Week of Oct. 14 (Oct 14 is a holiday)
Oct. 17 (1.5 h)	Lect. 12	"	Engineering Statistics II: Measures of spread, probability distributions	19, 21 to 23	Project: Pro/E Solid Modelling & STL File Preparation
Oct. 18 (1 h)	TSE 5	TBD††			
Oct. 22 (1.5 h)	Lect. 13	McRae	Estimating Population Means, Confidence Limits	19, 24	Week of Oct. 21
Oct. 24 (1.5 h)	Lect. 14	"	Regression and Correlation I	20, 25	Project STL files due Friday Oct. 25 at 16:30
Oct. 25 (1 h)	TSE 6	TBD			
Oct. 28 – Nov. 1			MidTerm Break - No Classes		
Nov. 5 (1.5 h)	Lect. 15	McRae	Regression and Correlation II	20, 25	Week of Nov. 4
Nov. 7 (1.5 h)	Lect. 16	"	Linear Systems in Engineering and Introduction to MATLAB: Vectors & Scalars	29	Lab. 5 Univariate Data
Nov. 8 (1 h)	TSE 7	TBD			
Nov. 12 (1.5 h)	Lect. 17	McRae	MATLAB I: Matrices & Matrix Operations	30, 32	Week of Nov. 11
Nov. 14 (1.5 h)	Lect. 18	"	MATLAB II: Programming & Plotting	31	Lab. 6 Bivariate Data and Regression
Nov. 15 (1 h)	TSE 8	TBD			
Nov. 19 (1.5 h)	Lect. 19	McRae	Maple: Symbolic Manipulation of Equations and Calculus	33 to 37	Week of Nov. 18
Nov. 21 (1.5 h)	Lect. 20	"	Departmental Presentations I		Lab. 7 MATLAB I: Matrix Operations, Presentation of 3D Models
Nov. 22 (1 h)	TSE 9	TBD			
Nov. 26 (1.5 h)	Lect. 21	McRae	Departmental Presentations II		Week of Nov. 25
Nov. 28 (1.5 h)	Lect. 22	"	Engineering as a Profession	4 & 5	Lab. 8 MATLAB II: Programming in MATLAB, Presentation of 3D Models
Nov. 29 (1 h)	TSE 10	TBD			Design Project Report Due Nov. 29 at 16:30 in ECOR 1010 slot, orange cabinet in hall at 3135ME
Dec. 3 (1.5 h)	Lect. 23	McRae	Health & Safety	7 & 8	Week of Dec. 2
Dec. 5 (1.5 h)	Lect. 24	"	Wrap-Up & Review		Lab. 9 Maple, Symbolic Computations, Presentation of 3D Models
Dec. 9					WorkSmart Campus transcript Due Dec. 6 at 16:30 in ECOR 1010 slot, orange cabinet in hall at 3135ME
					Lab. 9 Due Dec. 9 in ECOR 1010 slot, orange cabinet in hall at 3135ME by 16:30

\* All due dates-times are FIRM. Late submissions will NOT be accepted.

† TSE – These lectures will present specific topics related to Technology, Society and the Environment.

†† TBD – to be determined: the titles of the talks, and names of the presenters, will be given at a later date

<http://at.eng.carleton.ca/engsched/index.php?&direc>
Engineering Schedu... x

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Course data last update

**Course Code**  **CRN**  **Timetable Whiz**  **Submit Request (Engineering Courses Only)**  **Help**

Scope **Engineering** Subject **ECOR** Course **1010** Section **C** [Clear All Courses](#)

Summer 2013 [ 0 ] **Fall 2013 [ 3 ]** Winter 2014 [ 0 ]

	Mon	Tue	Wed	Thu	Fri
08:30					
09:00		<b>ECOR 1010 A</b> <input type="checkbox"/>		<b>ECOR 1010 A</b> <input type="checkbox"/>	
09:30		08:35 - 09:55		08:35 - 09:55	
10:00					
10:30					<b>ECOR 1010 C</b> <input type="checkbox"/>
11:00					<b>ECOR 1010 B</b> <input type="checkbox"/>
11:30					
12:00					
12:30					
13:00					
13:30		<b>ECOR 1010 C</b> <input type="checkbox"/>		<b>ECOR 1010 C</b> <input type="checkbox"/>	
14:00		13:05 - 14:25		13:05 - 14:25	<b>ECOR 1010 A</b> <input type="checkbox"/>
14:30					
15:00					
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17:00					
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18:00					
18:30		<b>ECOR 1010 B</b> <input type="checkbox"/>		<b>ECOR 1010 B</b> <input type="checkbox"/>	
19:00		18:05 - 19:25		18:05 - 19:25	
19:30					

# ECOR 1010: Labs

- Labs are held in Rooms 2256 ME & 5010 MC
  - Attend Your Lab period
  - 55+ workstations – all software required for this course
  - Also Canal Building room 2201 has 31 top-rate machines, but to use these you need to follow 5010 MC protocol.

# ECOR 1010: Labs

## **Labs Hours:**

During Monday to Friday, only use 2256 ME and 5010 MC during your lab session, unless there is no scheduled lab session. The lab schedule will be posted outside of the lab.

Canal Building room 2201 can be used anytime.

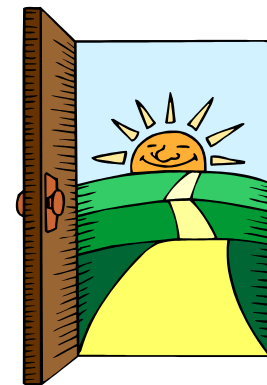
# Access to Room 2256ME and Computer Accounts

Me2256 will be open from 8 am to 6 pm Monday to Friday

## **After hours: Door Access**

Door access to the lab is controlled by a campus card reader. You must login to Carleton Central to generate your own 4 digit door access pin code.

- Swipe your campus card in the reader
- Enter the 4 digit PIN
- Press the # key
- Open the door



# Access to Room 2256ME and Computer Accounts

## **Computer Login:**

Your username is the first part of your cmail address.

Your initial password is your student number followed by .Pass,  
e.g.

BillSmith

100394823.Pass

The first time you login to a computer in 2256ME you will be asked to change your password.

# Access to Room 2256ME and Computer Accounts

## Printing

You will have a default printer named <\\\\printserver1\\me2256queue> for printing.

The print job is released by going to the print-station at the front of the room and swiping your campus card and selecting your file for printing:

- You will be charged \$0.10 per page.
- You can print elsewhere if you like.
- You can add money on-line to your campus card, or go to the Atrium in the UniCentre where they take the pictures for the cards.

# Access to Room 2256ME and Computer Accounts

- **Computer file storage and submitting Lab Assignment files:**

You will have a personal network H: drive to store up to 60mb of files. Only you can access files in your H: drive.

- You will have access to a network P: drive

P:\\arrow\ecor1010\_2013

This is where you will submit lab assignment files if required. Once submitted, the file cannot be edited or deleted, and no other student can see it.

# Computer Lab 5010MC

## **Computer login:**

- username: student
- password: (none, leave blank)
- Log on to: ODENG2 (default domain)

Any user files created are temporary and are automatically deleted at login and logoff.

# Computer Lab 5010MC

## Computer file storage and submitting Lab Assignment files:

- Students must login at least once to the 2256ME lab to set their password before they can access the shared network drive to submit lab assignment files.
- After that, students can map the shared drive for submitting lab assignments by running the following command:

```
net use P: \\134.117.71.23\ECOR1010_2013/user:maent\username
```

Note the use of / versus \ in the command line is critical.

where the **username** is the **first part** of your cmail email address.

To facilitate this, students may either:

- Click on the “MAPECOR1010” icon on the desktop or
- open a command prompt (Start --> Run --> cmd) and type “MAPECOR1010”
- You will then be prompted for the password set in the 2256ME lab.

# Computer Lab 5010MC

## **Printing:**

The student will have a default printer named “engQueue on pharosq” for printing.

The print job is release by going to the print-station at the front of room and swiping your campus card and selecting your file for printing. The student is charged \$0.10 per page.

# Access to Rooms and Computer Accounts

- If you have difficulties – first ask your TA

If the TA cannot help, then ask:

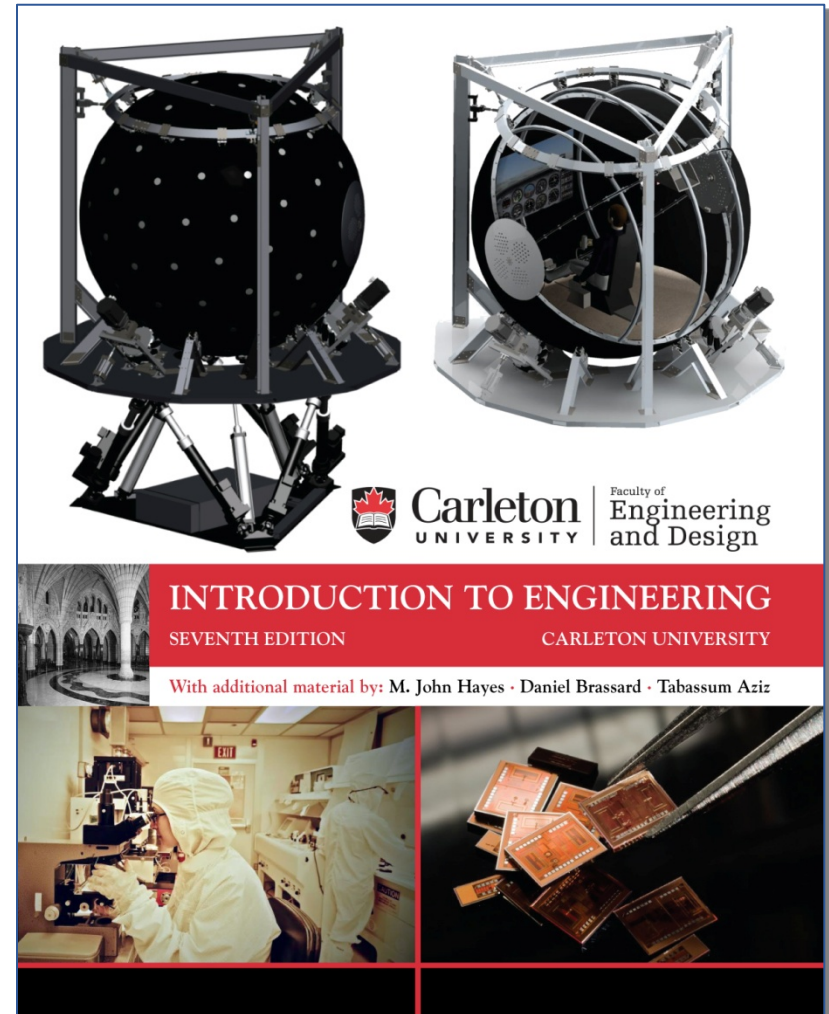
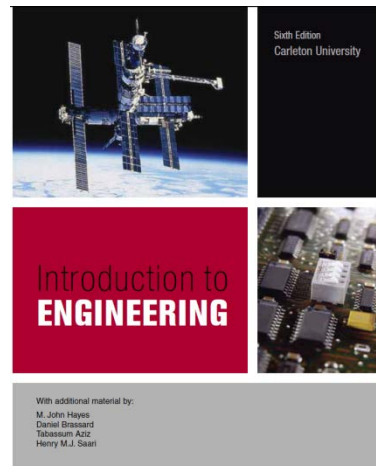
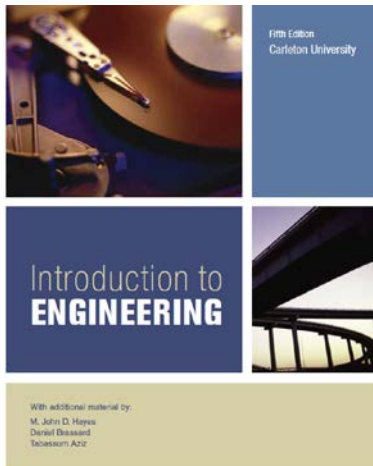
- Neil McFadyen, Supervisor of Computer Operations
  - Room 3154ME, Tel: 5636, [nmcfadye@mae.carleton.ca](mailto:nmcfadye@mae.carleton.ca)
- Bruce Johnston, Software and Network Specialist
  - Room 3170ME, Tel: 3555, [bjohnsto@mae.carleton.ca](mailto:bjohnsto@mae.carleton.ca)

# Lecture & Lab Behaviour

- No food or drinks in Labs
  - If you are caught, you will loose lab privileges
  - Strictly Enforced
- No cell phones
- Do not disrupt
- Respect Fellow Students
- No video/audio recording of lectures without permission

# Textbook

- Required Text
  - Introduction to Engineering, 7th edition (Bookstore)
    - 5<sup>th</sup> and 6<sup>th</sup> editions almost the same
    - Some errors not corrected



# Course Evaluation

(from Course Outline)

- ECOR 1010 Introduction to Engineering
  - Laboratories (best 7 of 9) 15%
  - Design Project (Reverse Engineering) 10%
  - WorkSmart Campus (Online) 5%
  - Midterm Exam 25%
  - Final Exam 45%
  - 100%
  
- Bonus (the other two labs) 1-2%

# Course Evaluation

- For a passing grade – must complete all course elements
- Late Lab Assignments, Design Project, WorkSmart result will **NOT** be accepted
  - Lab Assignments are due 30 minutes after start of next Lab Session (hand in hard copy to TA; if required, upload electronic copy to shared area on P: drive)
  - Design Project
    - STL file due 16:30 Friday October 25, 2013
    - Report due 16:30 November 29, 2013
  - WorkSmart result is due 16:30 Friday, December 6, 2013

# Lab Assignment Marking

- The lab marking scheme
  - 9-10 (excellent)
  - 7-8 (good)
  - 5-6 (acceptable)
  - less than 5 (poor)
- To receive passing grade for the course:
  - complete 7 of 9 Labs
  - complete WorkSmart Campus
  - write midterm exam
  - complete design project
  - write final exam

# Laboratories

- Laboratory assignments available on cuLearn
- Each laboratory is worth about 2% of your final mark for the course
- **Must complete 7 of 9 Labs to Pass Course**
  - Fewer than 7 means a “FND” grade
  - More than 7, take best 7 marks
  - If you pass 8, get a bonus 1 % (pass means  $\geq 5/10$ )
  - If you pass 9, get an additional 1 %
- ***YOU*** should do the labs well:
  - Compared with mid-term & final exams, these are easy marks.
  - **More importantly, they are an effective way to learn course material.**

# Laboratories: Submission Procedure

- Laboratories assigned one week are due within the first 30 minutes of the next laboratory period or they will be considered late
- **Late labs will not be accepted**
- Labs must be written using the template on cuLearn
- Paper copies must be submitted to the lab section TA according to the guidelines and procedure listed in the assignment statement for each lab
- When required, electronic copies must be uploaded to your network P:\\arrow\\ecor1010\_2013



# Exceptions

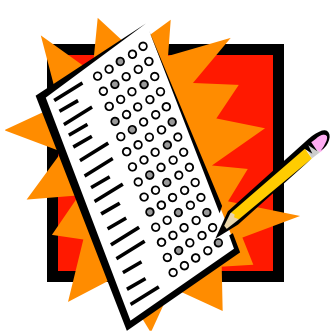
## Laboratories: Holidays

- No labs on:
  - Thanksgiving: Monday, October 14, 2013
    - Lab Sections on Monday October 14 shall submit Lab 4 on Tuesday Oct. 15 by 16:30 in the **orange** cabinet in the hall outside 3135ME



# Laboratory Notice

- ECOR 1010 Laboratories start with **Lab Zero** on Monday **September 9** (i.e., next week)
- There is nothing to prepare and there are no marks associated with Lab Zero
  - this is an **orientation lab**



# Mid-Term Exam

- Mid-Term Exam: *Thursday, 10 October 2013*
  - In class
  - 1 hour
  - $\approx$  30 multiple choice questions
  - Covers material in Lectures 1–9 & TSE 1-4
  - **To pass this course you MUST write the mid-term exam**
    - ***DO NOT BE LATE***
    - ***DO NOT FORGET***
    - ***BE PREPARED !***



# ECOR 1010 Design Project

Reverse Engineering and Redesign  
Fall 2013

# Introduction

- Reverse engineering is the process of taking an **existing product, measuring and evaluating** it, and creating a CAD database to **reproduce it**
- Redesign is modifying an existing design
- While this project is open-ended and limited only by your imagination, your grade will be based on reasonable fulfillment of the requirements
- You are encouraged to strive for excellence, but keep the notion of diminishing returns in mind

# Introduction

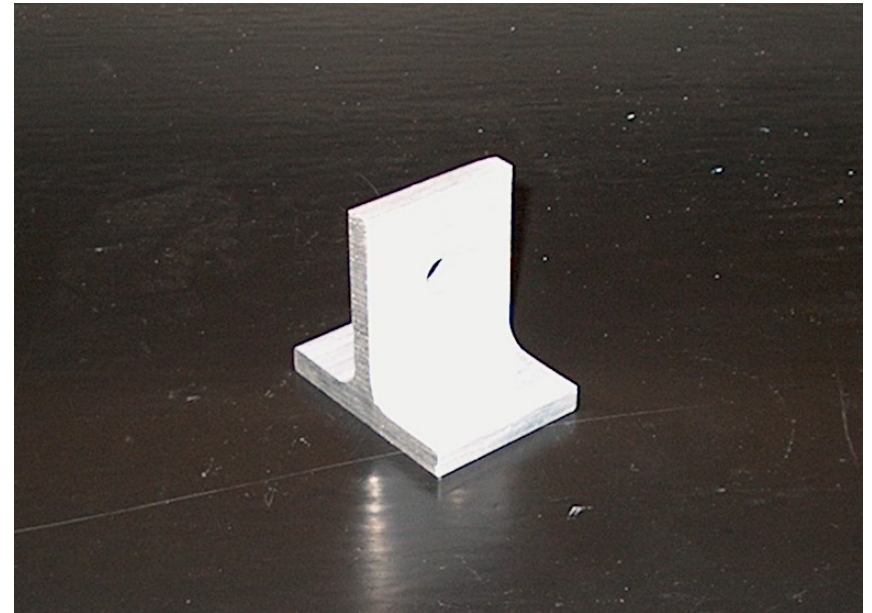
- Diminishing returns: meaning, you will receive full marks if your report is excellent; but you will also receive full marks if your report is “super-fantastic-really-really-excellent”
- The extra effort, after a critical level of excellence, will not translate into extra grades

# Project Groups

- You must find two partners to form a group of **THREE**
- All group members **MUST** be in the **SAME LABORATORY SECTION AS YOU**
- Tell your TA who is in your group, and you will be assigned a group number that will start with your Lab Section number
- For example, A2-2 is Group 2 in Section A2

# Project Requirements

- Find a one-piece, simple object that you can hold in your hand
- Reverse engineer and redesign this piece
- The piece must have some simple features such as a hole, flange, boss, etc.
- Simple solids (cube, rectangle, etc) are not acceptable
- The part can be anything: a screwdriver, a shelf bracket, a simple part found at a hardware store



# Project Requirements

1. Determine (and indicate in your report) the **purpose** of the part. What is it called?
2. **Measure** all of the important dimensions;
3. Determine the **material** the part is made from;
4. Describe the **manufacturing process** required to go from raw material to finished part;
5. Identify one **failure mode** for your part;
6. Describe the **value and benefit** of your redesign in approximately 200 words, considering creativity, usefulness, part integrity, and aesthetics;
7. Using **IntelliCAD**, generate a working drawing of the part, including all relevant dimensions;
8. Using **Pro/ENGINEER** generate a rendered solid model of the part to include in the Design Report, and a scaled model converted to STL file format;
9. Submit the STL file for printing on one of two **3D printers**.

# 3D Print Requirements

- Volume limits:
  - Dimensions: 1 in<sup>3</sup> maximum material volume; Minimum thickness is 0.0625 in (1/16<sup>th</sup> in)



# Visit to 3D Print Lab, 2230ME

- During the week of October 14 during lab sections (Oct 14 is a holiday, so these labs will have tours the following Monday)
  - tour of the 3D Print Lab by Mr. Stephan Biljan



# 3D Print Requirements

- Using Pro/E, generate an STL file\*
  - In this solid model, the part will have to be scaled to conform to print volume limits
- You must submit your STL file according to instructions to be specified by Mr. Stephan Biljan (room 2230ME) in advance of the deadline of:
  - 16:30 Friday October 25, 2013
- **IMPORTANT:** Make sure that your project group number (e.g. B2-2) has been included as a text protrusion on any convenient, but visible surface on your part (see 'To create text in sketcher' in the Pro/E help page)

\* STL = STereoLithography

# Report Requirements

- A formal engineering report is required
- You must include a title page and table of contents, but the remaining sections in the report can be arranged, included, or excluded as you see fit
- **MAXIMUM LENGTH:** 7 pages; Any additional pages will simply be ignored
  - The 7 pages INCLUDES the **title page** and **table of contents**
  - The **working drawing** (IntelliCAD), including title block, should be sized to occupy a full page
  - The rendered **solid model** (Pro/E) should be sized to occupy a full page
  - That leaves 2 pages for **text**

# Report Requirements

- Hardcopy ONLY will be accepted
- Must be submitted through the ECOR 1010 slot in the **orange** cabinet outside the Mechanical and Aerospace Engineering office (3135ME) before:
  - 16:30 November 29, 2013
- It is to be stapled in the upper left corner
- No other binding is to be used
- Reports in envelopes will be discarded
- Your name, student number, group number, and date are to be inserted on the title page
- **Late reports will NOT be accepted for grading**

# Project Deliverable Deadlines

- Project: Reverse Engineering
  - Assigned today
  - All deliverables are **COMPULSORY**
  - Deliverable Deadlines (Drop-Dead Dates)
    - STL files: 16:30 Friday, October 25, 2013
    - 3D print: Lab period week of November 18, 2013
    - Design Report: 16:30 Friday, November 29, 2013  
(orange cabinet ECOR 1010 slot outside room 3135ME)
- Late project deliverables will not be accepted
- Failure to complete and submit the Project will result in a course grade of 'FND'

# Read, Read, Read

- Read the Project description!
- You will find it on cuLearn

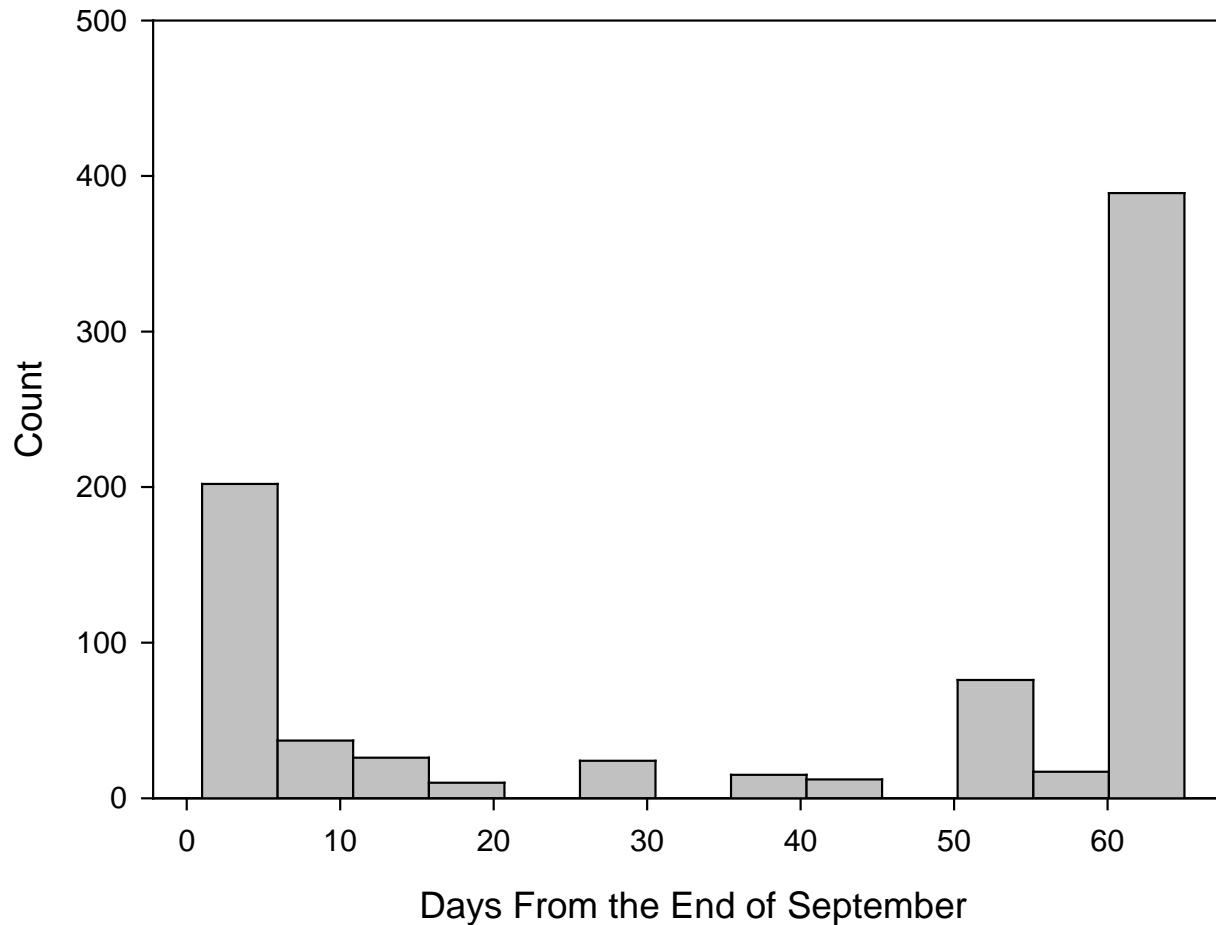
WorkSmart Campus

# WorkSmart Campus

- Health and Safety
- You must:
  - Access and study on-line materials
  - Take on-line tests
    - Will need to score 100% on short quizzes to gain access to subsequent modules (total of 4)
    - “Final exam” of 4 sets of 25 questions
    - Your grade on the final exam will determine your grade for the WorkSmart Campus portion of ECOR 1010
- Approximately 4 hours to complete
  - 5% of ECOR 1010 grade
  - When complete: Print transcript and deposit in the ECOR 1010 slot, **orange** steel cabinet in hallway beside 3135ME **BEFORE** 16:30 on December 6, 2013
  - **Late Submissions will NOT be accepted ⇒ course grade of FND**

# Procrastination:

When people handed in WorkSmart Campus in 2012



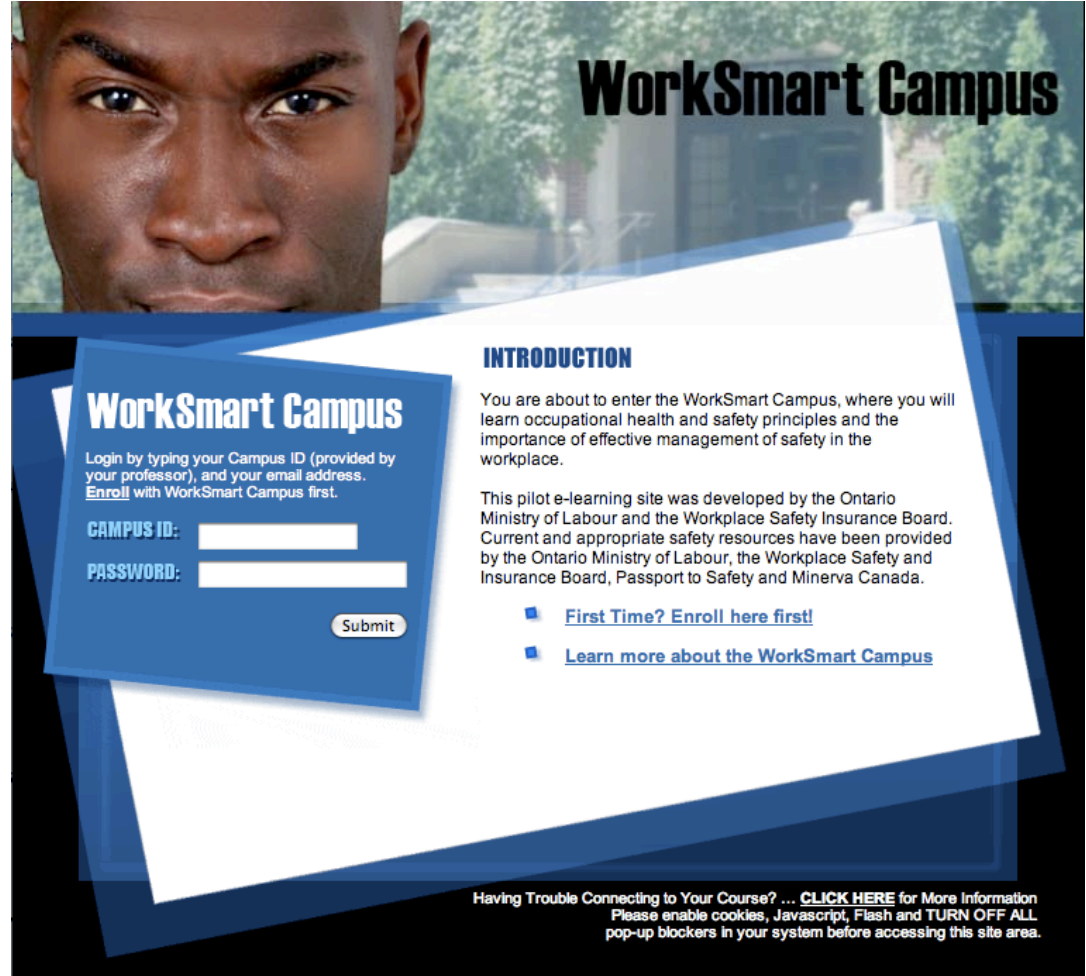
## WorkSmart Campus

www.worksmartcampus.ca

Enroll with Campus ID: MEVT2747

Email: use your gmail account

Follow online instructions.



The image shows a screenshot of the WorkSmart Campus website. The background features a close-up of a man's face. The page has a blue header with the text "WorkSmart Campus". Below the header is a login form with the following text: "Login by typing your Campus ID (provided by your professor), and your email address. [Enroll](#) with WorkSmart Campus first." The form includes two input fields labeled "CAMPUS ID:" and "PASSWORD:", and a "Submit" button. To the right of the form is an "INTRODUCTION" section with the following text: "You are about to enter the WorkSmart Campus, where you will learn occupational health and safety principles and the importance of effective management of safety in the workplace. This pilot e-learning site was developed by the Ontario Ministry of Labour and the Workplace Safety Insurance Board. Current and appropriate safety resources have been provided by the Ontario Ministry of Labour, the Workplace Safety and Insurance Board, Passport to Safety and Minerva Canada." Below the introduction are two bullet points: "First Time? Enroll here first!" and "Learn more about the WorkSmart Campus". At the bottom of the page, there is a footer with the text: "Having Trouble Connecting to Your Course? ... [CLICK HERE](#) for More Information Please enable cookies, Javascript, Flash and TURN OFF ALL pop-up blockers in your system before accessing this site area."

# WorkSmart Campus

## WorkSmart Campus

Login by typing your Campus ID (provided by your professor), and your email address.  
[Enroll](#) with WorkSmart Campus first.

CAMPUS ID:

PASSWORD:

Submit

### INTRODUCTION

You are about to enter the WorkSmart Campus, where you will learn occupational health and safety principles and the importance of effective management of safety in the workplace.

This pilot e-learning site was developed by the Ontario Ministry of Labour and the Workplace Safety Insurance Board. Current and appropriate safety resources have been provided by the Ontario Ministry of Labour, the Workplace Safety and Insurance Board, Passport to Safety and Minerva Canada.

- First Time? [Enroll here first!](#)
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Having Trouble Connecting to Your Course? ... [CLICK HERE](#) for More Information  
Please enable cookies, Javascript, Flash and TURN OFF ALL pop-up blockers in your system before accessing this site area.

# How To Be Successful ?

## It Takes Work and Organization !

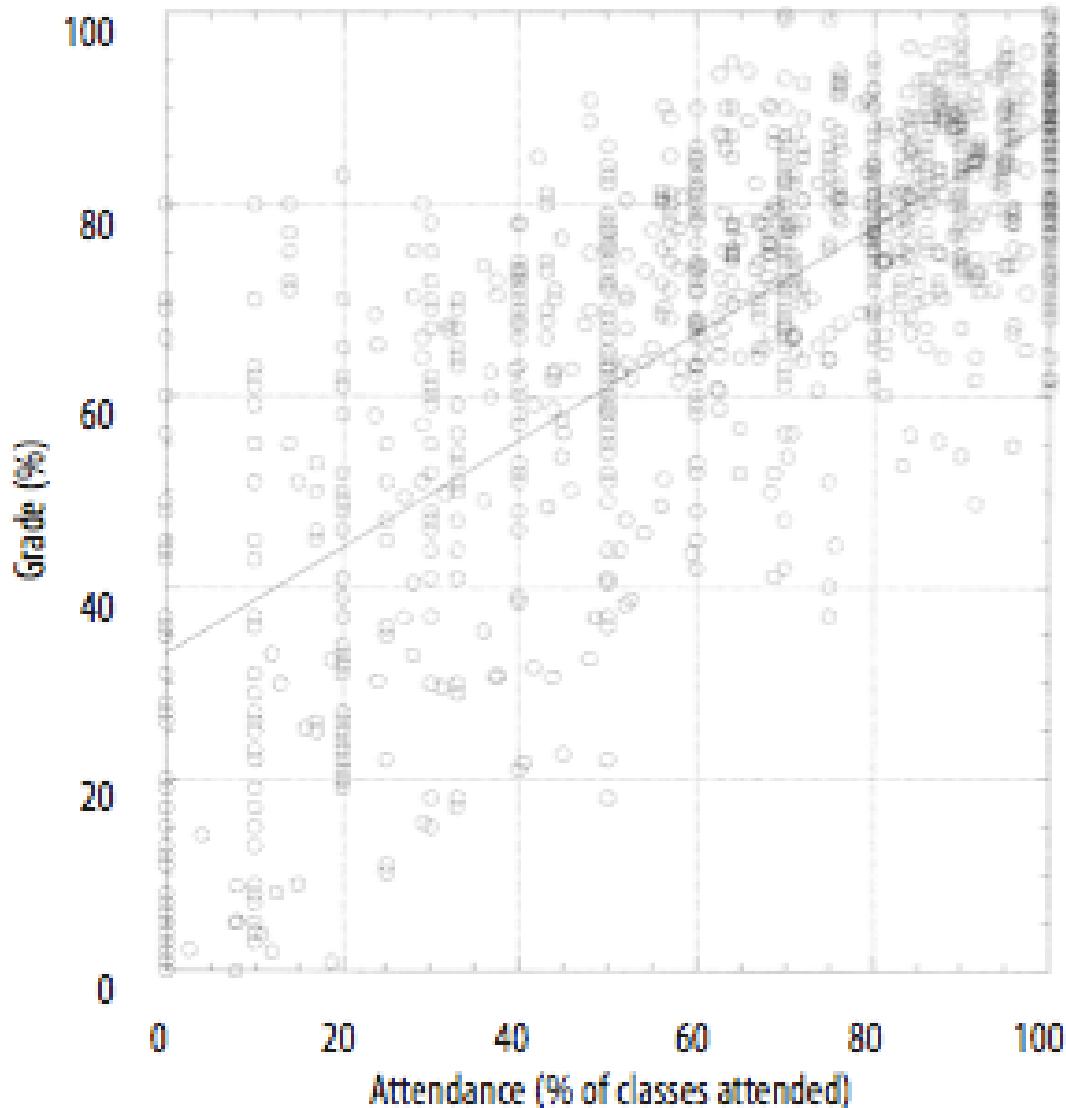
- Attend All Lectures
- Attend All Laboratories
- **YOU** Keep up to date with reading assignments
- Hand in Lab Assignments On-time
- **YOU** Do Lab Assignments
- Hand in Design Project on-time
- **YOU** do & hand in WorkSmart Campus on-time
- Prepare for, & write the Mid-Term & Final Exam

# University is different from high school

- Less time in class and more homework, which places greater responsibility on you
- Larger class sizes, which mean less personal attention—and often loss of focus
- Different attendance expectations, which shifts accountability from the teacher to you

## Figure 1.

The relation of class attendance and course grades in our Introductory Science classes. The size of this sample exceeded 1400. The equation for these data is  $y = 33.1 + 0.55x$ , and the correlation coefficient ( $r$ ) = 0.78.



### Showing Up: The Importance of Class Attendance for Academic Success in Introductory Science Courses

Randy Moore, Murray Jensen, Jay Hatch, Irene Duranczyk, Susan Staats, and Laura Koch General College, University of Minnesota, Minneapolis, MN  
(American Biology Teacher, v65 n5 p325-29 May 2003)

# If You Have Questions / Difficulties ?

- Consult University Calendar
- Ask Teaching Assistant
- Visit Student Academic Success Centre
- Contact Paul Menton Centre for students with disabilities
- Contact Professor
- Contact Program Undergraduate Assoc. Chair

“Professors and TAs want you to succeed. If you need help, ask for it” Eric Duivesteyn, B.Eng. 2011

# Student Academic Success Centre

- Academic Counseling and Resource Centre
- Provides counseling for
  - First year students
  - Educational planning
  - International Study
  - Transfer students
  - Undecided and Exploratory Students
  - Students in Academic Difficulty
  - High Achieving students
  - Any student who has a question about any aspect of their education at Carleton University

<http://www.carleton.ca/sasc/>

# Paul Menton Centre

- A multidisciplinary team provides a variety of support services to students who have any of the following verifiable disabilities
  - acquired brain injury
  - attention deficit/hyperactive disorder
  - blind/visual impairment
  - chronic medical condition
  - deaf/hard of hearing
  - learning disability
  - physical/mobility impairment
  - psychological/psychiatric disorder

501 University Centre  
(613) 520-6608  
[www.carleton.ca/pmc](http://www.carleton.ca/pmc)

Advisors for Undergraduate Programs

- Future Students
- Current Students
  - Schedules and Dates
  - Clubs and Societies
  - Undergraduate Academic Support
  - Advisors for Undergraduate Programs
  - Basic Science Elective
  - Change of Program
  - Complementary Studies Electives (CSE)
  - First Year Students
  - Forms
  - Iron Ring
  - Prerequisite Trees
- Graduate Students
- Awards
- Undergraduate Academic Support
- Awards, Scholarships and Financial Aid
- Departments and Schools
- About the Faculty
- Health and Safety
- Research
- Contact

- Student Services
- Co-ordinator Record
- Ingenious

Home / Current Students / Undergraduate Academic Support / Advisors for Undergraduate Programs

Department of Civil and Environmental Engineering

<p><b>Civil Advisor</b>                  Professor Neal Holtz                  3432 Meckenzie Building                  613-520-2600 ext. 5797  <a href="mailto:nholtz@oeo.carleton.ca">nholtz@oeo.carleton.ca</a></p>	<p><b>Environmental Advisor</b>                  Professor Deniz Karman                  2370 Meckenzie Building                  613-520-2600 ext. 8914  <a href="mailto:Deniz_Karman@carleton.ca">Deniz_Karman@carleton.ca</a>  <a href="http://www.carleton.ca/~dkarman">www.carleton.ca/~dkarman</a></p>
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**Architectural Conservation and Sustainability Advisor**  
 William O'Brien  
 5208 Canal Building  
 613-520-2600 ext. 8037  
[LiamOBrien@carleton.ca](mailto:LiamOBrien@carleton.ca)

Department of Electronics

<p><b>Electrical &amp; Sustainability and Renewable Energy-Stream A (SREE A) Advisor</b>                  Professor Berry Syrett                  4150 Meckenzie Building                  613-520-5775  <a href="mailto:bsr@doe.carleton.ca">bsr@doe.carleton.ca</a> or <a href="mailto:ugohain@doe.carleton.ca">ugohain@doe.carleton.ca</a>  <a href="http://www.doe.carleton.ca/~bsc">www.doe.carleton.ca/~bsc</a></p>	<p><b>Engineering Physics Advisor</b>                  Professor Tom Smy                  4154 Meckenzie Building                  613-520-5754  <a href="mailto:tjs@doe.carleton.ca">tjs@doe.carleton.ca</a></p>
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Department of Mechanical and Aerospace Engineering (includes SREEM B, and Biomedical)

Advisor for all programs under this department  
 Professor Henry Saari  
 3135 Meckenzie Building  
 613-520-2600 ext. 1457  
[hcsari@mae.carleton.ca](mailto:hcsari@mae.carleton.ca)

Department of Systems and Computer Engineering

<p>Advisor for all programs                  Jerome Tallm                  4456 Meckenzie Building                  613-520-5740                  Please use inquiry form at <a href="http://www.sce.carleton.ca/ughelp">http://www.sce.carleton.ca/ughelp</a></p>	<p><b>Biomedical &amp; Electrical Advisor</b>                  Andrew Marble  <a href="mailto:po_bme@coe.carleton.ca">po_bme@coe.carleton.ca</a></p>
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<p><b>Communications Advisor</b>                  Helim Yanikomeroglu  <a href="mailto:po_ce@coe.carleton.ca">po_ce@coe.carleton.ca</a></p>	<p><b>Computer Systems Advisor</b>                  Greg Franks  <a href="mailto:po_coe@coe.carleton.ca">po_coe@coe.carleton.ca</a></p>
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**Software Advisor**  
 Professor Yvan Labiche  
[po\\_ce@coe.carleton.ca](mailto:po_ce@coe.carleton.ca)

Azrieli School of Architecture and Urbanism

Associate Director Janine Debanne  
 411 Architecture Building  
 613-520-2600 ext. 2876  
[janine\\_debanne@carleton.ca](mailto:janine_debanne@carleton.ca)

<http://www1.carleton.ca/engineering-design/current-students/undergrad-academic-support/advisors-for-undergraduate-programs/>

# Academic Offences

- **Disrupting a class or period of Instruction**
  - It is a violation of the standards of academic integrity for student registered in class to disrupt the class or other period of instruction with any action or behaviour reasonably judged by the instructor, lab assistant or tutorial assistant to be detrimental to the class.
- **Cheating: “Unauthorized Cooperation or Collaboration”**
  - An important and valuable component of the learning process is the progress a student can make as result of interacting with other students.
  - Students shall not cooperate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis.

# Academic Offences

- **Plagiarism:**

- Plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own.

- **Penalties:**

- Expelled
- Suspended
- Reprimanded
- placed on probation
- grade penalty, including grade of F.

# Reading Assignment

- Chapters 1 to 3
- Section 14 of Undergraduate Calendar on Academic Integrity
- Read Chapter 3 in the text several times: “Advice on Studying, Exams and Learning”
  - Read Chapter 3 before you *need* Chapter 3

Advice from the classes of 2010&2011: If you could give one piece of advice to a first-year engineering student, what would it be?

- “Stop partying, start thinking, engineering is hard”  
Alex Pharland, BEng 2010
- “If you get into the habit of going to class & doing all your work now it’s easier to time manage in the following years.” Sylvie Tremblay, BEng 2010
- “try to create good study habits as early on in your university career as possible, you will have to figure it out sooner or later, might as well be sooner.”  
Michael Michalak, BEng 2010

Advice from the classes of 2010&2011: If you could give one piece of advice to a first-year engineering student, what would it be?

- “Don’t copy assignments; won’t learn anything”  
Marc Bacler, BEng 2010
- “Remember that in 4 years you will be expected to actually know all the subject matter you have covered. So don’t just focus on getting the assignments done, or studying enough to pass a test, make sure you actually learn the material and keep it” Matthew Parker, BEng 2010

- “Engineering is a pyramid of knowledge. By the end, all your subjects merge into one big subject: Engineering. If you don’t have a solid foundation for your pyramid, life will only get harder. So, please, master all the skills in the early years and you’ll be laughing by the end.”

Alex J. Kotler, BEng 2011

- “Hard work, diligence and team work all equal excellence in engineering in both the classroom and in the workplace.” Rich Chapple, BEng 2011

- “Stick with it! No one says its easy but it’s definitely worth it!” Alexandre Adcock, BEng 2010

Advice from the classes of 2010&2011: If you could give one piece of advice to a first-year engineering student, what would it be?

- “Manage your time properly” Yogendra Sawh, BEng 2010
- “Stay on top of your coursework and topics. If done the workload and theories are very manageable, otherwise allowing them to pile up = stress!! Enjoy.”  
Adrian Barber, BEng 2010
- “... if you stay disciplined you’ll learn a lot of cool things and the rewards are huge.” Damiano Alloggia, BEng 2010

# Finally ...

- “I would advise 1<sup>st</sup> year students that not every class can be learnt the day before the final exam. They need the time throughout the whole term. And also, that stressing over everything isn't going to help at all.”  
Anali Christina Stewart, BEng 2011

The following slides are from the  
Associate Dean's Presentation on  
Academic Integrity



**Carleton**  
UNIVERSITY

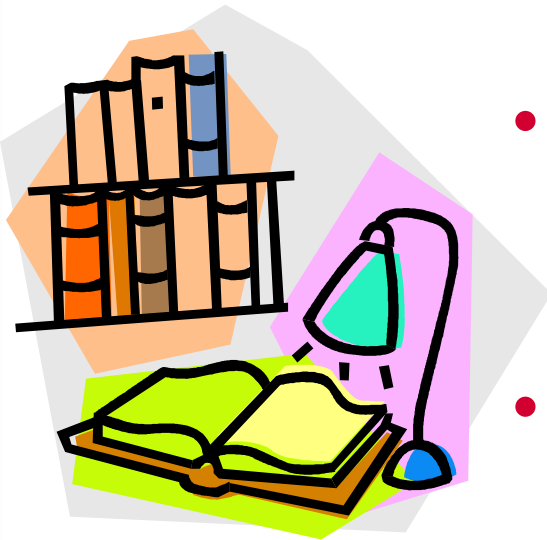
Canada's Capital University

# Academic Integrity

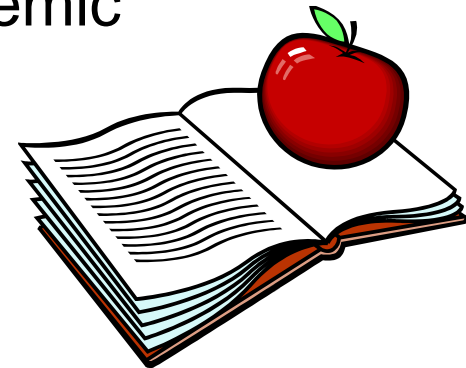
- **What is Academic Integrity?**
- **Examples of Academic Fraud**
- **Who is Affected by Academic Fraud?**
- **How to Avoid Committing Academic Fraud**

# Academic Integrity, what is it?

- It is a commitment to honesty, trust, fairness and responsibility
- It is about respecting other people's hard work in the production of scholarship – where it is published
- An expectation placed on all students, staff and faculty - **different from high school**



- **Plagiarism**
  - **Reproducing or paraphrasing sections of another person's work without proper citation or reference.**
  - Can be intentional or unintentional
  - Can come in many different forms.
  - The most frequent infraction of the Academic Integrity Policy



- Getting access to a test before it is administered
- Resubmitting an old assignment for a different class or submitting someone else's assignment from any class
- Impersonating someone else on an exam
- **Unauthorized Collaboration** - Working together with friends or in groups in ways not authorized by the professor
  - **Expect to do your own work. Unless allowed to submit a group work/report**
  - **Avoid looking at (copying) each other's work when doing your assignment/lab report/essay**
  - **Discuss, but do not show your work to others (unless specified not to discuss by your instructor)**



# Examples of Academic Fraud

- Submitting false documentation such as a forged medical note
- Submitting sections of someone else's computer code as your own
  - **Avoid showing your code to others**
  - **Do not leave your computer (login)/work unattended**
  - **Dispose of your (old) work properly**
- Falsifying facts on assignments, including lab data
- Copying data or text from old lab reports

- Not citing information
- Trying to read someone else's answers on an exam
- Helping someone commit academic fraud is the same as committing it yourself
  - **Give/lend assignment, essay or lab report to someone (avoid asking someone to hand in your assignment)**
  - **Allow someone to read your exam (avoid sitting close to friends)**



- **You**

- Possible Sanctions include:
  - Receiving a grade of zero on an assignment
  - Educational Assignments
  - Grade point reduction
  - Failing the class
  - Having Additional degree requirements
  - Suspension
  - Expulsion
- Difficulties with exams and future courses
- Future employment

**We expect that you know the rules from day one**

- **Others**

- The people who help fund your education: they expect you to know engineering.



- **Difficulties with Writing**
  - Students who do not budget enough time for assignments and lab reports and who are struggling with writing are tempted to copy from old assignments and reports
  - ESL students may have an especially difficult time writing under pressure
  - Remember, a poorly written lab report that earns low marks is better than a zero for the lab report  
(or worse: possible failure, suspension and expulsion)



- **Time Management**

Not having enough time is the most common excuse for cheating

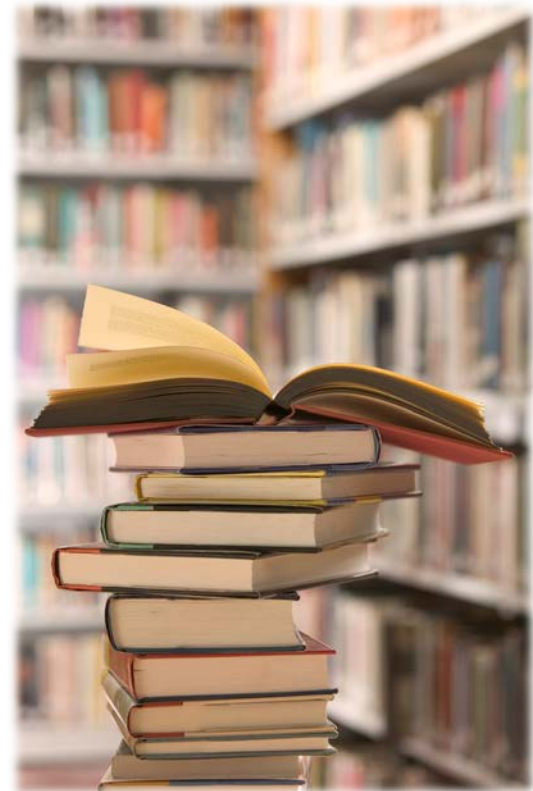
- Give yourself enough time to finish your assignment
- Take advantage of the workshops offered by LSS (4<sup>th</sup> Floor Library)

- **Ask for Help**

When in doubt ask for help:

- If you think something might be plagiarism ask your instructor before submitting the assignment
- If you are unclear about how much group work is permitted then ask your instructor
- Download “How to Cite” Guides from the Library’s website or from individual departments’ websites

- **Use Proper Research Methods**
  - Take detailed notes while researching
  - Ensure that you cite all material that is not yours, even when you are paraphrasing, no matter how small the phrase
  - Ensure that you use quotation marks to indicate when you use words that are not your own



# Conclusion

Carleton has an academic integrity policy. It is enforced and you are expected to maintain academic honesty at all times

For more information on academic integrity or to read the Academic Integrity Policy visit the Office of Students website:

<http://www2.carleton.ca/studentaffairs/academic-integrity/>

