

## Engineering & Design II - Course Outline ENGG\*2100 - Fall 2005

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[www.soe.uoguelph.ca/webfiles/wstiver](http://www.soe.uoguelph.ca/webfiles/wstiver) (course website - sharing public domain information)  
WebCT site too (communication & sharing non-public domain information)  
Office Hours: any time I am in my office  
(my base schedule is posted on my office door and on my website)

**Teaching Assistants:** (No office hours)

Araz Jahaniaval  
Pat Linton  
Matt MacPhail  
Matt Narrol

Support:

Ken Graham (Shop)  
John Phillips (Ideas)

**Class times:** Course Section Code: 10YZ (Y Lab; Z tutorial)

### *LECTURES*

ALL Tu, Th 1:00 - 2:20 LA 204

Note: The course is formally 2 lecture hours per week. We will use nearly the full 1.5 hours in our lecture slot to permit us to NOT hold lectures in Weeks 6 & 7 (to lighten your load a touch during midterm stretch) and to permit a common time for project Q&A.

*LAB Sections* (You MUST attend your assigned section only)

Y=1 ... Wednesday 2:30-5:20  
Y=2 ... Friday 2:30-5:20  
Y=3 ... Tuesday 2:30-5:20  
Y=4 ... Monday 2:30-5:20

Labs will use all of the following rooms

THRN 1135 & SHOP (THRN 1170)

THRN 1103 for Tu, W, F afternoons; CRSC 116 for M afternoon

Lab Attendance is expected.

*TUTORIAL Sections* (You MUST attend your assigned section only)

Z=1 ... Thursday 11:30 - 12:20 (CRSC 116)  
Z=2 ... Friday 9:30-10:20 (CRSC 116)

Attendance is required Week 1 PLUS two additional weeks as scheduled. Schedule will be posted via WebCT.

**Textbook & Reading Material:**

No required textbook.

ENGG\*1100 textbook has a number of valuable and relevant chapters.

There are a large number of books in the library that are relevant. Some website links are identified on the course website. Examples...

Cross N. (2000) *Engineering Design Methods: strategies for product design*,  
(TA174.C76)

Dieter G.E. (1983) *Engineering Design: A Materials and Processing Approach*, 1st  
Edition, McGraw Hill.

Hunter T.A. (1992) *Engineering Design for Safety*, McGraw-Hill, New York, 298p.  
(TA166.H86)

Some documents will be provided via WebCT. These compliment the lecture material and you are responsible for the content within them.

**Prerequisites:**

ENGG\*1100

(Although ENGG\*1100 is the only formal prerequisite, this course is a second year, semester 3 engineering course and as such students will be expected to have completed the majority of the first year courses and be taking the majority of the semester 3 courses for their engineering program)

**Undergraduate Calendar Description:**

*ENGG\*2100 Engineering & Design II. F(2-4). [0.75]*

Progression in engineering design skills with particulare emphasis on computer usage in design, oral communication of solutions and team skills. Computer usage in design will include advanced CAD/CAM/CAE tools, structured programming and database management software. An introduction to safety in engineering practice and design. An introduction to the concept of sustainable development.

**Credit Weighting:**

0.75 (This means an *average* student requires about 15 hours per week to get a 'B' grade. This 15 hours includes the 6 hours of scheduled class time.)

**Evaluation:**

Team Design (1)	45% (including oral evaluation component)
CAE Task (1)	25% (including oral evaluation component)
Presentation (2)	10%
Final Exam (1)	20% (December 12 <sup>th</sup> , 8:30 -10:30 am)

**Note: A failing grade on the Team Design portion OR a failing grade on any two of the remaining three items will mean that you have failed the course. The assigned grade will be based on the failed items only.**

Grading philosophy to be used recognizes that design has a significant artistic component and is not a right or wrong situation. Thus, we will start with a perspective that you are assumed to be a “B” until you do things that impress or do things that disappoint the evaluator. Impressive and disappointing components are integrated to leave a final assessment. Letter grades are used to reflect that the process is not  $\pm 2\%$  accurate.

*Letter grade translation:*

<i>A+</i>	<i>Really Impressive</i>	<i>100</i>
<i>A</i>	<i>Impressive</i>	<i>90</i>
<i>B</i>	<i>Expected</i>	<i>75</i>
<i>C</i>	<i>Satisfactory</i>	<i>65</i>
<i>D</i>	<i>Disappointing, serious flaws</i>	<i>55</i>
<i>F</i>	<i>Inadequate</i>	<i>40</i>
<i>X</i>	<i>no submission or wholly inadequate</i>	<i>0</i>

(+ and - 's will be used when judgement warrants ... A- is 85, B+ is an 80 etc.; no finer resolution than this will be used)

**Academic Conduct Expectations and Academic Misconduct:**

The team design project will have multiple written submissions. All team members must sign the cover sheet for the report together with their PEO Student Membership Program Number (UoG student # in the absence of a SMP #). This cover sheet must also have the following statement.

*In signing this cover page, I certify that I have been an active member of the team and provided approximately equal contribution to the work. I understand that taking credit for work that is not my own is a form of academic misconduct and will be treated as such.* (see UofG Calendar, 2002-2003, p30).

**Engineering Portfolio (New this Fall!)**

We are launching Engineering Portfolio as a pilot project this fall in ENGG\*2100. The goal of the portfolio is to provide a focal point for showcasing the work of our students collectively and individually. It will be a place where your work will be stored. Once it is fully developed, you will have the option to permit prospective employers to see your work - your presentations, reports, spreadsheets, drawings, computer programs, engineering calculations etc. We will have the option to showcase to accreditation bodies and others the calibre of your work. It will take us some time to build all of these features and bring all of your courses online.

The software, website, server and database have been built this summer by Ben Millen and Ryan Connors. There is a risk of a crash thus for this fall your submissions will use both formats (paper and electronic).

### **Team Design**

You will each participate in one large design-build project. You will be assigned to teams of approximately 5. You will advance your design, hands-on, database, team and communication skills.

### **CAE Design Task**

(an assigned individual component as part of a larger team project)  
A Computer-Aided-Engineering design project using I-Deas.

### **Presentations (Tutorials)**

You will each individually provide two oral presentations during your tutorial sessions. Effective oral presentation skills and comfort come from a combination of practice and feedback. It also comes from observing and considering what does and doesn't work for others.

You are required to attend your tutorial session in Week #1 plus the two other weeks in which you are scheduled to present. Week 1 will be used to provide additional detail regarding the format and expectations, provide you with the evaluation criteria that will be used, and provide you with a range of presentation tips (Do's and Don't's). Weeks 2-6 are for oral presentations without any visual aids. Weeks 7-12 will be your scheduled presentation opportunity with visual aids (Powerpoint). Powerpoint assistance will be provided as one of the computer labs.

The schedule and topic for your two individual presentations will be posted through WebCT. You are RESPONSIBLE for checking the schedule and attending the appropriate week.

You are **required** to provide feedback to your colleagues who are presenting during your presentation weeks. You are free to attend other tutorials.

**Lectures:**

The lecture component of the course is to assist in your design skill development. The lectures will not explicitly address the technical requirements of your Design Project or your Design Tasks. The Final Exam will be used to assess your understanding of this complementary material.

<b>Lecture outline:</b>	approximate # of hours
Introduction .....	1
Team Skills .....	5
Creativity .....	4
Safety .....	5
Computers in Design .....	3
Sustainable Development .....	5
Course Review .....	1

**Comments:**

All students are encouraged to submit signed written comments (positive or negative) to the Director of the School of Engineering on any aspect of this course.

## Lab Time Layout - ENGG\*2100 - Fall 2005

each lab section will be split in two halves.

Week	Time	Group A (Group B reversed order)*	“Due” Design Build CAE
1 Sept 12- 16	2:30-3:55 3:55-5:20	CAE Intro Skills (Rm 1135) Machine Shop (Rm 1170)	Team Data
2 Sept 19-23		Machine Shop (Rm 1170) CAE Base Skills (Rm 1135)	Parts allocated
3 Sept 26-30		2D Dwgs (Rm 1135) Learning Styles, (Rm 1103 OR CRSC 116)	Submission #1 - Idea listing
4 Oct 3-7		Design - Coaching on Analysis (Rm 1103 OR CRSC 116) CAE - FEA I (Rm 1135)	Submission #2 - Feasible Three 2D Dwgs & Materials
5 Oct 10 - 14		CAE - Assembly (Rm 1135) (except Monday - holiday) Design - Team reflection	
6 Oct 17-21		Design - Coaching for Presentation #1 (Rm 1103 OR CRSC 116) Powerpoint + Database (Rm 1135) (+ Assembly for Monday)	Submission #3 - Preliminary Analysis
7 Oct 24-28		CAE - FEA II (Rm 1135) Presentation #1 (Rm 1103 or CRSC 116)	Presentation #1 - Proposed Solution
8 Oct 31 - Nov 4		Shop & Design (Rm 1170 & Rm 1103/CRSC 116) CAE 3D support (Rm 1135)	
9 Nov 7-11		CAE 3D presentation & submission (1135) Shop & Design (Rm 1170 & Rm 1103/CRSC 116)	3D Eval & Sub
10 Nov 14-18		Shop (Rm 1170 & Rm 1103/CRSC 116) CAE FEA & Assembly support	
11 Nov 21-25		CAE Assembly demonstration Shop & Design (Rm 1170 & Rm 1103/CRSC 116)	CAE Assembly
12 Nov 28-Dec 2		Design Project Presentations & Evaluation	Presentation #2 & Final Report Submission

\* For MONDAY lab students: For all weeks you are to go to the SHOP/Design Room First (at 2:30); On Monday October 17<sup>th</sup>, the GTA's will stay overtime to recover some lost time due to the holiday.