

Engineering & Design II (ENGG*2100)

Winter 2013 Course Outline

Instructor: John Runciman
Associate Professor
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Teaching Assistants: (No office hours)

Nicholas Walters
Murray Lyons
Soundas Jamal
Darius Mali

Teaching Support:
Ken Graham

Prerequisites:

ENGG*1100 plus 4.0 credits

(It is expected that students will 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 particular emphasis on computer usage in design, on 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 (2 hrs lecture, 3 hrs lab & 1 hr seminar) per week.

Lecture Schedule: (There will be a number of invited lecturers in addition to the following)

Lecture 1	Introduction, Administration & Oral Communications
Lecture 2	Design and Engineering
Lecture 3	"Total Design"
Lecture 4	Tools of Engineering Design
Lecture 5	Teamwork - basics
Lecture 6	Teamwork – strategies for dealing with people
Lecture 7	Teamwork – group dynamics
Lecture 8	Meetings
Lecture 9	Meeting – chairing
Lecture 10	Brainstorming
Lecture 11	Brainstorming – making it happen
Lecture 12	Creative Design, Concept Development
Lecture 13	Creative Design, Case Studies

Lecture 14	Design Ergonomics – communicating through your design
Lecture 15	Design Ergonomics – case studies
Lecture 16	Manufacturing
Lecture 17	Polymer Manufacturing
Lecture 18	Quality Assurance
Lecture 19	Review

Class times:

LECTURES

ROZH 103 M & W 10:30 – 11:20

LABS

You MUST attend your assigned section only

Lab Attendance is expected for all weeks.

All of the following rooms THRN 1004, SHOP (THRN 1025) & THRN 1006 will be used for the lab component of this course.

Lab times by Section are as follows:

1.1, 1.2, 1.3 & 1.4	Monday	2:30 – 5:20
2.1, 2.2, 2.3 & 2.4	Tuesday	9:00 – 11:50
3.1, 3.2, 3.3 & 3.4	Thursday	9:00 – 11:50
4.1, 4.2, 4.3 & 4.4	Friday	2:30 – 5:20

SEMINARS

Seminars will be used for personal presentations.

Seminar times by Section are as follows:

1.1, 2.1, 3.1 & 4.1	12:00 – 12:50	Tuesday,	MACK 227
1.2, 2.2, 3.2 & 4.2	8:30 – 9:20	Friday,	MACK 228
1.3, 2.3, 3.3 & 4.3	10:30 – 11:20	Friday,	MACK 228
1.4, 2.4, 3.4 & 4.4	12:30 – 1:20	Friday,	MACK 232

EXAM

Location: TBD, 11:30 am – 1:30 pm, April 12, 2013

Textbook & Reading Material:

No required textbook.

Additional Course Materials:

Courselink - D2L, will be used for distributing material for the course.

Evaluation:

Skills Mastery Checks (3)	6%
Reverse Engineering	
- component drawings	10%
- assembly drawings	10%
Design & Build	
- concept sketches	2%
- animation preliminary check	2%
- presentation and final report preliminary checks	2%

- group presentations	6%
- demonstration	6%
- design evaluation	7%
- final report	15%
Seminars	
- personal presentation, no aids	6%
- personal presentation, with aids	8%
Final Exam	20%

Evaluation (continued):

Notes:

- ***A failing grade on the Design and Build portion OR a failing grade on the final exam will mean that you have failed the course. The assigned grade will be based on the failed items only.***
- ***Late submissions will not be accepted.***

The grading philosophy used for this course will recognize that design has a significant artistic component and is not a right or wrong situation. Thus, we will start with a perspective that your work is assumed to be a “B” until there is evidence within that work that is impressive or aspects that are disappointing. 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 and that design could never be assessed with fine resolution.

Letter grade translation:

A+	<i>Really Impressive</i>	100
A	<i>Impressive</i>	90
A-		82
B+		78
B	<i>Expected</i>	75
B-		72
C+		68
C	<i>Satisfactory</i>	65
C-		62
D+		58
D	<i>Disappointing, serious flaws</i>	55
D-		52
F	<i>Inadequate</i>	35
X	<i>no submission or wholly inadequate</i>	0

Academic Conduct Expectations and Academic Misconduct:

The course requires several team written submissions. All team members must sign the cover sheet for the submissions. 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.

Respect for ownership of Intellectual Property (e.g. copyright, patents, trade marks, music, software) is important. Work that has been created or prepared with unlicensed or illegal software will not be knowingly accepted for submission within the course (e.g. a grade of zero will be assigned).

Final Exam:

The Final Exam will be used to assess your understanding of the lecture material. The Final Exam will be closed book with no electronic aids permitted.

Safety:

Many laboratory sessions will be held in the School's machine shop. The following safety principles apply to all sessions and to all students:

- Ken Graham has full authority for all aspects of our time in the shop
- There will be a maximum of 25 students in the shop at any point in time and this number can only be supported when both Ken and a GTA are present
- You will NOT be able to attend any lab session other than the one assigned to your lab section of the course (this includes Week 10 in which time pressures may increase your desire to attend additional times)
- You will be required to show respect for Ken, your GTA and the shop's equipment
- You will be required to dress appropriately
 - No open toed shoes
 - No loose clothing
 - Safety glasses are to be worn
 - Shop coats are to be worn
- If you do not know how to use shop equipment - ASK.
- THINK first.
- Additional rules will be posted in the shop or expressed by Ken.

Failure to safely work in the shop may lead to lost shop privileges. This is likely to have academic consequences.