

beyond, the importance of communication through drawings, presentations and writing and the key steps in solving most engineering problems.

Course Learning Objectives:

- develop the engineering skills necessary to address technical problems.
- develop a systematic methodology for design.
- develop good communication skills.
- develop analytical/design skills.
- develop creativity, problem solving, and decision-making techniques.
- develop teamwork and leadership skills.
- become familiar with the technical drawing and graphics language as means of expressing and communicating an engineering design.

Grade Evaluation:

Assignments	20%
Term Project	10%
Midterm Exam	20%
Final Exam	50% (10% of the final graphics exam + 90% of the final problems exam)

Important Notes:

- Assignments are due on the day of your scheduled problem/graphic lab session, **one week after the session at 10:00am**. These are to be submitted in the appropriate box in the foyer of the engineering building. **Late assignments will not be marked.**
- Individual and original assignments are to be submitted by each student unless otherwise indicated.
- Students are expected to attend their assigned graphics and problems lab sessions. The TAs will give the final and updated instructions during the lab sessions.
- Unless otherwise noted, all assignments are to be submitted on suitable engineering paper.
- **The term test is scheduled for Thursday, October 20, 2005, time: 8:30 am.**
- **The final exam is scheduled for December 16, 2005 (2:30-4:30).** Note that the final exam will include a **graphics** lab portion during the **week of November 28, 2005, at the time of the Graphics Lab sessions.**
- Communications regarding this course will frequently involve the use of WebCT and e-mail. Students are responsible for checking the WebCT location and your university email account for all instructions and announcements. It is expected that this will be done at least once every week.
- October 10th is the thanksgiving holiday; therefore, Monday's Groups must attend the lab with other sections during the week of October 10th.

Term Project

Each student is required to complete a term project as part of this course. The project will involve the preliminary proposal, final proposal, final report and presentation on a subject detailed in the problem assignments. Projects are to be done in groups of from 4 or 5 from the *same problem lab section*, either selected by the students or assigned by the instructor. Students wishing to create their own groups must do so by **September 26th** by submitting the names of their groups to the instructor. Those Students not yet in groups at that time will be assigned to groups by the course instructor and a full list of groups published on **September 30th**.

The project will comprise problem assignments P3, P6, a project report and a presentation. Grading for the projects will comprise all of these but P3, which will be graded separately. Project report deadline is **November 25th, 2005 (16:00)**. The breakdown of the grading for the projects will be:

P6	10%
Presentation	10%
Performance	20%
Final Report	60%

The **final project mark** for each member of a design group depends on **his/her performance** within the group.

University Policy on Academic Misconduct

Academic misconduct, such as plagiarism, is a serious offence at the University of Guelph. Please consult the Undergraduate Calendar 2003-2004 and School of Engineering programs guide, for offences, penalties and procedures relating to academic misconduct.
http://www.uoguelph.ca/undergrad_calendar/08-amisconduct.shtml

Problems Solving Section (Schedule of Topics)

Week	Lecture Material (every Tuesday)	Seminar Lab Assignment
Sept. 12	<u>Engineering, Units, Measurement & Errors</u> - the role of an engineer, engineering calcs., measurements, dimensions basic units - uncertainty, sig. figures, estimating errors	No lab assigned
Sept. 19	<u>The Engineering Design Process</u> - engineering design; design process - problem definition, constraints & criteria - the design loop	P1-Engineering Approximations
Sept. 26	<u>Preliminary Ideas & Design Teams</u> - team organization & dynamics - design notes, information gathering - information gathering, brainstorming	P2-DesignProcess: Problem Definition
Oct. 3	<u>Problem Analysis & Recourses Planning</u> - analysis of design process - time & resource planning & scheduling - CPM & Gantt Charts	P3-DesignProcess: Preliminary Design Ideas
Oct. 10	<u>Decision-Making</u> - evaluating alternatives - basic decision-making method - decision matrix; criterion functions	P4-Project Planning & Scheduling
Oct. 17	<u>Design Implementation & Reporting</u> - design reports; final presentation, demonstration and report	P5 - Information Sources Exercise
Oct. 24	<u>Mid-Term Examination</u>	P6-Term Project: Preliminary Design
Oct. 31	<u>Economic Analysis</u> - cost considerations converting between types of cost - equivalent uniform annual cost - Cash flow diagrams	No lab assigned
Nov. 7	<u>Professional Practice & Code of Ethics</u> - engineering is a profession, PEO membership & code of ethics - engineering seal, iron ring	P7 - Engineering Design and Economic Analysis
Nov. 14	<u>Technical Presentations</u> - preparation of material - delivery, visual aids, formal meetings	P8 - Engineering Ethics
Nov. 23	<u>Contemporary Engineering</u> - special lecture	P9 - Critical Evaluations
Nov. 28	<u>Course Review & Evaluation</u>	Projects Presentations

Graphics Section (Schedule of Topics)

Week	Lecture Material (every Thursday)	Graphics Lab Assignment
Sept. 12	<u>Intro. To Engineering Graphics</u> - importance of engineering graphics - tools; pencil & paper, CAD - visualization, scale, angles of projection - type of CAD modeling	G1-Introduction to SOE Computing Facilities.
Sept. 19	<u>Graphics and Communications Basics</u> Engineering drawing layout and elements engineering office communications design notes and calculations	G2-Hand Sketching
Sept. 26	<u>Communication by Graphs</u> - effectiveness for communicating ideas - types, key elements - spreadsheet as a design tool	G3-Intro to AutoCAD LT 2000
Oct. 3	<u>Views & Projections</u> - multi-view drawings, 3-view drawings - orthographic projection, types	No lab assigned
Oct. 10	<u>Engineering Communications</u> - email, memos & letters design notes, - technical letters; technical reports - letter of transmittal	G4-AutoCad LT 2000 Basic
Oct. 17	<u>Advanced Spreadsheets</u> - some concepts, functions, formulas - modeling, calculation - dimensioning, types of dimensioning	G5-Orthographic Projection
Oct. 24	<u>Sectional Views</u> - definition, types - sections as views	G6-Graphs by Excel
Oct. 31	<u>Auxiliary Views</u> - definition, types of auxiliary views - drawing an auxiliary view	No lab assigned
Nov. 7	<u>Advanced Graphics</u> - 3D projection, pictorial drawing - isometric and oblique projection	G7-Sectional & Auxiliary views
Nov. 14	<u>Graphics Summary</u> - putting it all together concept - engineering final drawings - working and CAD drawings	G8-Detailed Drawing & Isometric projection
Nov. 21	<u>Professional Practice</u> - special lecture	Graphics Lab Final Exam
Nov. 28	<u>Course Review and Makeup lecture</u>	No lab assigned