University of Calgary

Faculty of Engineering

ENGG 311 - Engineering Thermodynamics

H (3 - 5/2 T - 3/2), Section 60

Summer 2003

Course Outline

1. Course Program

Section	Days	Time	Duration	Location	Instructor
LEC 60	MWF	8:30	110 min	ENC 33	A.Sohrabi
LAB 60	T	13:00	165 min	ENC 34	A.Sohrabi
TUT 60	TR	11:00	75 min	ENC 33	A.Sohrabi

Instructor's office: MEB 310
Telephone: 220-4165 Email: sohrabi@ucalgary.ca
This course will be displayed in: blackboard.ucalgary.ca

2. Course Purpose

ENGG 311 is the first course in Engineering Thermodynamics in which major emphasis is placed on developing a working knowledge of the First and Second Laws of Thermodynamics. It is a course in classical thermodynamics dealing with energy and its transformation. The concepts of heat, work, internal energy, enthalpy and entropy will be discussed. Applications to typical engineering systems will be integrated throughout the course.

3. Recommended Text

FUNDAMENTALS OF ENGINEERING THERMODYNAMICS
Third Edition, SI version
Micheal J.Moran and **Howard N.Shapiro**
John Wiley & Sons, Inc., 1998

The material of Chapters 1 through 6 will be discussed. In addition, depending on the availability of time, only selected material from Chapters 8, 9,and 10 may be covered.

4. Course Organization

The ENGG 311 course consists of six hours of lectures per week, two tutorial sessions per week, and one laboratory session every other week. The conduct of tutorials and laboratories is described later.

5. Examination and Grade Determination

There will be a mid-term and a final examination. All the examinations will be:

Open textbook and closed notes.

The final grade for the course will be based on the following components:

Quizzes	10%
Mid-term Examination	30%
Laboratory Note Books	15%
Final Examination	45%
Total	100%

Please note that examinations constitute 75% of the course mark and that the cumulative components for the examination must be in excess of 35 for successful completion of the course. (i.e. an average of 46.7% of the available marks on the examination components of the course must be achieved in order to successfully complete this course)

The mid-term examination is tentatively scheduled for Friday July 25,2003.

6. Tutorials and Quizzes

Tutorial classes provide an opportunity to clarify the concepts and solution techniques relating to the course. You are strongly urged to make use of this opportunity. Practice problems will be assigned on a one-week basis. The material covered by the problems will be the subject for the tutorials. Tutorial Quizzes will be given at the start of three selected tutorials. They will consist of one or two questions, which are similar but not identical to the assigned material.

Tutorials will commence on Thursday, July 3,2003. The tutorial session scheduled for Tuesday July 8 will be used to present the lecture on "Experimental Errors" (see section 7, "Laboratory"). All students are required to attend this tutorial session.

7. Laboratory

The laboratory program is an integral part of ENGG 311. The basic purpose of the laboratory is to provide illustrations of the theoretical concepts presented in the course. In addition, the laboratory provides an opportunity to acquaint the students with experimental techniques.

The laboratory program consists of:

a) Lecture on Experimental Errors;
b) Experiment on Empirical Temperature Measurement;
c) Experiment on Compression and Expansion of Gases;
d) Experiment on Heat Conduction.

Detailed descriptions of these exercises are available in a Manual, which should be purchased at the University of Calgary Bookstore.

The experimental data, results, discussion and conclusions will be recorded in a bound laboratory notebook. The notebook will be graded. In order to obtain maximum credit, a satisfactory notebook record and satisfactory attendance are required.

The ENGG 311 laboratory is located in Room C034. The laboratory will start on July 8, 2003. If possible, students will be assigned to groups beforehand, details of which will be posted in the laboratory. In the event that this is not possible and because the experiments run simultaneously, you must be familiar with all the experiments before attending the first laboratory session.

Date	Laboratory Schedule	Activity
8th July(11:00am-12:15pm)	Lecture on Error Analysis	
8th July(13:00pm-15:45pm)	Lab session I	Experiment 1,2,3
22nd July(13:00pm-15:45pm)	Lab session II	Experiment 2,3,1
5th August(13:00pm-15:45pm)	Lab session III	Experiment 3,1,2
15th August(12:00pm)	Deadline for third lab report	

8. Use of Electronic Calculators

Electronic calculators are allowed.