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Université d'Ottawa  
Faculté de génie  
Génie mécanique

University of Ottawa  
Faculty of Engineering  
Mechanical Engineering

## **MCG 2130 - THERMODYNAMICS I**

**Instructor:** Dr. R. E. Milane

**Phone** 562 5800 (6278)

**Office** CBY A-208

### **Course text:**

Fundamentals of Classical Thermodynamics, 7<sup>th</sup> edition, [REDACTED], Sonntag, and Borgnakke, Wiley.

### **Contents:**

1. Some Introductory Comments  
(Equipments where thermodynamics calculations are used) 1.1-1.8
2. Some Concepts and Definitions  
(Defining terms used in thermodynamics) 2.1-2.11
3. Properties of a Pure Substance  
(Experimental relations and equation of state for pressure, volume and Temperature) 3.1 - 3.7
4. Work and Heat 4.1-4.8
5. The First Law of Thermodynamics  
(Conservation of Energy for a system) 5.1 - 5.8
6. First-Law Analysis for a Control Volume  
(Conservation of Energy for a control volume) 6.1-6.5
7. The Second Law of Thermodynamics  
(Cyclic machines that can be realized) 7.1-7.7
8. Entropy  
(System following a process that can be realized) 8.1-8.11
9. Second-Law Analysis for a Control Volume  
(Control volume following a process that can be realized) 9.1-9.5

☎ 613-562-5800 (6274)  
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### **Problem Labs :**

A problem lab session which will be held every week. In the problem lab you will work on problems under the direction of the teaching assistant. At the end of each problem lab, a test on the subject discussed in the previous week will be given. The duration of the test will be 20-30 minutes. You will also be given weekly suggested problems. These will not be marked, but solutions will be available on reserve in the library.

### **Test and Marking Scheme:**

A mid-term test will be held on Thursday 23 October.

The marks for the test and the problem labs will be added to give a term mark T out 100:

Midterm tests	60%
Problem labs	<u>40%</u>
Total Term	100%

This will be combined with the final exam mark F (out of 100) to give the final mark.

I) If  $F > 60$  and  $F > T$ , the final mark will be calculated as:

$$\text{MARK} = (F^2/100) + (100 - F)T/100,$$

a weighting scheme which increases the value of the final exam as F increases above T.

II) If  $F < 60$  or  $F < T$ , a simple weighting applies instead:

$$\text{MARK} = 0.6F + 0.4T$$

### **Consultation:**

Thursday 13:00-15:00.

The tutor will be available for individual consultation at times to be posted.

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