SAULT COLLEGE ^FABPLIBD ARTS AND TBCHNOLOGY
SAtfLTSm* MARIE, Otftf. •$<$&&3$$ -;:?vISD

COURSE QUTLIME

COURSE Ttf LR • ; AfrPMED! THERHOglMfAMICS

CODE NO. : CftCH:5Q5

PROGRAM: ^! HECHANtCAL .EbtG^EE^ING TECHNOLOGY

SEMESTER: f ;.gflEgriL-

AUTHOR : ^MRS.;: -X .1 GHSNG

DATE: *Ml&li^iMQ*

PREVIOUS OUTLINE JS0X&ED: , CM 881

APPROVED: . . . . .^ Ltl: 'K).<<vC. . - Cf< ~ " // 1
^AIRFERSON DATE

THERMODYNAMICS MCH305

COURSE **NAME*** CODE NO.

TOTAL CREDIT HOURS:

PREREQUISITES) : MUST HAVE COMPLETED SUCCESSFULLY 3rd and 4th semester courses, in Mechanical Technology Thermodynamics.

I. PHILOSOPHy/GOALS

It is the, .goal of this course to provide the student of thermodynamics with the basic tools to be able to; in subsequent courses, -or on his own with suitable text, to apply the principles and techniques learned on the practical problems such as mixtures of vapours and gases, combustion, and steam plants. The skills, trained by this course is transferrable to other endeavours.

II. STUDENT **PERFORMANCE** OBJECTIVES:

upon successful completion of this course, the student will be able to:

1. describe and define reversibility, reversible work, the first law, non-flow energy equation, the steady flow energy equation, amd the working fluid.

2. solve problems involving reversible non-flow processes such as: constant volume, constant pressure, constant temperature, adiabatic and polytropic; and irreversible processes; such as flow and nonsteady flow.

3. describe and define entropic and the T-s diagram for steam and perfect gases.

4. sketch.the T-S diagram for reversible processes and solve problems in Chapter 5 of the textbook.

5. solve problems involving some standardized cycles for common heat engines such as the carnot, otto, diesel, dual combustion etc. .

III. TOPICS TO BE COVERED:

1. INTRODUCTION

1.1 Heat, work and the system.

1.2 The state of the working fluid

1.3 Reversibility and reversible work

2. THE FIRST LAW OF THERMODYNAMICS

2.1 Conservation of energy.

2.2 The non-flow equation

2.3 The steady flow equation

3. THE WORKING FLUID

3.1 Liquid, vapour and gas

3.2 The use of vapour tables

3.3 The perfect gas

4. REVERSIBLE AND IRREVERSIBLE PROCESSES

4.1 Reversible non-flow processes

4.2 REversible adiabatic non-flow process

4.3 Polytropic processes

4.4 Irreversible processes

4.5 Reversible flow processes

5. THE SECOND LAW

5.1 The heat engine

5.2 Entropy

5.3 The T-s diagram

5.4 Reversible process on the T-s diagram

5.5 Entropy and Irreversibility

6. THE HEAT ENGINE CYCLE

6.1 The Carnot cycle for a perfect ga:

6.2 The constant pressure cycle

6.3 The air standard cycle

6.4 The Otto cycle

6.5 The diesel cycle

6.6 The dual combustion cycle

6.7 Mean effective pressure

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V. METHOD(S) OF EVALUATION

Two tests will be conducted during the semester. Tests will be announced one week in advance.

Quizzes will be conducted at sporadic intervals and without prior warning. Quiz questions will be based directly on homework assignments.

The final course mark is calculated according to the formula:

0.60 * {(testl + test2)/2}
+ 0 . 30 * quiz

The following list indicates the relationship between numerical mark and the letter grades:

A+	90 - 100
A	80 - 89
B	70 - 79
C	60 - 69
I	Incomplete with permission from instructor and to be completed before a given deadline or an R grade will result.
	less than 60% '.Repeat course

Only one rewrite will be given at the end of the course for student with an overall grade between 45% and 59%. This rewrite is also limited to students with a good working attitude and attendance record. The maximum grade attainable with a re-write is a 60% or C grade.

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VI. REQUIRED **STUDENT RESOURCES**

The textbook for the course is:

Applied Thermodynamics f_{Qg} Engineering Technologists,
T. D. Eastop and A. HcConkey
published by Longman and available from the Campus Book store.

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VIII. SPECIAL NOTES

All classes are.s6om#u'lsdry. If it is necessary to miss a class, the student is*expected to explain his absence to the instructor and obtain all missed materials from a classmate.

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