Philadelphia University
Mechanical Engineering Department
Faculty of Engineering

Course Syllabus	
Course Title	**Thermodynamics I**
Course Number	**620341**
Course Level	**3th year** **Credit Hours: 3**
Course Time	**(11:15-12:30) 90 min. Monday, Wednesday.**
Prerequisites	**Dynamics & Engineering Analysis I (620212, 630201)**
Text Book	**Engineering Fluid Mechanics, by Clayton T Crowe, Donlad F. Elger & John a. Roberson, Eighth edition**
Department	**Mechanical Engineering**

Course Description:

To make the students develop and enhance the knowledge and awareness of thermodynamics and its applications in practice. The students will learn the basic principles of thermodynamics, to present a wealth of real-world engineering examples to give students a feel for how thermodynamics is applied in engineering practice and finally to develop an intuitive understanding of thermodynamics by emphasizing the physics and physical arguments.

Course Objectives:

Upon completion of this course, the student should be able to understand the followings:

- The Basic Concepts of Thermodynamics.
- Energy Transfer & Energy Analysis.
- Properties of Pure Substance.
- Energy analysis of a closed system.
- Mass and energy analysis of control volumes.
- The second law of thermodynamics.
- Entropy.

Course Academic Calendar

Week	Subject	Notes
Oct 10	Introduction and Basic Concepts of Thermodynamics	Chapter 1
Oct 17	Energy Transfer & Energy Analysis	Chapter 2
Oct 24	Energy Transfer & Energy Analysis	Chapter 2
Oct 31	Properties of Pure Substance	Chapter 3
Nov 7	Properties of Pure Substance	Chapter 3
Nov 14	Energy Analysis of a Closed System	Chapter 4 ***Eid Adha Holiday Nov 16-20***
Nov 21	Energy analysis of a Closed System	Chapter 4 **EXAM I (Nov 22-30)**
Nov 28	Energy analysis of a Closed System	Chapter 4
Dec 5	Mass and energy analysis of control volumes.	Chapter 5
Dec 12	Mass and energy analysis of control volumes.	Chapter 5
Dec 19	Mass and energy analysis of control volumes.	Chapter 5
Dec 26	The second law of thermodynamics	Chapter 6

		EXAM II Dec (22-30)
Jan 2	The second law of thermodynamics	Chapter 6
Jan 9	Entropy	Chapter 7
Jan 16	Entropy	Chapter 7
Jan 23-Feb 1	**FINAL EXAMS**	

Assessment Instruments

Evaluation of students' performance (final grade) will be based on the following three categories:

- **Exams**. Two in-class exams will be given. Each will cover about 6-weeks of lectures
- **Final Exam**: The final exam will cover all the class material.

Allocation of Marks	
Exam I	15%
Exam II	15%
Quizzes	20%
Final Exam	50%

Other class work will include:

- **Quizzes**. Three 10-minute quizzes will be given to the students throughout the semester. These quizzes will cover material discussed during the previous week of lectures. The quizzes will be used as bonus points (added to the exams' grades) to help the students with their grade.
- **Homework**. A homework at the end of each chapter will be assigned to the students . The homework will not be graded nor collected by the instructor. However, students are encouraged to do the homework and discuss their results with the instructor in order to better understand the course and be prepared for the exams.

References

- Fundamentals of Engineering thermodynamics, Moran and Shapiro 2005.
- Heat Transfer, J.P. Holman, S.I. Metric edition, Mc-Graw Hill,Latest Edition.
- Heat Transfer, Martin Becker, Plenum Press, Latest Edition.

Websites

1. http://www.amazon.com/Advanced-Engineering-Thermodynamics-Adrian-Bejan/dp/0471148806
2. http://www.freebookcentre.net/Physics/ThermoDynamics-Books.html