The Hashemite University
Faculty of Engineering
Course Syllabus
Department of Mechanical Engineering

Course title:	**Thermodynamics-I 3 (3,0, 0)**	**Course Number:**	110402221
Designation:	Compulsory	**Prerequisite(s):**	110102101 & 110103107
Instructor:	Dr. Ahmad ALMIGDADY	**Instructor's e-mail:**	ahmad.alqan@gmail.com
Office Hours:			

Course Description (catalog): Students will be introduced to the Properties and behavior of a pure substance. First law and second law analysis applied to different systems and control volumes

Textbook(s) and/or Other Supplementary Materials:
Yunus A. Cengel, and Michael A. Boles, "Thermodynamics, an Engineering Approach," 8th edition McGraw-Hill
** soft copy of the book is available on moodle course page

References: **********

Major Topics Covered:

Topics	No. of Weeks	Contact hours*
Ch.1: Basic Concepts of Thermodynamics.	**2**	**6**
Ch.2: Energy, Energy Transfer, And General Energy Analysis.	**1**	**6**
Ch.3: Properties of Pure Substances.	**3**	**6**
Ch.4: Energy Transfer by Heat, Work, and Mass.	**2**	**3**
Ch.5: Energy Analysis of open Systems: control volumes.	**2**	**6**
Ch.6: The Second Law of Thermodynamics.	**2**	**6**
Ch.7: Entropy.	**2**	**6**
Total	**15**	**45**

*Contact hours include lectures, quizzes and exams

Specific Outcomes of Instruction (Course Learning Outcomes):

After completing the course, the student will be able to:

1) Identify the properties and the state of a pure substance using thermodynamic tables and locate the substance state on the phase diagram. . These properties include: pressure, temperature, specific volume, internal energy, enthalpy, entropy, etc. **(a,e)**
2) Studying the behavior of ideal gases and use thermodynamic tables to determine their properties. **(a,e).**
3) Applying the first law of thermodynamics of thermodynamic to a closed system **(a,e).**
4) Application of first law of thermodynamic to a n open system "control volumes and control surfaces" **(a,e)**
5) Demonstrate the second law of thermodynamics and the concept of entropy **(a,e)**

Student Outcomes (SO) Addressed by the Course:

#	Outcome Description	Contribution
	General Engineering Student Outcomes	
(a)	an ability to apply knowledge of mathematics, science, and engineering	H
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	H
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(h)	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	
	H=High, **M**= Medium, **L**=Low	

Grading Plan:

First Exam	(15 Points)	**Will be announced later**
Second Exam	(15 Points)	**Will be announced later**
Quizzes & Homework's	(20 Points)	**4 quizzes will be conducted through moodle platform**
Final Exam	(50 points)	

General Notes: The home work assignment will include analyzing an integrated thermodynamic system that may contain various components like turbine, compressor, pump, expansion valve, heat exchangers, boiler, mixing chambers and/or piston-cylinder assembly

Prepared by: *Dr. Ahmad ALMIGDADY* **Date:** 18th Sep. 2016