



**Philadelphia University
Faculty of -Engineering
Department of Mechanical engineering**

Course Syllabus

Course Title: Thermodynamics 2	Course code: 620342
Course Level: 3	Course prerequisite (s) and/or co requisite (s): Thermodynamics 1
	Credit hours: 3

Academic Staff

Specifics

Name	Rank	Office Number and Location	Office Hours	E-mail Address
Dr. S. Ammourah	Associate professor	Mechanical Eng. Dept E61308	11-12 10:15-11:15	sammourah@philadelphia.edu.jo

Course description:

In this course students will be presented to the applications of thermodynamics 1, which are the well known thermal cycles. These cycles include the gas power cycles, steam power and combined cycles and refrigeration cycles. Analyzing each cycle in details and finding the thermal efficiency is the major aim. Also studying the thermal availability (exergy) based on the second law concept will be presented in this course. In addition an introduction to the air-conditioning and gas mixtures will be given.

Course objectives:

- Verify the second law and all types of cycles.
- To know when and how to use these laws in the practical life.

Course components

- **Books (title , author (s), publisher, year of publication)**

Thermodynamics, an Engineering approach. By Y.Cengel, 5th edition

Teaching methods:

Lectures, discussion groups, problem solving, debates.

Learning outcomes:

• **Knowledge and understanding:**

The student should be able to analyze any thermal cycle and know how to deal with the actual cycles. Also, the students should be able to discuss any problems encountered in reducing the thermal efficiency and suggest a practical solution.

• **Practical and subject specific skills (Transferable Skills):**

The comprehension of thermodynamics cycles is a key to understand all thermal devices and applications of them in practical life.

• **Cognitive skills (thinking and analysis).**

The students should link the concepts that they are learning with the real applications available in Jordan through a suggested projects by the supervisor or even by the students who have a practical background in the field.

• **Practical and subject specific skills (Transferable Skills).**

Discussing the required projects with the students via oral presentations and open the door for free discussion and suggestion session run by the supervisor and the students.

Assessment instruments

- Short reports and/ or presentations, and/ or Short research projects
- Quizzes.
- Home works
- Final examination: 50 marks

Documentation and academic honesty

• **Documentation style (with illustrative examples)**

The students will be given the key solution after each exam to compare with their answers as well as the marking scheme. If any has an objection then the supervisor should consider it based on the key solution and the marking scheme. If the student has extra marks then he it should be added to him

• **Avoiding plagiarism.**

The university has strict rules about plagiarism and it will be considered where it is necessary.

Course academic calendar

week	Basic and support material to be covered	Homework/reports and their due dates
(1)	Exergy	Quiz at the end of the chapter
(2)	Exergy	
(3)	Gas power cycles	Quiz out at the end of the chapter and small related project
(4)	Gas power cycles	
(5)	Gas power cycles	
(6) First examination	Vapor and combined power cycles	Quiz at the end of the chapter and small related project
(7)	Vapor and combined power cycles	
(8)	Vapor and combined power cycles	
(9)	Refrigeration cycles	Quiz at the end of the chapter and small related project
(10)	Refrigeration cycles	
(11) Second examination	Revision for the cycles chapters	
(12)	Gas mixtures	Quiz at the end of the chapter
(13)	Gas mixtures	
(14)	Gas and vapor mixture (Air conditioning)	Quiz at the end of the chapter
(15) Specimen examination (Optional)	Gas and vapor mixture (Air conditioning)	
(16) Final Examination	Revision	

Expected workload:

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

Attendance policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

Course references

Books

Thermodynamics, an Engineering approach. By Y.Cengel, 5th edition
Fundamentals of Engineering thermodynamics, Moran and Shapiro 1998

Journals

Science direct Journal
ASHRE

Websites

ASHRE website
ASME website