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

Course title:	**Thermodynamics-II 3 (3,0, 0)**	**Course Number:**	110402222
Designation:	Compulsory	**Prerequisite(s):**	110402221
Instructor:	Dr. Mohammad Tarawneh	**E-mail:**	Mohammad.tarawneh@hu.edu.jo
Office Hours:	{Mon, Wed} ➔ (9:30 - 11:00) Ms Teams		

Course Description (catalog): The basic concepts of classical thermodynamics are continued in this course as was introduced in Thermodynamics 1. It introduces the students to basic laws and principles applications to gas power and refrigeration cycles, vapor and combined power cycles, mixtures of gases and vapors, psychrometry, chemical reactions, Thermodynamic property relations, and exergy analysis.

Textbook(s) and/or Other Supplementary Materials:
Yunus A. Cengel, and Michael A. Boles, "Thermodynamics, an Engineering Approach," 8th edition McGraw-Hill

References:
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Major Topics Covered:

Topics	No. of Weeks	Contact hours*
Exergy	**1**	**3**
Gas power cycles	**2**	**6**
Vapor and combined power cycles	**2**	**6**
Refrigeration cycles	**2**	**3**
Thermodynamic property relations	**2**	**6**
Gas mixtures	**2**	**6**
Gas–vapor mixtures and Air-conditioning	**2**	**6**
Chemical reactions	**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:
CLO1: Apply first law and second law of thermodynamics to analyze power and refrigeration cycles **(a,c,e)**
CLO2: Analyze and design multi component thermodynamic systems (Mixtures) **(a ,e,c)**
CLO3: Implement the principles of chemistry and thermodynamics to carry out basic combustion reactions. **(a,e)**
CLO4: Apply the principles of thermodynamics to various air-conditioning systems **(a,e)**
CLO5: Apply thermodynamic relations to develop fundamental relations between thermodynamic properties that cannot be measured directly in terms of measurable properties **(a,e)**
CLO6: Study the environmental impact of exhaust systems of gas power cycles **(h)**
CLO7: Apply computer skills, numerical analysis and dimensional analysis to find thermodynamic relationships between the different parameters of the thermo dynamical systems to enhance the research ability of the students for long life learning issues **(I, k)**.

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	**L**
(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	**M**
(i)	a recognition of the need for, and an ability to engage in life-long learning	**L**
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	**L**
H=High, **M**= Medium, **L**=Low		

Grading Plan:

Mid_ Exam	(30 Points) Mon.9/12/2020 1400-15:30	TBA
Homework's&Quizzes	(30 points)	TBA
Final Exam	(40 points)	TBA

Prepared by: *Dr. Mohammad Tarawneh* **Date:** 11. Oct. 2020