Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering
Mechanical Engineering Department

SYLLABUS

Code/Name	MCE 206 / Thermodynamics II
Type	Required
Credit/ECTS	5/5
Hour per Week	3 (3+0+0)
Level/Year	Undergraduate/2
Semester	Spring
Classroom	A203
Content	Gas power cycles. Vapor and combined power cycles. Refrigeration cycles and heat pump systems. Thermodynamic property relations. Gas mixtures. Gas-vapor mixtures, psychrometry, and air conditioning processes. Chemical reactions.
Prerequisites	NA
Textbooks	***Primary*** Y A Cengel, M A Boles, M Kanoglu, *Thermodynamics: An Engineering Approach*, 9th edition, McGraw-Hill, 2019. ***Supplementary*** M J Moran, H N Shapiro, D D Borttner, M B Bailey, *Fundamentals of Engineering Thermodynamics*, 9th edition, Wiley, 2018.
Objectives	• To analyze gas power, vapor power, and refrigeration cycles using the first and second laws of thermodynamics • To analyze air conditioning processes. • To analyze chemical reactions using thermodynamic principles.
Course Outcomes	In this course you will be able to: CO1 Describe operation and thermodynamic principles of internal combustion engine cycles, gas power cycles and jet engines CO2 Describe operation and thermodynamic principles of vapor power, refrigeration, and heat pump cycles CO3 Perform performance analyses of ideal and actual gas power, vapor power, and refrigeration cycles CO4 Determine the thermodynamic properties from the available data CO5 Find the properties of non-reacting mixtures and perform thermodynamic analysis on air-conditioning processes C06 Acquire the basic concepts in analyzing the reacting mixtures

Weekly Schedule of Topics

W	Topic
1	Gas power cycles
2	Gas power cycles
3	Gas power cycles
4	Vapor power cycles
5	Vapor power cycles
6	Vapor power cycles
7	Refrigeration cycles
8	Refrigeration cycles
9	Thermodynamic property relations
10	Gas mixtures

11	Psychrometry and air-conditioning
12	Psychrometry and air-conditioning
13	Chemical reactions
14	Chemical reactions

Professional Contribution	Ability to understand, analyze, and improve energy systems

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	5	0	0	5	0	0	2	0	0	3	0
CO2	5	0	0	5	0	0	2	0	0	3	0
CO3	5	0	0	5	0	0	2	0	0	3	0
CO4	5	0	0	5	0	0	0	0	0	3	0
CO5	5	0	0	5	0	0	0	0	0	3	0
CO6	5	0	0	5	0	0	0	0	0	3	0

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Special Conditions	• Students work in groups for project and presentations.
Requirements	
Evaluation	Midterm Exam 40% Quizzes 15% Final Exam 45% Total 100%
Rubric	
Course Policy	1. Students are required to attend at least 70% of the theoretical courses and 80% of the courses with lab/application sessions including add-drop period. Otherwise, you will receive a grade of DZ. Health reports, and other official or nonofficial excuses are not accepted. 2. Be in the class on time. Late attendance may result in grade deductions. 3. English should always be used to communicate in the class. 4. Mobile phones should be switched off and put away during the class. 5. Illegal copies of the textbooks and other illegal course materials cannot be used for the classwork and exams. 6. Exam papers can only be checked within one week of grade announcement.
Cheating & Plagiarism	• Copying or letting someone copy your work on exams, assignments, or reports is cheating. • Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism. • A consequence of academic dishonesty is to receive a grade of FF for the course.

Instructor

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Prepared by Mehmet Kanoğlu