Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering
Mechanical Engineering Department
2023-2024 Fall Semester
SYLLABUS

Code/Name	MEC 311 / Renewable Energy
Type	Required
Credit/ECTS	4/4
Hour per Week	3 (2+0+1)
Level/Year	Undergraduate/3
Semester	Fall
Classroom	A103
Content	Introduction to renewable energy. Fundamentals of solar energy, solar energy applications, solar collectors, and photovoltaic systems. Wind power and hydropower. Geothermal, biomass, wave, and tidal energies. Hydrogen and fuel cells. Economic and environmental considerations. Lab applications.
Prerequisites	
Textbooks	***Primary*** M Kanoglu, Y A Cengel, J M Cimbala, *Fundamentals and Applications of Renewable Energy*, McGraw-Hill, 2020. ***Supplementary*** B K Hodge. *Alternative Energy Systems*. Wiley, 2010.
Objectives	• To provide an overview of renewable energy resources and the technologies • To analyze renewable energy systems • To assess performance of renewable energy applications
Course Outcomes	In this course you will be able to: CO1 Identify and describe main characteristics of renewable energy sources CO2 Categorize technologies for harnessing renewable energy sources CO3 Illustrate operation and main components of different renewable energy systems CO4 Compare different renewable energy technologies and choose the most appropriate based on site conditions CO5 Perform technical and economic assessments of renewable energy systems C06 Conduct experiments on various renewable energy applications

Weekly Schedule of Topics

W	Topic
1	Introduction to renewable energy
2	Fossil fuel systems
3	Solar fundamentals
4	Solar thermal systems
5	Solar photovoltaic systems
6	Wind energy
7	Hydropower
8	Geothermal energy, direct applications
9	Geothermal energy, power production
10	Biomass energy
11	Ocean, tidal, and wave energies
12	Hydrogen energy and fuel cells

13	Economics of renewable energy applications
14	Hybrid systems

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

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	0	0	0	0	0	0	0	0	3	0	1
CO2	0	3	0	0	0	0	0	0	3	0	1
CO3	0	3	0	0	0	0	0	0	3	0	1
CO4	2	5	0	2	0	0	0	0	3	0	0
CO5	5	3	0	5	0	4	4	0	3	4	3
CO6	0	0	5	5	0	5	2	0	3	0	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. • The consequence of violation of the attendance rule is to receive a grade of NA.
Requirements	
Evaluation	Midterm Exam 30% Quiz, Lab, Project 20% Final Exam 50% Total 100%
Rubric	
Course Policy	1. You must attend at least 80% of the sessions including add-drop period. 2. Be in the class on time. 3. English should always be used to communicate with one another. 4. Mobile phone should be switched off and put away during the class.
Cheating & Plagiarism	• Copying or letting someone to copy your work on exams, assignments, or reports is cheating. • Cutting and pasting text, figures and tables from the web sources or any other electronic source is plagiarism.

Instructor

Name/Surname	Dr. Gökhan CANBOLAT	Email	gokhan.canbolat@alanya.edu.tr
Room	411	Office Hours	Tuesday : 11:30 – 12:30 Wednesday : 11:30 – 12:30