

Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering  
**Electrical-Electronics Engineering Department**  
2023-2024 Fall Semester

### Syllabus

<b>Code/Name</b>	EEE 403 / Renewable Energy Sources
<b>Type</b>	Required
<b>Credit/ECTS</b>	4/4
<b>Hour per Week</b>	2(2+0+0)
<b>Level/Year</b>	Undergraduate/4
<b>Semester</b>	Fall
<b>Classroom</b>	A103
<b>Content</b>	General structure of renewable energy systems. General structure of power converters used in renewable energy systems. Solar power systems and principles. Panel structure and types. Connection types of solar inverters. Wind power systems and principles. Wind turbine types, connection types. Maximum power point tracking. Fuel cells and applications. Other renewable energy sources. Electric vehicles.
<b>Prerequisites</b>	None
<b>Textbooks</b>	<b>Primary</b> Alternative Energy in Power Electronics; M.H. Rashid, Elsevier Inc <b>Supplementary</b> Introduction to Renewable Energy for Engineers; K.D. Hagen, Pearson Education Inc.
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To examine the technology of energy systems</li><li>• To learn the techniques necessary for the analysis and basic design of the electrical power transformation in renewable energy systems</li></ul>
<b>Course Outcomes</b>	In this course you will be able to: CO1 Understand the working principles of renewable energy systems and can make basic calculations about these systems. CO2 Have information about Turkey's renewable energy projection and legislation CO3 Know what electrical power converters used in renewable energy systems are and what they are used for CO4 Know the energy storage technologies used in renewable energy systems CO5 Know system elements, control and network connection principles of the other renewable energy systems

### Weekly Schedule of Topics

W	Topic
1	Energy Sources and Renewable Energy
2	Turkey's Renewable Energy Projection and Legislation
3	Electrical Power Converters Used In Renewable Energy Systems.
4	Photovoltaic Effect and Photovoltaic Semiconductor Structures
5	Photovoltaic Source Renewable Energy Systems
6	Maximum Power Point Tracking In Photovoltaic Source Renewable Energy Systems
7	Grid Connections of Photovoltaic Source Renewable Energy Systems.
8	Basic Design of Photovoltaic Source Renewable Energy Systems
9	Wind Turbines and Structures
10	Wind Source Renewable Energy Systems

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11	Wind Farms and Grid Connections
12	Hydraulic, Geothermal and Biomass Source Renewable Energy Systems
13	Energy Storage In Renewable Energy Systems
14	Electric Vehicles

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**Contribution to Program Outcomes\***

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	5	5	1	5	0	5	1	3	1	3	0
CO2	5	5	1	4	0	5	4	3	4	3	0
CO3	5	5	3	5	2	5	1	3	1	3	0
CO4	5	4	3	5	0	5	2	3	1	4	0
CO5	5	4	1	4	0	5	4	3	4	1	2

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

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<b>Requirements</b>	Basic knowledge of Electromagnetic Field Theory	
<b>Course Policy</b>	<ul style="list-style-type: none"><li>• Be in the class on time.</li><li>• English should always be used to communicate with one another.</li><li>• At least 70% attendance is required, otherwise a grade of <b>DZ</b> will be assigned.</li></ul>	
<b>Cheating &amp; Plagiarism</b>	<ul style="list-style-type: none"><li>• Copying or letting someone copy your work on exams, assignments, or reports is cheating.</li><li>• Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism.</li><li>• The consequence of academic dishonesty is to receive a grade of <b>FF</b> for the course.</li></ul>	
<b>Evaluation</b>	Midterm	40%
	<u>Final Exam</u>	<u>60%</u>
	Total	100%

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**Instructor**

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Name/Surname	Leyla Akbulut	Email	leyla.akbulut@alanya.edu.tr
Room		Office Hours	

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Prepared by Akin Uslu on June 10th, 2024.