

TOROS ÜNİVERSİTESİ

Faculty Of Engineering
Electrical And Electronics Engineering (English)

Course Information

ELECTRIC POWER GENERATION AND RENEWABLE ENERGY					
Code	Semester	Theoretical	Practice	National Credit	ECTS Credit
		Hour / Week			
EEE411	Fall	3	0	3	5

Prerequisites and co-requisites	
Language of instruction	English
Type	Elective
Level of Course	Bachelor's
Lecturer	Prof. Ahmet TEKE
Mode of Delivery	Face to Face
Suggested Subject	
Professional practise (internship)	None
Objectives of the Course	Introducing basic terms related with energy, Analyzing energy consumption profile in Turkey and the world, Understanding the operation principles of renewable and alternative energy sources.
Contents of the Course	Renewable Energy Sources: Hydro Power; Pumped Storage; Wave; Wind; Solar; Geothermal; Biomass; Bio-fuel; Ethanol-fuel and Recycle Wastes and Their Nature; Sustainability; Operating Principles and Cleanliness; Incentives and Barriers; Utilization; Efficiency and Effectiveness; Management of Renewable Energy and Its Sustainability; Energy Storage: Flywheel; Batteries and Fuel Cell; Hybrid System and Integration; AC and DC Electricity Conversion; Electricity Quality Regeneration; Power Conditioning and Renewable Energy to Grid.

Learning Outcomes of Course

#	Learning Outcomes
1	Has capability in those fields of mathematics and physics that form the foundations of engineering.
2	Grasps the main knowledge in the basic topics of electrical and electronic engineering.
3	Analyses the functional integrity of the knowledge gathered in the fields of basic engineering and electrical-electronics engineering.
4	Identifies problems and analyzes the identified problems based on the gathered professional knowledge.
5	Formulates and solves a given theoretical problem using the knowledge of basic engineering.
6	Has aptitude for computer and information technologies
7	Has English at a level adequate to comprehend the main points of a scientific text, either general or about his profession, written in English.
8	Has the ability to apply the knowledge of electrical-electronic engineering to profession-specific tools and devices.

Course Syllabus

#	Subjects	Teaching Methods and Technics
1	Introduction to energy sources: Aims and applications	Presentation and classical lecturing
2	Basic nonrenewable energy sources	Presentation and classical lecturing
3	Thermal power plants	Presentation and classical lecturing
4	Nuclear power plants	Presentation and classical lecturing
5	Basic renewable energy sources	Presentation and classical lecturing
6	PV power plants: Components and design	Presentation and classical lecturing

7	Midterm exam	
8	Wind energy plants: Components and design	Presentation and classical lecturing
9	Geothermal power plants	Presentation and classical lecturing
10	Tide energy plants	Presentation and classical lecturing
11	Hydraulic power plants	Presentation and classical lecturing
12	The basics of energy efficiency and saving for power plants	Presentation and classical lecturing
13	Energy storage types	Presentation and classical lecturing
14	High technology renewable energy generation types	Presentation and classical lecturing
15	Power plant performance factors	Presentation and classical lecturing
16	Final Exam	

Course Syllabus

#	Material / Resources	Information About Resources	Reference / Recommended Resources
1	Renewable and Efficient Electric Power Systems, Gilbert M. Masters		
2	Renewable Energy in Power Systems, Leon Freris and David Infield		
3	Renewable Energy Resources, John Twidell		
4	Advanced Renewable Energy Sources, G. N. Tiwari, Rajeev Kumar Mishra		

Method of Assessment

#	Weight	Work Type	Work Title
1	40%	Mid-Term Exam	Mid-Term Exam
2	60%	Final Exam	Final Exam

Relationship between Learning Outcomes of Course and Program Outcomes

#	Learning Outcomes	Program Outcomes	Method of Assessment
1	Has capability in those fields of mathematics and physics that form the foundations of engineering.	1	1,2
2	Grasps the main knowledge in the basic topics of electrical and electronic engineering.	1	1,2
3	Analyses the functional integrity of the knowledge gathered in the fields of basic engineering and electrical-electronics engineering.	1	1,2
4	Identifies problems and analyzes the identified problems based on the gathered professional knowledge.	1	1,2
5	Formulates and solves a given theoretical problem using the knowledge of basic engineering.	1	1,2
6	Has aptitude for computer and information technologies	1	1,2
7	Has English at a level adequate to comprehend the main points of a scientific text, either general or about his profession, written in English.	1	1,2
8	Has the ability to apply the knowledge of electrical-electronic engineering to profession-specific tools and devices.	1	1,2

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

Work Load Details

#	Type of Work	Quantity	Time (Hour)	Work Load

1	Course Duration	14	3	42
2	Course Duration Except Class (Preliminary Study, Enhancement)	14	2	28
3	Presentation and Seminar Preparation	0	0	0
4	Web Research, Library and Archival Work	0	0	0
5	Document/Information Listing	0	0	0
6	Workshop	0	0	0
7	Preparation for Midterm Exam	1	8	8
8	Midterm Exam	1	1	1
9	Quiz	0	0	0
10	Homework	0	0	0
11	Midterm Project	0	0	0
12	Midterm Exercise	0	0	0
13	Final Project	0	0	0
14	Final Exercise	0	0	0
15	Preparation for Final Exam	1	10	10
16	Final Exam	1	1	1
				90