



**ESOGU ELECTRICAL-ELECTRONICS ENGINEERING DEPARTMENT
COURSE INFORMATION FORM**

Course Title	Course Code
RENEWABLE ENERGY DESIGN	15128XXX

Semester in Program	Number of Course Hours per Week		ECTS Credit
	Theory	Practice	
8	2	4	9

Course ECTS Credit Distribution				
Basic Sciences	Engineering Sciences	Design	General Education	Social
		9		

Language of Instruction	Course Level	Course Type
English	Undergraduate	Elective

Prerequisite	NONE
Objectives of the Course	Design and/or optimal operation of a renewable energy system (solar, wind, biomass, etc., or a sub-component of these systems) under realistic operational constraints and environmental conditions.
Brief Course Content	Teaching the stages of the engineering design process focused on renewable energy.

Learning Outcomes of the Course	Contributed POs	Teaching Methods *	Assessment Methods **
1 Students will have the ability to apply design process methods to the design of a renewable energy system (or a sub-system) under realistic operational constraints and conditions.	2, 3, 4a, 4b	4, 5, 13, 14	G, L
2			
3			
4			
5			
6			

*Teaching Methods 1:Lecture, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Problem Solving, 11:Individual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation

**Assessment Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

Main Textbook	None
Supplementary Resources	None
Necessary Course Material	None

Course Weekly Schedule	
1	Problem Definition and Renewable Energy Potential Analysis
2	Determination of Requirements and System Constraints
3	Collection of Necessary Information and Meteorological Data
4	Detailed Information Gathering on Renewable Energy Resources
5	Concept Generation and Evaluation of Different Renewable Technologies
6	Decision Making and Concept Selection
7	Detail Design
8	Mid-Term Exams
9	Detail Design
10	Detailed Design of System Integration
11	Detailed Design of Power Electronics and Storage Interfaces
12	Modeling and Simulation (Introduction with Simulation Software)
13	Modeling and Simulation
14	Report Preparation
15	Project Presentation
16,17	Final Exams

Calculation of Course Workload			
Activities	Count	Time (Hour)	Total Workload (Hour)
Weekly classroom time	14	2	28
Weekly study time (review, reinforcing, preparation)	14	15	210
Homework			
Taking a quiz			
Studying for a quiz			
Oral exam			
Studying for an oral exam			
Report writing (Preparation and presentation time included)	1	15	15
Project (Preparation and presentation time included)	1	10	10
Presentation (Preparation time included)	1	1	1
Mid-Term Exam			
Studying for Mid-Term Exam			
Final Exam			
Studying for Final Exam			
		Total workload	264
		Total workload / 30	8,80
		Course ECTS Credit	9

Assessment	
Activity Type	%
Presentation	30
Jury Exam	70
Homework	
Final Exam	
Total	100

COURSE CONTRIBUTION TO THE PROGRAM OUTCOMES (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	PROGRAM OUTCOMES	Contribution
1	a. Sufficient knowledge of mathematics	
	b. Sufficient knowledge of basic sciences	
	c. Sufficient basic engineering and Electrical-Electronics engineering knowledge	
	d. Skill of applying all these knowledge and experience to complicated Electrical-Electronics engineering problems	
2	Skill of identifying, defining, formulating, and solving complex problems in Electrical-Electronics engineering and related areas by selecting and applying appropriate analysis and modeling methods, while considering the relevant UN Sustainable Development Goals.	5
3	Skill of designing a complicated process, system, equipment or product by applying modern design methods under realistic constraints and conditions.	5
4	To analyze and solve the complicated engineering problems: a. skill of developing, selecting and applying the required techniques and devices	5
	b. skill of using information technologies effectively	3
5	To study the complicated on the complicated Electrical-Electronics engineering problems and research subjects: a. skill of experimental design	
	b. skill of performing the experiments, collecting the data and analyzing and interpreting the results	
6	a. Skill of performing individual studies	
	b. Skill of performing intra and interdisciplinary and multidisciplinary teamwork and studies	
7	a. Skill of effective oral and written communication in Turkish and English	
	b. Skill of improving and using foreign language knowledge	
	c. Skill of effective reporting, understanding the reports and preparing the design and production reports	
	d. Skill of effective presentation and giving and getting clear and understandable instructions.	
8	Awareness of the necessity of life-long learning and skill of accessing to information and following the improvements in contemporary science and technology	
9	a. Awareness of necessity of behaving in accordance with the ethical principles and awareness of the importance of having professional ethical responsibilities	
	b. Knowledge about legal regulations and standards of engineering	
10	a. Knowledge about project management, risk management and change management	
	b. Awareness of the significance of entrepreneurship and innovation	
	c. Knowledge about sustainable development	
11	Knowledge of the effects of engineering applications on health, environment, economy, sustainability, and safety on global and societal dimensions within the scope of the UN Sustainable Development Goals; awareness of national and international legal regulations and standards, as well as the legal consequences of engineering solutions.	
12	Knowledge about modern problems in local and universal scale	

INSTRUCTORS				
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