

## DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGIES COURSE SYLLABUS

Course Details										
Code				Academic Year			Semester			
EBT312				3			6			
Title				Т	Α	L	ECTS	ECTS		
Sustainable Energy						0	6	6		
Language	German	German								
Level	Undergraduate	Х	Graduate	Postgraduate						
Department / Program	Energy Science and	Energy Science and Technology								
Forms of Teaching and Learning	Face-to-face	Face-to-face								
Course Type	Compulsory		E	Elective			х			
Objectives	This course aims to them with knowled energy efficiency, en systems. Furthermo energy policies and	This course aims to introduce students to the concept of sustainable energy, and to equip them with knowledge and skills regarding the efficient use of renewable energy resources, energy efficiency, energy storage technologies, and the environmental impacts of energy systems. Furthermore, the course aims to evaluate energy systems within the framework of energy policies and sustainable development goals.								
Content	The course covers s conservation, energ environmental impa and economic analy	The course covers sustainable energy, renewable energy sources, energy efficiency and conservation, energy storage technologies, smart grids and energy management, environmental impacts of energy systems, energy policies and sustainable development, and economic analysis of energy systems.								
Prerequisites	-	-								
Coordinator	Asst. Prof. Dr. Melte	Asst. Prof. Dr. Meltem Karaismailoğlu Elibol								
Lecturer(s)	Asst. Prof. Dr. Melte	Asst. Prof. Dr. Meltem Karaismailoğlu Elibol								
Assistant(s)										
Work Placement	None	None								
Recommended or Required Reading										
Books / Lecture Notes	Harald Bolt, Isolde Arzbe Energiewende. Sven Geitmann (2010). E Matthias Günther (2014) Potenziale, Systeme	larald Bolt, Isolde Arzberger, Christina Berger (2017). Werkstoffe und Materialien für die nergiewende. iven Geitmann (2010). Erneuerbare Energien mit neuer Energie in die Zukunft. Aatthias Günther (2014). Energieeffizienz durch Erneuerbare Energien: Möglichkeiten, Potenziale, Systeme								
Other Sources	Technische Universität D Technische Universität B	chnische Universität Dortmund – Bachelor of Sustainable Energy Systems chnische Universität Berlin – Conversion Technologies of Renewable Energies								
Additional Course Material										
Documents	-									
Assignments	1									
Exams 2										



## DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGIES COURSE SYLLABUS

Course Composition					
Mathematics und Basic Sciences		%			
Engineering		%			
Engineering Design		%			
Social Sciences		%			
<b>Educational Sciences</b>		%			
Natural Sciences		%			
Health Sciences		%			
Expert Knowledge		%			
Assessment					
Activity		Percentage (%)			
Midterm Exam		40			
Quiz		0			
Assignments		20			
Attendance		0			
Recitations		0			
Projects		0			
Final Exam		40			
		100			
ECTS Points and Work Load					
Activity	Count	Duration	Work Load (Hours)		
Lectures	14	2	28		
Self-Study	14	2	28		
Assignments	2 25		50		
Presentation / Seminar Preparation					
Midterm Exam	1 3		3		
Recitations	14	56			
Laboratory					
Projects					
Final Exam	1	2			
		Total Work Load	168		

ECTS Points (Total Work Load / Hours)

6

## Learning Outcomes 1 Students will acquire knowledge of the concept and significance of sustainable energy. 2 Students will gain knowledge about the applications of energy efficiency and conservation methods.



## DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGIES COURSE SYLLABUS

				COORDE	JILLADO				
3	Students will develop the ability to analyze energy storage technologies.								
4	Students will develop the ability to assess the environmental impacts of energy systems.								
5.	Students will develop the ability to interpret energy policies and sustainable development goals and conduct economic analysis of energy systems.								
Weekly Conter	nt								
1	Introducti	Introduction to Sustainable Energy and Basic Concepts							
2	Renewable Energy Resources: Solar, Wind, Biomass, Hydroelectric, and Geothermal								
3	Energy Ef	Energy Efficiency and Conservation Methods							
4	Energy Storage Technologies: Batteries, Hydrogen, and Thermal Storage								
5	Economic Analysis and Cost Evaluation of Energy Systems								
6	Environmental Impacts of Energy Systems and Carbon Footprint								
7	Energy Policies and Sustainable Development Goals								
8	Midterm Exam								
9	Digitalization and Energy Systems								
10	Smart Grids and Energy Management Systems								
11	Future Energy Technologies and Innovative Materials								
12	Life Cycle Assessment of Energy Systems – I								
13	Life Cycle Assessment of Energy Systems – II								
14	Sustainable Energy Projects and Case Studies								
15	Student Presentations and Project Work								
16	Final Exam								
Contribution o	f Learning	Outcomes	to Program	n Objectiv	/es (1-5)				
	P1	P2	P3	P4	P5				
1	5	3	3	5	5				
2	4	3	4	3	4				
3	3	4	4	5	3				
4	5	4	4	4	5				
5	5	3	3	5	5				
Contribution Lev	evel 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High								
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=EN&curSunit=5706									
Compiled by:	Compiled by: Res. Assist. Dr. Kaan DEVECİ								
Date of Compila	tion:	02.05.202	02.05.2025						