DEPARTMENT OF ENERGY SCİENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	**Academic Year**			**Semester**
EBT308	3			6
Title	**T**	**A**	**L**	**ECTS**
Applied Research Laboratory in Energy Science	1	0	5	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Energy Science and Technology					
Forms of Teaching and Learning	Face to Face					
Course Type	**Compulsory**	**X**	**Elective**			
Objectives	The aim of this course is to familiarize students with laboratory practices through undergraduate-level experiments and to conduct applied courses in the field of energy.					
Content	The content of this course includes synthesis and characterization studies of materials used in the energy field, as well as performance analyses. It also covers experimental design, modeling, and economic analysis applications.					
Prerequisites	None					
Coordinator	Dr. Meltem Karaismailoğlu Elibol					
Lecturer(s)	Dr. Meltem Karaismailoğlu Elibol					
Assistant(s)	Res.Asst. Anıl Can Duman Res.Asst. Berat Berkan Ünal Res.Asst. Kevser Celep Res.Asst. Yusuf Karakaş					
Work Placement	No					

Recommended or Required Reading	
Books / Lecture Notes	-
Other Sources	Experiment Sheets

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences	30	%
Engineering	40	%
Engineering Design	10	%

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Social Sciences		%
Educational Sciences		%
Natural Sciences	20	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam		
Quiz		
Assignments		
Laboratory	1	40%
Recitations		
Projects		
Final Exam	1	60%
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	1	14
Self-Study	10	7	70
Assignments			
Presentation / Seminar Preparation			
Midterm Exam			
Recitations			
Laboratory	14	6	84
Projects			
Final Exam	1	1	1
		Total Work Load	**169**
		ECTS Points (Total Work Load / Hours)	**6**

Learning Outcomes

1	Students will gain the ability to work independently in the laboratory.
2	Students will gain the ability to recognize experimental systems and set them up when necessary.
3	Students will gain the ability to read and review technical writing.
4	Students will gain the ability to solve laboratory problems and system errors.

Weekly Content

1	Introduction / Theoretical Course

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2	Concepts of Experimental Design (Theoretical Knowledge)
3	Drawing of the I-V curve of the PV module and MPP calculation
4	Modeling and economic analysis of a solar tower power plant
5	Modeling and economic analysis of a solar tower power plant
6	Study of the impact of acid leaching and calcination on the halloysite mineral
7	Theoretical Course
8	Midterm Exam
9	Synthesis of Perovskite Materials
10	Synthesis of Perovskite Materials
11	Theoretical Course
12	Design, Synthesis, and Characterization of Zinc Phthalocyanine for Improved Photocatalytic Applications - Part I
13	Design, Synthesis, and Characterization of Zinc Phthalocyanine for Improved Photocatalytic Applications - Part II
14	Design, Synthesis, and Characterization of Zinc Phthalocyanine for Improved Photocatalytic Applications - Part II
15	Introduction to Experimental Design
16	Final Exam

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**
1	5	5	5	5	4	5	5	5	3
2	3	5	5	5	4	5	5	5	3
3	5	5	5	5	3	5	5	5	5
4	5	5	5	5	4	5	5	5	3

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

P1 Working with modern scientific sources.
P2 Having modern scientific knowledge and scientific analysis abilities and being able to apply them to scientific problems.
P3 Having theoretical and practical skills in the area of Energy Science and Technology.
P4 Having foreign language skills to follow the worldwide advancements in the field of Energy Science and Technology and to be able to discuss them with foreign colleagues.
P5 Having computational skills for research data analysis purposes.
P6 Having appropriate skills for academic and industrial jobs, being ready to take responsibility in working life.
P7 Having knowledge about work occupational work and safety.

Compiled by:	
Date of Compilation:	

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