DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGIES
COURSE SYLLABUS

Course Details

Code	Academic Year			Semester
EBT307	3			5
Title	**T**	**A**	**L**	**ECTS**
Introduction to Raw Materials and Energy	2	1	1	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**		**Elective**	**X**		
Objectives	Teaching the raw materials and resources that provide heat, electricity and chemical energy production, transferring the process of extracting raw materials and resources as minerals, processing them and turning them into energy sources. Teaching the students all the stages of transformation of a raw material from its inception to its recycling and transformation into waste, by showing all the operational stages of energy systems using raw materials and resources.					
Content	Description of raw material, classification, mineral raw materials, raw materials for environmental protection, raw materials for energy field, zeolite. Determination of above-ground and underground energy resources, Extraction of energy resources and mining operations, Raw material usage methods, Nuclear power plants fuels. The Concept of Characterization of Energy Raw Materials, Basic Principles and Methods, Laboratory Characterization and Tests, Scientific Thought Method, Research Types and Data Collection Methods.					
Prerequisites	None					
Coordinator	Asst. Prof. Dr. Gülsüm Gündoğdu					
Lecturer(s)	Asst. Prof. Dr. Gülsüm Gündoğdu Asst. Prof. Dr. Elif Yunt Asst. Prof. Dr. Aslı İşler Kaya Asst. Prof. Dr. Osman Sinan Süslü					
Assistant(s)						
Work Placement	None					

Recommended or Required Reading

Books / Lecture Notes	LASCHKA, D.; STRIEBEL, T.; DAUB, J.: Platin im Regenabfluß einer Straße. - Umweltwissenschaften und Schadstoff-Forschung, 8(1996)3. RÖSLER, H. J.: Lehrbuch der Mineralogie. - VEB Deutscher Verlag für Grundstoffindustrie, Leipzig 197 HEINTZ, A.; REINHARDT, G.: Chemie und Umwelt. - Vieweg & Sohn, Braunschweig/ Wiesbaden Pohl, W. (2005). Mineralische und Energie-Rohstoffe: eine Einführung zur Entstehung und nachhaltigen Nutzung von Lagerstätten. Schweizerbart.

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	Fundamentals of Materials for Energy and Environmental Sustainability Edited by David Ginley and David Cahen, Cambridge University Press.
Other Sources	GAJEWSKI, W.: Werkstoffe für Katalysatoren im Umweltschutz. - cfi/Ber. DKG, Wiesbaden 68(1991)3. Pohl, W. (2005). Mineralische und Energie-Rohstoffe: eine Einführung zur Entstehung und nachhaltigen Nutzung von Lagerstätten. Schweizerbart

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%
Engineering	20	%
Engineering Design	20	%
Social Sciences		%
Educational Sciences		%
Natural Sciences	20	%
Health Sciences		%
Expert Knowledge	40	%

Assessment

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

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	14	7	98
Assignments	13	1	13
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	1	14

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Laboratory	14	1	14
Projects			
Final Exam	1	2	2
		Total Work Load	**171**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Students acquire detailed knowledge about raw material classification and extraction.
2	They learn about the global and Turkish positions and potentials of raw materials.
3	They gain detailed knowledge about the processing and mining of raw materials.
4	They obtain detailed information about the operation and advancement of energy plants.

Weekly Content	
1	Definition of raw material and classification of raw materials
2	Classification of raw materials 1
3	Classification of raw materials 2
4	Classification of raw materials 3
5	Classification of raw materials 4
6	Identification of surface and underground energy resources
7	Extraction of energy resources and mining
8	Midterm Exam
9	Methods of raw material utilization
10	Systems producing energy from raw materials
11	Thermal, Geothermal, and Hydroelectric Power Plants
12	Nuclear Power Plants and Uranium ore mining
13	Recycling and use of waste in thermal power plants
14	Biogas and biofuels Biogas and biofuels
15	Biogas and biofuels Biogas and biofuels

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

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

Contribution Level	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

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