

DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	Academic Year			Semester
EBT203	2			3
Title	T	A	L	ECTS
Electrochemistry	3	1	0	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	This course aims to introduce the basic concepts of electrochemistry.			
Content	This course covers electrochemical terms, electrical conductivity, electric charge, current strength ionic conductivity, equivalent conductivity, limit equivalent conductivity, electrolytic equilibria, acids, bases, degree of dissociation, hydrolysis, electrochemical cells, electrode potentials, electrode types, electrolysis, overvoltage, decomposition voltage, corrosion and cathodic protection.			
Prerequisites	None			
Coordinator	Assist. Prof. Dr. Meltem Karaismailoğlu Elibol			
Lecturer(s)	Assist. Prof. Dr. Meltem Karaismailoğlu Elibol			
Assistant(s)	Res. Assist. Berat Berkan Ünal			
Work Placement	None			
Recommended or Required Reading				
Books / Lecture Notes	Lehrbuch der Elektrochemie: Grundlagen, Methoden, Materialien, Anwendungen. Wittstock, G. (2023). John Wiley & Sons. Elektrochemie. Hamann, C. H., & Vielstich, W. (2005). Wiley-Vch.			
Other Sources				
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	1	30
Quiz	-	-
Assignments	1	20
Attendance	-	-
Recitations	-	-
Projects	-	-
Final Exam	1	50
Total		100

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	14	3	42
Assignments			
Presentation / Seminar Preparation	1	20	20
Midterm Exam	1	3	3
Recitations	14	3	42
Laboratory			
Projects	1	20	20
Final Exam	1	3	3
Total Work Load			172
ECTS Points (Total Work Load / Hour)			6

Learning Outcomes

1	Basic electrochemical terms will be taught.
2	Electrical conductivity, electric charge, current intensity, ionic conductivity, equivalent conductivity and limit equivalent conductivity will be taught.
3	Electrolytic balances, acids, bases and degree of dissociation will be taught.
4	Hydrolysis, electrochemical cells, electrode potentials, electrode types and electrolysis will be taught.
5	Overvoltage, dissociation voltage, corrosion and cathodic protection will be taught.

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Weekly Content							
1	Electrochemical Terms and Concepts						
2	Ionic Conductivity						
3	Electrolyte Balances						
4	Electrolyte Balances						
5	Electrochemical Cells						
6	Electrochemical Cells						
7	Electrochemical Cells						
8	Electrolysis						
9	Electrolysis						
10	Corrosion and Corrosion Protection Methods						
11	Fuel Cells						
12	Electrochemical Treatment Basis						
13	Electrochemical Treatment Basis						
14	Student Presentations						
15							
Contribution of Learning Outcomes to Program Objectives (1-5)							
	P1	P2	P3	P4	P5	P6	P7
1	5	5	5	4	5	4	5
2	5	5	5	4	5	4	5
3	5	5	5	4	5	4	5
4	5	5	5	4	5	4	5
5	5	5	5	4	5	4	5
Contribution Level		1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High					
<p>P1 Working with modern scientific sources.</p> <p>P2 Having modern scientific knowledge and scientific analysis abilities and being able to apply them to scientific problems.</p> <p>P3 Having theoretical and practical skills in the area of Energy Science and Technology.</p> <p>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.</p> <p>P5 Having computational skills for research data analysis purposes.</p> <p>P6 Having appropriate skills for academic and industrial jobs, being ready to take responsibility in working life.</p> <p>P7 Having knowledge about work occupational work and safety.</p>							
Compiled by:							
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