

DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGIES
COURSE SYLLABUS

Course Details				
Code	Academic Year			Semester
MWT307	4			7
Title	T	A	L	ECTS
Polymeric Materials	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	Providing an overview of the design principles of polymers, polymer characterization strategies, material properties, and applications of the various classes of polymers discovered over the years or currently under development			
Content	<ul style="list-style-type: none"> - Descriptions of the polymerization processes - Polymer solutions, polymer chain conformations, - The crystalline and amorphous states of polymers; the glass transition - Thermal, mechanical, electrical and optical properties of polymers and characterization techniques. 			
Prerequisites	None			
Coordinator	Associate Prof.Dr. ÇAĞLA SÖZ			
Lecturer(s)	Associate Prof.Dr. ÇAĞLA SÖZ			
Assistant(s)	None			
Work Placement	No			
Recommended or Required Reading				
Books / Lecture Notes	Lecture Notes			
Other Sources	Polymer-Werkstoffe, G. W. Ehrenstein, Hanser Verlag (2011)			
Additional Course Material				
Documents	-			
Assignments	-			
Exams	-			
Course Composition				
Mathematics und Basic Sciences	-			%
Engineering	50			%
Engineering Design	-			%

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Social Sciences	-	%
Educational Sciences	-	%
Natural Sciences	30	%
Health Sciences	-	%
Expert Knowledge	20	%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	20
Quiz		
Assignments	2	20
Attendance		
Recitations	2	20
Projects		
Final Exam	1	40
Total		100

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	14	6	84
Assignments	2	10	20
Presentation / Seminar Preparation	-	-	-
Midterm Exam	1	2	2
Recitations	14	1	14
Laboratory	2	10	20
Projects	-	-	-
Final Exam	1	2	2
Total Work Load			170
ECTS Points (Total Work Load / Hours)			6

Learning Outcomes

1	Students will have knowledge about the relationship between the structure, properties and synthesis/processing of polymer materials.
2	They learn the diversity of polymers and their usability in different applications.
3	They will have knowledge about polymerization processes.
4	They know the main methods used to characterize the properties of polymers.

Weekly Content

1	Introduction to Polymer Science
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2	Polymer Morphology and Physical Properties - I
3	Polymer Morphology and Physical Properties - II
4	Polymer Molecular Weight Characterization
5	Synthesis of Polymers I
6	Synthesis of Polymers II
7	Synthesis of Polymers III
8	Midterm exam
9	Mechanical properties of polymers - I
10	Mechanical properties of polymers - II
11	Thermal and spectroscopic properties - I
12	Thermal and spectroscopic properties - II
13	Processing and production of polymers - I
14	Processing and production of polymers - II
15	Processing and production of polymers - III

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

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

Compiled by: Res. Assist. Elvan Burcu KOŞMA

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