

**ABDULLAH GUL UNIVERSITY**  
**GRADUATE SCHOOL OF ENGINEERING & SCIENCE**  
**BIOENGINEERING DEPARTMENT**  
**COURSE DESCRIPTION AND SYLLABUS**  
**DERS TANIM VE UYGULAMA BİLGİLERİ**

Course Name	CODE	SEMESTER	T+L Hour	CREDIT	ECST
Polymer Technology	BENG528	FALL-SPRING	3 + 0	3	7,5

<b>Prerequisite Courses</b>	-
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<b>Course Type</b>	Elective
<b>Course Language</b>	English
<b>Course Coordinator</b>	Prof. Sevil Dinçer İšoğlu
<b>Lecturers</b>	Prof. Sevil Dinçer İšoğlu
<b>Course Assistants</b>	-
<b>Course Objectives</b>	Giving information about polymer science and technology, polymerization types, polymer classification and explaining polymer characterization methods
<b>Learning Outcomes</b>	<p>Student,</p> <ul style="list-style-type: none"> <li>• Learns general polymer properties and classification.</li> <li>• Learns concepts of conformation, configuration, isomerism</li> <li>• Gains knowledge about morphology</li> <li>• Learns thermal properties, molecular weight concept, mechanical properties and measurement techniques.</li> <li>• Learns polymerization types.</li> <li>• Learns polymerization processes and fabrication techniques.</li> </ul>
<b>Course Content</b>	General polymer properties and classification; Concepts of conformation, configuration, isomerism; Morphology; thermal properties, molecular weight concept, mechanical properties and measurement techniques; Polymerization types; polymerization processes and fabrication techniques

WEEKLY SUBJECTS AND RELATED PRELIMINARY PAGES		
Week	Subjects	Preliminary
1	General polymer properties and classification	Section 1 from the Lesson Book and Related Articles from Literature
2	Polymers classification	Section 1 from the Lesson Book and Related Articles from Literature
3	Conformation, configuration, isomerism	Section 1 from the Lesson Book and Related Articles from Literature
4	Polymer morphology	Section 2 from the Lesson Book and Related Articles from Literature
5	Glass transition temperature and melting temperature and crystal, amorphous, semi crystalline polymers	Section 2 from the Lesson Book and Related Articles from Literature
6	Molecular weight concept and types	Section 3-4 from the Lesson Book and Related Articles from Literature
7	Molecular weight determination methods, colligative	Section 3-4 from the Lesson Book and Related

	properties	Articles from Literature
8	Size Exclusion Chromatography, Light Scattering	Section 4 from the Lesson Book and Related Articles from Literature
9	Mechanical Properties	Section 2 from the Lesson Book and Related Articles from Literature
10	Midterm	Course notes and book
11	Polymerization reactions: Radical polymerization	Section 5 from the Lesson Book and Related Articles from Literature
12	Addition Polymerization	Section 5 from the Lesson Book and Related Articles from Literature
13	Condensation Polymerization	Section 6 from the Lesson Book and Related Articles from Literature
14	Bulk, solution, suspension and emulsion processes	Course book and Related Article from Literature
15	Polymer fabrication	Course book and Related Article from Literature
16	Final exam	Course book and Related Article from Literature

#### RESOURCES

<b>Course Notes</b>	Course notes and slides
<b>Other Resources</b>	<b>Course Book:</b> "Introduction to Polymer Science and Chemistry", Chanda, Lee, 1st Edition, 2006, Taylor&Francis.

#### MATERIAL SHARING

<b>Documents</b>	Course notes and slides
<b>Homework</b>	Homework will be given every week on the subject.
<b>Exams</b>	1 midterm exam and 1 final exam

#### RATING SYSTEM

SEMESTER WORKS	NUMBER	CONTRIBUTION
Midterm	1	20
Homework	14	25
Quizzes	14	25
<b>TOTAL</b>		70
<b>Success Rate of Semester</b>		70
<b>Success Rate of Final</b>	1	30
<b>TOTAL</b>		100

#### Course Category

Basic Sciences and Mathematics	%50
Engineering Sciences	%50
Social Sciences	%0

#### THE RELATIONSHIP BETWEEN THE LEARNING OUTCOMES AND PROGRAM COMPETENCE

No	Program Outcomes	Contribution Level				
		1	2	3	4	5
1	Understanding of Life Sciences, Mathematics and Engineering at the post-graduate level, and being able to implement of this knowledge into bioengineering problems					x

2	Having the ability of developing a new scientific method or a technological product or process, and, designing experiments, implementing, collecting data and evaluating regarding these issues					<b>x</b>
3	Choosing technical equipment used in the applications related to bioengineering, having sufficient knowledge in adopting and using new technological equipment					<b>x</b>
4	Having the ability of reaching the information, using resources, contributing to the literature by transferring the process and results of scientific studies as written or verbally in the national and international environments					<b>x</b>
5	Having the ability of working as an individual or a team, in the teams composed of discipline or different disciplines, gaining awareness of leadership and taking responsibility				<b>x</b>	
6	Having advanced level of foreign language knowledge to manage efficient verbal, written and visual communication in the major field				<b>x</b>	
7	Having the understanding of ethics in science and the responsibility in profession with the awareness of lifelong learning, being beneficial to society and sensitiveness to global issues					<b>x</b>
8	Being aware of the social impacts of the solutions and applications of the challenges regarding Bioengineering					<b>x</b>

\*From 1 to 5, it increasingly goes.

<b>ECTS / WORK-LOAD TABLE</b>			
Activities	Activities	Duration (Hour)	Total (Work-Load)
Course Duration (Including exam week: 16x total course hour)	16	3	48
Out of Class Exercise Time (Pre-study, reinforcement)	16	7	112
Reading	16	3	48
Searching on Internet, library study	5	3	15
Material Designing, practice	16	3	48
Preparation of report	1	15	15
Preparation of presentation	1	15	15
Presentation			301
Homework			301/30
Midterms			7,5