



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Biopolymers and Biomaterials							
Course Code		BYK627		Couese Level		Third Cycle (Doctorate Degree)			
ECTS Credit	5	Workload	125 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		Biomaterials will be defined at a basic level and their importance in terms of application areas and uses will be emphasized.							
Course Content		Basic definitions, Metallic biomaterials, Ceramic biomaterials, Polymerization and its basic structure, Polymers used as biomaterials, Sterilization, Surface derivatization for Biocompatibility, Composite Biomaterials, Biodegradable polymeric biomaterials, Biological biomaterials: tissue-derived biomaterials, soft tissue work, Protection techniques for biomaterials.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Biopolymers: Alen Walton
2	biopolimers: R. M. Johnson, L. Y. Mwaikambo, N. Tucker
3	Biopolymers and Biomaterials, Aneesa Padinjakkara, Aparna Thankappan, Fernando Gomes Souza, Jr., Sabu Thomas

Week	Weekly Detailed Course Contents	
1	Theoretical	Definition and classification of polymers and biopolymers
2	Theoretical	Structure, physical, chemical and biological properties of polymers and biopolymers
3	Theoretical	Polymerization Mechanisms (Ionic Polymerization)
4	Theoretical	Polymerization Mechanisms (Radical Polymerization)
5	Theoretical	Biological and industrial production and synthesis of biopolymers
6	Theoretical	Definition and classification of bio and biocompatible materials
7	Theoretical	Biocompatibility, bioactivity, bioinertity
8	Intermediate Exam	Biopolymers and Biomaterials Midterm Exam
9	Theoretical	Polymeric biomaterials
10	Theoretical	Biodegradable polymers
11	Theoretical	Immunity
12	Theoretical	Applications of biopolymers and biomaterials (hydrogels)
13	Theoretical	Applications of biopolymers and biomaterials (Dental Applications)
14	Theoretical	Applications of biopolymers and biomaterials (Applications in cardiovascular systems)
15	Theoretical	Applications of biopolymers and biomaterials (Knee, Hip etc. Implants and prostheses)
16	Final Exam	Biopolymers and Biomaterials Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	2	84
Midterm Examination	1	18	2	20
Final Examination	1	20	1	21
Total Workload (Hours)				125
[Total Workload (Hours) / 25*] = ECTS				5

*25 hour workload is accepted as 1 ECTS



Learning Outcomes

1	Understanding the natural and synthetic production and synthesis mechanisms of polymers and biopolymers
2	To understand how to use polymer and biopolymers in biomaterial
3	Comprehension of the relationships between the structures of various biomaterials (implants, prostheses, etc.) and their uses
4	Understanding the physical, chemical and biological properties of polymers and biopolymers
5	Learning of polymer, biopolymer, biomaterial and related concepts

Programme Outcomes (*Biochemistry (Medical) Doctorate*)

1	To have basic theoretical knowledge about biochemistry and to help understanding biochemistry
2	To have the basic laboratory knowledge, apparatus and methods used in biochemistry
3	Analysis: To be able to analyze information critically
4	Synthesis: To be able to synthesize and adapt the knowledge in the field from different directions
5	Evaluation: To critically evaluate research in the field

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	5	5	5	5	5
P2	4	5	4	4	4
P3	5	4	5	5	4
P4	5	5	4	4	5
P5	4	4	5	5	5

