



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Nanobiotechnology							
Course Code		MBTK626		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	6	Workload	151 (<i>Hours</i>)	Theory	2	Practice	0	Laboratory	2
Objectives of the Course		Definition of Nanobiotechnology, nanomaterial types, modification of nanomaterials, biomedicine applications of nanomaterials, nanomaterials in imaging, diagnosis and treatment, molecular interaction with nanomaterials, biosensors, bionanorobotics							
Course Content		Introduction to nanobiotechnology, synthesis and types of nanomaterials, modification and application of nanomaterials, applications of bionanomaterials in biomedicine, nanomaterials in imaging, diagnosis and treatment, interaction between nanomaterials and biomolecules, biosensors, bionanorobotics							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Problem Solving					
Name of Lecturer(s)		Prof. Özge ÇEVİK							

Assessment Methods and Criteria

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

Recommended or Required Reading

1	Self-Assembled Peptide Nanostructures: Advances and Applications in Nanobiotechnology Nov 21, 2012, Jaime Castillo and Luigi Sasso.
2	Lecturer notes

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to nanobiotechnology
2	Theoretical	synthesis and types of nanomaterials
3	Theoretical	Modification and application of nanomaterials
4	Theoretical	Applications of bionanomaterials in biomedicine
5	Theoretical	applications of bionanomaterials in biomedicine
6	Theoretical	nanomaterials in imaging, diagnosis and treatment
7	Theoretical	nanomaterials in imaging, diagnosis and treatment
8	Intermediate Exam	Midterm exam
9	Theoretical	interaction between nanomaterials and biomolecules
10	Theoretical	interaction between nanomaterials and biomolecules
11	Theoretical	biosensors
12	Theoretical	biosensors
13	Theoretical	bionanorobotics
14	Theoretical	bionanorobotics
15	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	0	2	26
Assignment	5	0	10	50
Term Project	3	0	6	18
Individual Work	13	0	3	39
Quiz	4	0	3	12
Midterm Examination	1	0	3	3



Final Examination	1	0	3	3
Total Workload (Hours)				151
[Total Workload (Hours) / 25*] = ECTS				6
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	Introduction to nanobiotechnology
2	synthesis and types of nanomaterials
3	modification and application of nanomaterials
4	Introduction to nanobiotechnology
5	modification and application of nanomaterials

Programme Outcomes (Molecular Biotechnology(English) Interdisciplinary Doctorate)

1	Ability to identify, analyze and understand problems related to molecular biotechnology and finding valid conclusions with basic knowledge in biotechnology
2	Ability to appropriately use laboratories and their associated equipment as part of research and observation activities through various branches of sciences
3	Ability to understand and interpret biological processes at cell, tissue, organ, system and organism levels
4	Ability to decide and apply appropriate tools and techniques in biotechnological manipulation
5	Ability to comprehend fundamentals of genetics and molecular biology and carry out basic methods in relevant applications
6	Ability to apply the fundamentals of protein and DNA chemistry, and immunology to techniques in biotechnology
7	. Ability to understand and practice basics of applied biotechnology, with acquired knowledge on problem solving approaches
8	Ability to understand and interpret basics of molecular applications within medical, agriculture, veterinary and forensic sciences
9	Ability to perceive biological existence at the global and regional scales, together with comprehension of associated problems
10	Acquiring appropriate knowledge in the field of basic sciences to support perception, analysis and interpretation of biological facts, and ability to use and practice relevant methods for this goal
11	Ability to develop proficiency in laboratory management, including maintenance of an orderly work environment, inventory and ordering, and set up or maintenance of equipment
12	Ability to learn essential methods in microbiology and basic skills in a microbiology labortaory
13	Ability to demonstrate proficiency with standard techniques in liquid measurement, recombinant DNA technology, protein purification and identification, and cell culture

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

	L1	L2	L3
P1	5	5	5
P2	5	5	5
P3	3	3	3
P4	5	5	4
P5	5	5	4
P6	3	3	3
P7	4	4	5
P8	4	4	5
P9	4	4	5
P10	4	4	5
P11	3	3	3
P12	3	3	3
P13	5	5	5

