



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Mechanisms of Enzymatic Catalysis							
Course Code		KİM650		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	8	Workload	200 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The aim of this course is to understand , realize and investigate the reaction mechanisms of enyzme reactions.							
Course Content		To review the basic principles of enzymology and enzymes and to investigate the enzyme catalyst mechanisms.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Case Study, Individual Study					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	35
Assignment	3	45

Recommended or Required Reading

1	Enzymatic Reaction Mechanisms, C. Walsh 1979, W. H. Freeman and Company, ISBN 0-7167-0070-0
2	Enzim Kataliz Mekanizmaları basılmamış ders notları. Doç. Dr. A. Alev Karagözler.

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction: Enzymes and catalysis. Types of enzymatic catalysis.
2	Theoretical	Enzyme – catalysed group transfer reactions.
3	Theoretical	Endo- and ekzo – peptidases.
4	Theoretical	Phosphoryl transfer: Kinases
5	Theoretical	Phosphoryl transfer: Phosphatases.
6	Theoretical	Other group transfer reactions.
7	Theoretical	Enzymatic oxidation – reduction reactions.
8	Theoretical	Nicotinamide coenzymes. Flavine – dependent reactions.
9	Theoretical	Enzyme catalysed elimination, izomerization and rearrangement reactions.
10	Intermediate Exam	Midterm exam
11	Theoretical	Enzymatic reactions that make and break C-C bonds.
12	Theoretical	Decarboxylation – carboxylation reactions.
13	Theoretical	The chemical logic of metabolic pathways.
14	Theoretical	Examples to the enzymatic reactions.
15	Theoretical	Examples to the enzymatic reactions.
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Assignment	6	0	12	72
Midterm Examination	1	30	2	32
Final Examination	1	52	2	54
Total Workload (Hours)				200
[Total Workload (Hours) / 25*] = ECTS				8

*25 hour workload is accepted as 1 ECTS



Learning Outcomes

1	Learns enzymes and catalysis.
2	Knows the mechanisms of enzyme catalysed reactions.
3	Learns the chemical meaning of metabolic pathways.
4	Learns the enzyme catalysed elimination, izomerization and rearrangement reactions.
5	Learns the catalytic mechanism of special enzymes in metabolism

Programme Outcomes (Chemistry Doctorate)

1	Depending on the master degree competences, develops, insights and innovates current and advanced knowledge and/or research in proficiency level.
2	Gains high skill levels in using research methods in the field of his/her study.
3	Comprehends the interaction between disciplines related to his/her field. Reaches to original results using his/her expertise in order to analyze, synthesize and evaluate new and complicated ideas.
4	Enlarges the boundaries of his/her field of knowledge by publishing at least one research paper in national and/or international peer-reviewed journals.
5	Defends his/her original opinions related to his/her field before authority and communicates effectively illustrating his/her competence.
6	May communicate and debate written, orally and visually in European Language Portfolio level C1.
7	Follows the developments in computer software and information and communication technologies developed for his/her research area and uses these in order to solve research problems.
8	Collaborates for scientific research with national and international research teams.
9	Contributes to the course of creation and maintenance of knowledge based society and by introducing the scientific, social and cultural developments to the society he/she is living in.

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	4	4	4
P3	4	3	3	3	3
P4		3			
P5			3	3	3
P6		2			
P7		3	3	3	3
P8	3				

