



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Biochemistry of Exercise							
Course Code		BYK623		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	3	Workload	75 (Hours)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		To learn the basic nutrient sources of amino acids, fats and carbohydrates in the human body, metabolism and energy acquisition, changes in the functioning of metabolism during exercise and energy use, muscle biochemistry and changes in muscle biochemistry							
Course Content		The basic biochemical concepts to exercise and power paths. Carbohydrate degradation pathways for mild and severe exercise, degradation pathways of lipids and proteins, severe exercise-induced free radicals and their elimination, oxidative phosphorylation. Environmental and metabolic conditions that affect training and performance.							
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	Biochemistry of exercise and training: Ron J. Maughan, Michael Gleeson, Paul L. Greenhaff
2	Principles of Exercise Biochemistry: J. R. Poortmans

Week	Weekly Detailed Course Contents	
1	Theoretical	Basic building blocks of organism: Amino acids and general properties
2	Theoretical	Basic building blocks of organism: Proteins and basic structural properties, structure-function relationship in proteins (Hb-Mb)
3	Theoretical	Basic building blocks of the organism: Enzymes and working principles Nucleic acids and high energy molecules
4	Theoretical	Carbohydrates and lipids cell membrane structure and transport
5	Theoretical	Carbohydrate metabolism: glycolysis, gluconeogenesis
6	Theoretical	Glycogenolysis, glycogenesis, pentose phosphate pathway
7	Theoretical	TCA cycle, oxidative phosphorylation, mitochondrial shuttle systems
8	Intermediate Exam	Exercise biochemistry midterm exam
9	Theoretical	Lipid metabolism: Beta oxidation
10	Theoretical	Protein metabolism and urea cycle
11	Theoretical	Muscle contraction, carbohydrate metabolism in exercise
12	Theoretical	Lipid metabolism in exercise
13	Theoretical	Protein metabolism in exercise
14	Theoretical	Integration of metabolism in exercise
15	Theoretical	Biochemical evaluation of exercise
16	Final Exam	Exercise biochemistry final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	1.5	2	49



Midterm Examination	1	11	2	13
Final Examination	1	11	2	13
Total Workload (Hours)				75
[Total Workload (Hours) / 25*] = ECTS				3

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	To be able to define the terms of human biochemistry
2	To be able to define basic biochemical functioning of human body
3	To be able to define the functions of metabolic pathways
4	To be able to define the concept of exercise biochemistry
5	To be able to relate the effects of exercise and changes in the body

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	5	4
P3	5	5	5	4	5
P4	4	4	5	5	4
P5	5	5	4	5	5

