

DEPARTMENT FOR MEDICAL CHEMISTRY AND BIOCHEMISTRY(Performance plan – hours: academic year **2024/.202.**)

Head of department: Prof. Ivanka Mikulić, PhD

UNIVERSITY OF MOSTAR SCHOOL OF MEDICINE		INTEGRATED UNIVERSITY STUDY	
SOURCE:	Medical Biochemistry		
Year: II	Semester:		III
Course Level:	Basic Level		ECTS Points: 9
Course Status:	Class form: total 110 hours (L+S+P:42+34+34)		

Signature Requirements: Regular attendance of lectures, seminars, exercises

Examination method: colloquia, written exam, oral exam

Consultation terms: by agreement

Scheduled lessons: **01.10.2024. – 31.10.2024.**

Teachers: Associate professor Ivanka Mikulić

Professor Darija Pašalić

Assistant professor Vinka Mikulić,

Assistant professor Ana Ćuk,

Assistant, Ante Pušić

Assistant, Ivona Cvetković

MSE – Classroom for Medical Studies in English

Date/Day/ Time	Theme	L S E	Group	Teacher/ associate	Classroom
October 1th 2024. (Tuesday) 13,30-15,00	The Conformation and Dynamics of Protein Structure	L1	A	Ivanka Mikulić	MSE
15,15-16,45	Proteins with Special Functions: Hemoglobin, Myoglobin	L2	A	IM	MSE

October 2th 2024. (Wednesday) 13,30-15,00 15,15-16,00 16,00 – 17,30	Proteins with Special Functions: Collagen, Elastin	L3	A	IM	MSE
	Vitamins: role and function	L4	A	VM	MSE
	Seminars	S	A	VM	MSE
October 3th 2024. (Thursday) 13,30-15,00 15,15-16,45 16,45 – 18,15	Coenzyme; Bioenergetics : The role of ATP	L5	A	IM	MSE
	Enzyme catalysis	L6	A	IM	MSE
	Seminars	S	A	IM	MSE
October 4th 2024. (Friday) 8,30 – 12,45 13,30-15,00 15,15-16,00 16,00 – 17,30	Biochemistry Exercises	E	A B	Ana Ćuk Kristina Ljubić	CP
	Plasma Proteins and Immunoglobulins	L7	A	Vinka Mikulić	MSE
	Proteins with Special Functions: Actin, Myosin	L8	A	IM	MSE
	Seminars	S	A	IM	MSE
October 7th 2024. (Monday) 8,30 – 12,45 13,30-15,00 15,15-16,00 16,00 – 17,30	Biochemistry Exercises	E	A	Vinka Mik.	CP
	Nucleic Acid Structure & Function	L9	A	Ana Ćuk	MSE
	Metabolism of Nucleotides;	L10	A	Ana Ć	MSE
	Seminars	S	A	AĆ	MSE
October 8th 2024. (Tuesday) 8,30 – 12,45 13,30-15,00 15,15-16,00 16,00 – 17,30	Biochemistry Exercises	E	A B	Ana Ćuk VM	CP
	Glycolysis	L11	A	IM	MSE
	The Pentose Phosphate Pathway, Fructose, Galactose	L12	A	KLJ	MSE
	Seminars	S	A	KLJ	MSE
October 9th 2024. (Wednesday) 8,30 – 12,45 13,30-15,00 15,15-16,00	Biochemistry Exercises	E	A B	KLJ Ante Pušić	CP
	Citric acid cycle	L13	A	Darija Pašalić	MSE
	The Respiratory Chain & Oxidative phosphorylation	L14	A	DP	MSE

16,00 – 17,30	Seminars	S	A	DP	MSE
October 10th 2024. (Thursday) 8,30 – 12,45	Biochemistry Exercises	E	A B	KLJ Ivona Cv.	CP
13,30-15,00	Gluconeogenesis, Cori cycle	L15	A	DP	MSE
15,15-16,00	Lipids of Physiologic Significance; Cholesterol Sythesis, Transport & Excretion	L16	A	DP	MSE
16,00 – 17,30	Seminars	S	A	DP	MSE
October 11th 2024. (Friday) 8,30 – 12,45	Biochemistry Exercises	E	A B	KLJ AP	CP
13,30-15,00	Lipid Transport & Storage	L17	A	DP	MSE
15,15-16,00	The Diversity of the Endocrine System	L18	A	DP	MSE
16,00 – 17,30	Seminars	S	A	DP	MSE
October 14th 2024. (Monday) 8,30 – 12,45	Biochemistry Exercises	E	B	Ivona Cv.	CP
13,30-15,00	Replication, transcription, translation	L19 L20	A	AC	MSE MSE
15,15-16,00	Regulation of Gene Expression, Molecular diagnostics	S	A	AC	MSE
16,00 – 17,30	Seminars	S	A	AC	MSE
October 15th 2024. (Tuesday) 13,30-14,15	Amino acid metabolism,: urea cycle	L21	A	KLJ	MSE
14,30-16,00	Metabolism of xenobiotics, pharmacogenetics	L22	A	AC	MSE
16,00 – 17,30	Seminars	S	A	AC	MSE
October 16th 2024. (Wednesday) 13,30-15,00	Reactive oxygen compounds and antioxidants	L23	A	IM	MSE
15,15-16,00	Glycogen ; Synthesis and degradation	L24	A	IM	MSE
16,00 – 17,30	Seminars	S	A	IM	MSE

October 17th 2024. (Thursday)					
13,30-15,00	Oxidation of Fatty Acids: Ketogenesis	L25	A	VM	MSE
15,15-16,45	Overview of Metabolism & the Provision of Metabolic Fuels	L26	A	IM	MSE
16,45-18,15	Seminars	S	A	IM	MSE
October 18 th 2024. Friday					
08,30-12,15	Seminars	S	A	IM	MSE
October 21 th 2024. (Monday)					
08,30-12,15	A Practical part of the output Colloquium Seminars	S	A	Vinka Mikulić	MSE
October 30 th 2024. (Wednesday)					
09,00 h	Written and oral exam				

CP – Chemistry practicum
MBP- Microbiology practicum

Biochemistry exercises

PREPARATION OF ACETILSALICIC ACID (ASPIRIN); QUALITATIVE DETECTION OF PROTEIN; PROTEIN ELECTROPHORESIS IN SERUM; IONIZATIONAL PROPERTIES OF POLYPROTIC PARTICLES; AMINOACIDS; ENZYME KINETICS; INQUIRED QUANTITATIVE IMUNCHEMICAL METHODS; DETECTING MONOSACCHARIDES AND POLYSACCHARIDES; LIPIDS DETERMINATION; ACID-BASE AND MINERAL STATUS IN ORGANISM; QUALITATIVE URINE ANALYSIS; DNA ANALYSIS

**The exact timing of group exercise exercises will be announced immediately before the exercise; the place of maintenance - chemical-biochemical practice and partly diagnostic laboratory SKB Mostar.*

The students will be informed about the time of the partial and final exam.

Literature (2024./2025.)

Required literature:

For the course Medical Biochemistry is necessary:

Medical chemistry and biochemistry exercises handbook for medical students, I. Mikulić, N. Jelić Knezović, V. Mikulić, K. Landeka, A.Ćuk. Medicinski fakultet, Mostar 2014.

1. Murray RK, Bender DA, Botham KM, Kennelly PJ, Rodwell VW and Weil A.; Harper's Illustrated Biochemistry , 31ST EDITION, 2018.
2. Streyer L. Biochemistry, 6th ed. WH Freeman and Company, New York, 2011.

Optional literature:

1. Streyer L. Biochemistry, 5th ed. WH Freeman and Company, New York, 2001.
2. Michael Lieberman, Allan D. Marks, Colleen Smith: Mark'S Basic Medical Biochemistry , 2005

I. TOPICS OD LECTURES

a) The main learning guide is a CD of complete lectures from biochemistry.

b) According to requied literature

The number of	Topics	Literature: Harper's Illustrated Biochemistry , 31ST EDITION, 2018.
L1	The Conformation and Dynamics of Protein Structure	Section I Chapter 3-5
L2	Proteins with Special Functions: Hemoglobin, Myoglobin	Section II Chapter 6
L3	Proteins with Special Functions: Collagen, Elastin	Section X Chapter 50
L4	Vitamins: role and function	Section IX Chapter 44
L5	Coenzyme; Bioenergetics : The role of ATP	Section III Chapter 11
L6	Enzyme catalysis	Section III Chapter 11,12
L7	Plasma Proteins and Immunoglobulins	Section X Chapter 52
L8	Proteins with Special Functions: Actin, Myosin	Section X Chapter 51
L9	Nucleic Acid Structure & Function	
L10	Metabolism of Nucleotides;	
L11	Glycolysis	Section IV Chapter 15,17
L12	The Pentose Phosphate Pathway, Fructose, Galactose	Section IV Chapter 20
L13	Citric acid cycle	Section IV Chapter 16
L14	The Respiratory Chain & Oxidative phosphorylation	Section III Chapter 12,13
L15	Gluconeogenesis, Cori cycle	Section IV Chapter 19
L16	Lipids of Physiologic Significance; Cholesterol Sythesis, Transport &	Section V Chapter 21,26

	Excretion	
L17	Lipid Transport & Storage	Section V Chapter 25
L18	The Diversity of the Endocrine System	Section VIII Chapter 41
L19	DNA Organization, Replication & Repair RNA Synthesis, Processing & Modification; Protein Synthesis & the Genetic Code	Section VII Chapter 35 Section VII Chapter 36,37
L20	Regulation of Gene Expression, Molecular Genetics,	Section VII Chapter 38
L21	Metabolism of Xenobiotics, Pharmacogenetics	Section IX Chapter 47
L22	Metabolism of Amino Acids; Urea Cycle	Section VI Chapter 27-30
L23	Free Radicals & Antioxidant Nutrients	Section IX Chapter 45 Section XI Chapter 57
L24	Glycogen : Synthesis and Degradation	Section IV Chapter 18
L25	Oxidation of Fatty Acids: Ketogenesis	Section V Chapter 22
L26	Overview of Metabolism & the Provision of Metabolic Fuels	Section IV Chapter 14

SEMINARS

Solving tasks and issues after certain thematic units; individual presentations of the seminar work of the respective subject, of each individual student.

EXERCISES

Medical chemistry and biochemistry exercises handbook for medical students, I. Mikulić, N. Jelić Knezović, V. Mikulić, K. Landeka, A. Čuk. Medicinski fakultet, Mostar 2014. - students need to study this material before starting the exercise. Exercises are held in chemico-biochemical practice and microbiological practice: partly in ZZLD SKB Mostar.

II. KNOWLEDGE TEST

Attending all forms of tuition is **REQUIRED**. Exceptional seminars are compensated by colloquy, and the absence from the exercise is compensated by examining the theoretical part of the exercise.

The students prepare the material in advance, which is checked during the seminars and exercises. Any minus received at a seminar, as well as absence of exercises, students are required to qualify for a knowledge check.

After completing all forms of instruction, completed and passed the exercises colloquium, the student receives a signature, which is a condition for accessing the exam from Medical Chemistry and Biochemistry.

The exam will be taken in both forms : written and oral.

Students who achieve a minimum of 55% points on written exams can go to the oral exam.

For passage (on the final exam or the regular exam period) the student must achieve 55% or more points on the written exam. The unique grade of the exam will determine the number of points on a written seminar, indicated by oral exam and activity during all forms of teaching.