

DEPARTMENT FOR MEDICAL CHEMISTRY AND BIOCHEMISTRY

(Performance plan – hours: academic year 2020/.2021.)

Head of department: Ass.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: 05.10.2020. – 06.11 2020.

Teachers: Prof. Karmela Barišić

Prof. Daria Pašalić

Ass.prof. Ivanka Mikulić, PhD

Vinka Mikulić, mag. chem.

Ana Ćuk, mag. Forensic and mol.biology

MSE – Classroom for Medical Studies in English

Date/Day/ Time	Theme	L S E	Group	Teacher/ associate	Classroom
October 5th. 2020. (Monday)					
13,30-15,00	The Conformation and Dynamics of Protein Structure	L1	A	Ivanka Mikulić	MSE
15,15-16,00	Proteins with Special Functions: Hemoglobin, Myoglobin	L2	A	IM	
October 6th. 2020. (Tuesday)					
12,00 -13, 30	Biochemistry exercises	E	A	Ana Ćuk	CP
14,00-15,30	Plasma Proteins and Immunoglobulins	L3	A	IM	MSE
15,45-16,30	Proteins with Special Functions: Collagen, Elastin	L4	A	IM	
16,45 - 17,30	Seminar processing of the previous material	S	A	IM	

October 7th. 2020.(Wednesday) 11,30 – 14,30	Biochemistry exercises	E	A	Ana Ćuk	CP
15,00-16,30	Proteins with Special Functions: Actin, Myosin	L5	A	IM	MSE
17,00-18,30	Coenzyme; Bioenergetics : The role of ATP	L6	A	IM	
October 8th. 2020.(Thursday) 9,00 – 12,00	Biochemistry exercises	E	A	Vinka Mikulić	CP
12,30-14,00	Vitamins: role and function	L7	A	IM	MSE
14,05-15,00	Enzyme catalysis	L8	A	IM	
15,15 – 16,00	Seminar processing of the previous material	S	A	IM	
October 9th. 2020. (Friday) 9,00 – 12,00	Biochemistry exercises	E	A	Vinka Mikulić	CP
13,00-14,30	Metabolism of Nucleotides; Nucleic Acid Structure & Function	L9	A	Ana Ćuk	MSE
14,30-15,15	Seminar processing of the previous material		A	AĆ	
October 12th 2020. (Monday) 9,00 – 12,00	Biochemistry exercises	E	A	Vinka Mikulić	CP
12,30-14,00	DNA Organization, Replication & Repair	L10	A	Karmela Barišić	MSE
14,15-15,00	RNA Synthesis, Processing & Modification; Protein Synthesis & the Genetic Code	L11	A	KB	MSE
15,15 – 16,45	Seminar processing of the previous material	S	A	KB	MSE
October 13th 2020. (Tuesday) 9,00 – 12,00	Biochemistry exercises	E	A	Ana Ćuk	CP
12,30-14,00	Regulation of Gene Expression Molecular Genetics,	L12	A	Karmela Barišić	MSE

	Recombinant DNA & Genomic Technology	L13	A	KB	MSE
14,15 – 15,00	Seminar processing of the previous material	S		KB	MSE
October 14th 2020. (Wednesday)					
9,00 – 12,00	Biochemistry exercises	E	A	Ana Ćuk	CP
12,30-14,00	Metabolism of Xenobiotics, Pharmacogenetics	L14	A	Karmela Barišić	MSE
14,15 – 15,45	Seminar processing of the previous material	S	A	KB	MSE
October 15th 2020. (Thursday)					
9,00 – 12,00	Biochemistry exercises	E	A	Ana Ćuk	CP
12,30-14,00	Metabolism of Amino Acids; Urea Cycle	L15	A	IM	MSE
14,15 – 15,45	Glycolysis	L16	A	IM	MSE
October 16th 2020. (Friday)					
11,30 – 14,30	Biochemistry exercises A Practical part of the output Colloquium	E	A	Ana Ćuk	CP
15,00-16,30	Glycogen ; Synthesis and degradation	L17	A	IM	MSE
17,00-17,45	The Pentose Phosphate Pathway, Fructose, Galactose	L18	A	Vinka Mikulić	MSE
17,45-19,15	Seminar processing of the previous material	S		VM	MSE
October 19th 2020. (Monday)					
09,00-10,30	Gluconeogenesis, Cori cycle	L19	A	Darija Pašalić	MSE

10,45 – 11,30	Citric acid cycle	L20	A	DP	MSE
11,45 – 13,15	Seminar processing of the previous material	S	A	DP	MSE
October 20th 2020. (Tuesday)					
09,00-10,30	The Respiratory Chain & Oxidative phosphorylation	L21	A	DP	MSE
10,45 – 11,30	Lipids of Physiologic Significance; Cholesterol Synthesis, Transport & Excretion	L22	A	DP	MSE
11,45 – 13,15	Seminar processing of the previous material	S	A	DP	MSE
October 21st 2020. (Wednesday)					
09,00-10,30	Lipid Transport & Storage	L23	A	DP	MSE
10,45 – 11,30	The Diversity of the Endocrine System	L24	A	DP	MSE
11,45 – 13,15	Seminar processing of the previous material	S	A	DP	MSE
October 22th 2020. (Thursday)					
09,00-10,30	Oxidation of Fatty Acids: Ketogenesis	L25	A	IM	MSE
10,45 – 11,30	Free Radicals & Antioxidant Nutrients	L26	A	IM	MSE
11,45 – 14,00	Seminar processing of the previous material	S	A	IM	MSE
October 23 th 2020. (Friday)					
9,00 – 9,45	Overview of Metabolism & the Provision of Metabolic Fuels	L27	A	IM	

10,00 – 13,00	Seminar processing of the previous material	S	A		MSE
October 26 th 2020. (Monday) 09,00 – 12,45	Seminar processing of the previous material	S	A	IM	MSE
October 27th 2020. (Tuesday) 09,00 – 12, 00	Seminar processing of the previous material	S	A	IM	MSE
	TEST PAUSE				
November 05th 2020. (Wednesday) 09,00	Written exam				MSE
November 06th 2020. (Friday)	<u>Oral exam</u>				

CP – Chemistry practicum
MBP- Microbiology practicum

Red colour marked– on line lectures and seminars

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 (2020./2021.)

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.Čuk. 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	Plasma Proteins and Immunoglobulins	Section X Chapter 52
L4	Proteins with Special Functions: Collagen, Elastin	Section X Chapter 50
L5	Proteins with Special Functions: Actin, Myosin	Section X Chapter 51
L6	Coenzyme; Bioenergetics : The role of ATP	Section III Chapter 11
L7	Vitamins: role and function	Section IX Chapter 44
L8	Enzyme catalysis	Section III Chapter 11,12
L9	Metabolism of Nucleotides; Nucleic Acid Structure & Function	Section VII Chapter 32,33,34
L10	DNA Organization, Replication & Repair	Section VII Chapter 35
L11	RNA Synthesis, Processing & Modification; Protein Synthesis & the Genetic Code	Section VII Chapter 36,37
L12	Regulation of Gene Expression	Section VII Chapter 38
L13	Molecular Genetics, Recombinant	Section VII

	DNA & Genomic Technology	Chapter 39
L14	Metabolism of Xenobiotics, Pharmacogenetics	Section IX Chapter 47
L15	Metabolism of Amino Acids; Urea Cycle	Section VI Chapter 27-30
L16	Glycolysis	Section IV Chapter 15,17
L17	Glycogen : Synthesis and Degradation	Section IV Chapter 18
L18	The Pentose Phosphate Pathway, Fructose, Galactose	Section IV Chapter 20
L19	Gluconeogenesis, Cori cycle	Section IV Chapter 19
L20	Citric acid cycle	Section IV Chapter 16
L21	The Respiratory Chain & Oxidative phosphorylation	Section III Chapter 12,13
L22	Lipids of Physiologic Significance; Cholesterol Sythesis, Transport & Excretion	Section V Chapter 21,26
L23	Lipid Transport & Storage	Section V Chapter 25
L24	The Diversity of the Endocrine System	Section VIII Chapter 41
L25	Oxidation of Fatty Acids: Ketogenesis	Section V Chapter 22
L26	Free Radicals & Antioxidant Nutrients	Section IX Chapter 45 Section XI Chapter 57
L27	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.Ćuk. 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, the student receives a signature, which is a condition for accessing the exam from Medical Chemistry and Biochemistry.

Students have the opportunity to get a maximum of 5 points in the exams and exercises, which are added only to the first written exam of 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.