

DEPARTMENT FOR MEDICAL CHEMISTRY AND BIOCHEMISTRY

(Performance plan – hours: academic year 2021/.2022.)

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: 04.10.2021. – 05.11 2021.

Teachers: Prof. Karmela Barišić

Prof. Daria Pašalić

Ass.prof. Ivanka Mikulić, PhD

Vinka Mikulić, mag. chem.

Kristina Ljubić, 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 4th. 2021. (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	MSE
October 5th. 2021. (Tuesday)					
13,30-15,00	Plasma Proteins and Immunoglobulins	L3	A	Vinka Mikulić	MSE
15,15-16,00	Proteins with Special Functions: Collagen, Elastin	L4	A	IM	MSE
16,00 – 17,30	Seminars	S	A	IM	MSE

October 6th. 2021.(Wednesday) 13,30-15,00 15,15-16,00 16,00 – 17,30	Proteins with Special Functions: Actin, Myosin	L5	A	IM	MSE
	Vitamins: role and function	L6	A	IM	MSE
	Seminars	S	A	IM	MSE
October 7th. 2021.(Thursday) 13,30-15,00 15,15-16,00 16,00 – 17,30	Coenzyme; Bioenergetics : The role of ATP	L7	A	IM	MSE
	Enzyme catalysis	L8	A	IM	MSE
	Seminars	S	A	IM	MSE
October 8th. 2021. (Friday) 13,30-15,00 15,15-16,00 16,00 – 17,30	The Pentose Phosphate Pathway, Fructose, Galactose	L9	A	Kristina Ljubić	MSE
	Metabolism of Nucleotides; Nucleic Acid Structure & Function	L10	A	Ana Ćuk	MSE
	Seminar processing of the previous material	S	A	AĆ	MSE
October 11th 2020. (Monday) 13,30-15,00 15,15-16,00 16,00 – 17,30	DNA Organization, Replication & Repair	L11	A	Karmela Barišić	MSE
	RNA Synthesis, Processing & Modification;	L12	A	KB	MSE
	Seminar processing of the previous material	S	A	KB	MSE
October 12th 2021. (Tuesday) 13,30-15,00 15,15-16,00 16,00 – 17,30	Protein Synthesis & the Genetic Code	L13	A	Karmela Barišić	MSE
	Regulation of Gene Expression	L14	A	KB	MSE
	Seminar processing of the previous material	S	A	KB	MSE
October 13th 2021. (Wednesday) 8,30 – 12,45 13,30-15,00 15,15-16,00 16,00 – 17,30	Biochemistry exercises Molecular Genetics, Recombinant DNA & Genomic Technology	E L15	A A	Kristina Ljubić Ana Ćuk??	CP MSE
	Metabolism of Xenobiotics, Pharmacogenetics	L16	A	Ana Ćuk?	MSE
	Seminar processing of the previous material	S	A	Ana Ćuk?	MSE

<p>October 14th 2021. (Thursday) 8,30 – 12,45 13,30-15,00 15,15-16,00</p> <p>16,00 – 17,30</p>	<p>Biochemistry exercises Glycolysis; Citric acid cycle</p> <p>Seminar processing of the previous material</p>	<p>E L17 L18 S</p>	<p>A A A A</p>	<p>Ana Ćuk IM IM Ana Ćuk</p>	<p>CP MSE MSE MSE</p>
<p>October 15th 2021. (Friday) 8,30 – 12,45 13,30-15,00 15,15-16,00</p> <p>16,00 – 17,30</p>	<p>Biochemistry exercises Free Radicals & Antioxidant Nutrients Urea Cycle, Metabolism of Amino Acids;</p> <p>Seminar processing of the previous material</p>	<p>E L19 L20 S</p>	<p>A A A A</p>	<p>Vinka Mikulić IM Kristina Ljubić KLj</p>	<p>CP MSE MSE MSE</p>
<p>October 18th 2021. (Monday) 8,30 – 12,45 13,30-15,00 15,15-16,00</p> <p>16,00 – 17,30</p>	<p>Biochemistry exercises The Respiratory Chain & Oxidative phosphorylation; Gluconeogenesis, Cori cycle</p> <p>Seminar processing of the previous material</p>	<p>E L21 L22 S</p>	<p>A A A A</p>	<p>VM Darija Pašalić DP DP</p>	<p>CP Online Online Online</p>
<p>October 19th 2021. (Tuesday) 8,30 – 12,45 13,30-15,00 15,15-16,00</p> <p>16,00 – 17,30</p>	<p>Biochemistry exercises Glycogen ; Synthesis and degradation Lipids of Physiologic Significance; Cholesterol Sythesis, Transport & Excretion</p> <p>Seminar processing of the previous material</p>	<p>E L23 L24 S</p>	<p>A A A A</p>	<p>AC DP DP DP</p>	<p>CP Online Online Online</p>
<p>October 20st 2021. (Wednesday) 8,30 – 12,45 13,30-15,00 15,15-16,00</p> <p>16,00 – 17,30</p>	<p>Biochemistry exercises Lipid Transport & Storage The Diversity oft he Endocrine System</p> <p>Seminar processing of the previous material</p>	<p>E L25 L26 S</p>	<p>A A A A</p>	<p>KLj DP DP DP</p>	<p>CP Online Online Online</p>

October 21th 2021. (Thursday) 13,00 h - 13,30-15,00 15,15-18,15	A Practical part of the output Colloquium		A	AC KL	MSE
	Oxidation of Fatty Acids: Ketogenesis	L27	A	VM	MSE
	Seminar processing of the previous material	S	A	VM	MSE
October 22 th 2021. (Friday) 14,00- 14,45 15,00 -19,15	Overview of Metabolism & the Provision of Metabolic Fuels	L28	A	IM	MSE
	Seminar processing of the previous material	S	A	IM	MSE
TEST PAUSE					
November 04th 2021. (Thursday) 09,00	Written exam				
November 05th 2021. (Friday)	Oral exam				

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 (2021./2022.)

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 required 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	Vitamins: role and function	Section IX Chapter 44
L7	Coenzyme; Bioenergetics : The role of ATP	Section III Chapter 11
L8	Enzyme catalysis	Section III Chapter 11,12
L9	The Pentose Phosphate Pathway, Fructose, Galactose	Section IV Chapter 20
L10	Metabolism of Nucleotides; Nucleic	

	<i>Acid Structure & Function</i>	
L11	DNA Organization, Replication & Repair	Section VII Chapter 35
L12	RNA Synthesis, Processing & Modification; Protein Synthesis & the Genetic Code	Section VII Chapter 36,37
L13	Regulation of Gene Expression	Section VII Chapter 38
L14	Molecular Genetics, Recombinant DNA & Genomic Technology	Section VII Chapter 39
L15	Metabolism of Xenobiotics, Pharmacogenetics	Section IX Chapter 47
L16	Metabolism of Amino Acids; Urea Cycle	Section VI Chapter 27-30
L17	Glycolysis	Section IV Chapter 15,17
L18	Glycogen : Synthesis and Degradation	Section IV Chapter 18
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 Synthesis, 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.