

Program of Study : General Medicine
Course : Biochemistry 1
Abbreviation : LCH/VAB20
Schedule : 30 hours of lectures
45 hours of tutorials
Course Distribution : 1st year, 2nd semester
Number of Credits : 0
Course Form : Lectures, tutorials

Lectures:

Teachers: Prof. RNDr. Jitka Ulrichová, CSc.
Doc. Ing. Alena Rajnochová Svobodová, Ph.D.
Doc. Mgr. Jitka Vostálová, Ph.D.

Study: Continuous

	Date	Subject	No. of less.	Teacher
1	13.02.2023	Introduction to biochemistry.	2	Ulrichová
2	20.02.2023	Proteins, structure, function. Posttranslational modifications. Supramolecular assemblies.	2	Rajnochová
3	27.02.2023	Heteroproteins. Structure and function of hemoglobin. Immunoglobulins.	2	Rajnochová
4	06.03.2023	Enzymes – properties, structure, classification.	2	Rajnochová
5	13.03.2023	Cofactors. Mechanism of enzyme action.	2	Rajnochová
6	20.03.2023	Enzyme regulation. Enzymes in diagnosis.		Rajnochová
7	27.03.2023	<i>Dissection week</i>	2	
8	03.04.2023	Introduction to metabolic pathways. Signal transduction.	2	Vostálová
9	10.04.2023	<i>State holiday</i>	2	
10	17.04.2023	Biochemical function of subcellular organelles and membrane systems. Bioenergetics. Biological oxidation.	2	Ulrichová
11	24.04.2023	Respiratory chain. Oxidative phosphorylation.	2	Vostálová
12	01.05.2023	<i>State holiday</i>	2	

13	08.05.2023	<i>State holiday</i>	2	
14	15.05.2023	Citric acid cycle. Acetyl CoA-central role in metabolism.	2	Vostálová
15	22.05.2023	Biologically important radicals. NO – biosynthesis and function. Nucleotides - structure, function, metabolism.	2	Ulrichová

Tutorials:

Leading Teacher: Mgr. Pavel Kosina, Ph.D.

Study: Continuous

	Week from-to	Subject	No. of less.
1	13.02. – 17.02.2023	Rules of study and directions for laboratory work. Laboratory ware. Laboratory techniques. Training of pipetting, weighting, measurement of volume.	3
2	20.02. – 24.02.2023	Amino acids and proteins I. Chemical reactions of amino acids and proteins. Separation of acidic, neutral and basic amino acids by electrophoresis.	3
3	27.02. – 03.03.2023	Amino acids and proteins II. Determination of isoelectric point of histidine.	3
4	06.03. – 10.03.2023	Amino acids and proteins III. Isolation of albumins and globulins by fraction salting out. Electrophoretic separation of proteins.	3
5	13.03. – 17.03.2023	Saccharides. Chemical reactions of saccharides. Polarimetric observation of D-glucose mutarotation.	3
6	20.03. – 24.03.2023	Lipids I. Chemical reactions of lipids.	3
7	27.03. – 31.03.2023	<i>Dissection week</i>	3
8	03.04 – 07.04.2023	Lipids II. Determination of the iodine number of lipids.	3
9	10.04. – 14.04.2023	Revision of selected structures in biochemistry.	3
10	17.04. – 21.04.2023	Chromatography. Thin layer chromatography of amino acids. Gel chromatography of hemolyzed blood.	3
11	24.04. – 28.04.2023	Quantitative determination of low molecular weight substances. Determination of vitamin C.	3
12	01.05. – 05.05.2023	Quantitative determination of low molecular weight	3

		substances. Determination of acetylsalicylic acid in pharmaceutical drugs.	
13	08.05. – 12.05.2023	Principles of spectrophotometry. Quantitative determination of salicylates by photometry.	3
14	15.05. – 19.05.2023	Practical photometric test.	3
15	22.05. – 26.05.2023	Selected instrumental techniques. Revision.	3

Completed by: Course unit credit

Requirements: 100% tutorial attendance*; obtaining at least 70 % points (cumulative) in continuous test (if 70 % points (cumulative) in continuous tests are not reached, at least 70 % points in course unit credit test on principles of methods and calculations in biochemistry have to be obtained); elaboration of protocols including evaluation of results and formulation of conclusions (correctness of each complete protocol is approved by the teacher); Attend subject Principles of spectrophotometry and pass the practical photometric test.

* possibility of excuse 10% of obligatory classes according to Faculty of Medicine and Dentistry Policy LF-B-18/14

Literature:

Abali E.E., Cline S.D., Franklin D., Viselli S.M.: Biochemistry (8th ed.) Lippincott Illustrated Reviews. Wolters Kluwer 2021.
 Ferrier D.S.: Biochemistry (7th ed.), Lippincott Illustrated Reviews. Wolters Kluwer 2016.
 Champe P. C., Harvey R. A.: Biochemistry (6th ed.), Lippincott Williams & Wilkins 2014.
 Devlin T. M. Textbook of biochemistry with clinical correlations (7th ed.), John Wiley & Sons, Inc. 2010.
 Murray R. K., Bender D. A., Botham K. M., Kennelly P. J., Rodwell V.W., Weil P.A. Harpers Illustrated Biochemistry (29th ed.), Lange Medical Book 2012.
 Koolman J. Color Atlas of Biochemistry (3rd ed.), Georg Thieme Verlag 2012.
 Newsholme E., Leech T. Functional Biochemistry in Health and Disease (2nd ed.), Wiley-Blackwell, 2010.
 Dvořáčková S., Dvořák Z., Valentová K., Vičar J. Biochemistry. Laboratory classes. 2007.