

Study programme : Dentistry

Course : Biochemistry

Abbreviation : LCH/ZAA21

Course type : 15 hours of lectures
45 hours of practical training

Year : 2. year, 3. semester

Number of Credits : 0

Form : Lectures, practical training

Lectures:

Lecturers: Doc. RNDr. Eva Anzenbacherová, CSc.
Ing. Adéla Galandáková, Ph.D.
Mgr. Lenka Jourová, Ph.D.

Lessons: Continuous

	Date	Theme	Number hrs.	Lecturer
1	23.9.2022	Biochemistry in dental medicine. The benefits of the biochemical research progress in medicine. Structure and function of proteins, proteomics.	2	Anzenbacherová
2	7.10.2022	Enzymes. Mechanism of enzyme catalysis. Cofactors/Coenzymes. Enzyme activity, regulation.	2	Anzenbacherová
3	21.10.2022	Overview of the saccharide metabolism in the cell. Metabolism of saccharides in oral cavity. Gluconeogenesis, pentose cycle, metabolism of glycogen.	2	Galandáková
4	4.11.2022	Overview of lipid metabolism. Metabolism of triacylglycerols and fatty acids. Ketogenesis.	2	Jourová
5	18.11.2022	Cholesterol and steroid metabolism. Eicosanoids and their function in the organism.	2	Jourová
6	2.12.2022	Proteolysis, overview of amino acid catabolism, biogenic amines, formation of urea.	2	Galandáková
7	16.12.2022	Biochemical processes in gastrointestinal tract (GIT). Utilization of basic nutrients, resorption, biochemistry of microbial flora.	3	Jourová

Practical training:

Leading Lecturer: Doc. RNDr. Eva Anzenbacherová, CSc.

Lecturer: Ing. Adéla Galandáková, Ph.D.

Mgr. Lenka Jourová, Ph.D.

Lessons: Continuous

	Date	Theme	Number hrs.
1	20.9.2022	Laboratory rules and safety. First aid. <i>Principle and accuracy of pipetting.</i>	3
2	27.9.2022	Separation methods in biochemistry – Chromatography <i>Gel chromatography of haemolyzed blood.</i> <i>Test for purine and pyrimidine bases by thin layer chromatography.</i>	3
3	4.10.2022	Physical-chemical methods in biochemistry – Photometric analysis <i>Determination of salicylates by photometry.</i>	3
4	11.10.2022	Electrophoretic methods in biochemistry – Electrophoresis <i>Electrophoresis of blood serum proteins.</i> Properties of proteins <i>Determination of total serum protein by biuret reaction.</i> <i>Dialysis of diluted blood. Osmosis.</i>	3
5	18.10.2022	Properties of enzymes <i>Determination of Michaelis constant of alkaline phosphatase.</i>	3
6	25.10.2022	Enzymes important in clinical practice <i>Determination of alanine aminotransferase (ALT), lactate dehydrogenase (LD) and alkaline phosphatase activity (ALP).</i>	3
7	1.11.2022	Saccharides I <i>Chemical reactions of saccharides.</i>	3
8	8.11.2022	Saccharides II <i>Determination of glucose in serum and urine.</i> <i>Oral glucose tolerance test.</i> <i>Determination of glucose by a personal glucometer.</i> <i>Detection of glucose and ketone bodies with Diagnostic strips.</i>	3
9	15.11.2022	Lipids <i>Chemical reactions of lipids.</i> <i>Determination of total cholesterol in blood serum.</i>	3
10	22.11.2022	Biochemical processes in GIT I <i>Examination of gastric secretion.</i>	3
11	29.11.2022	Biochemical processes in GIT II <i>Influence of pH on pepsin activity.</i> <i>Calibration curve of peptides.</i>	3
12	6.12.2022	Biochemical processes in GIT III <i>Determination of optimum temperature for trypsin.</i>	3
13	13.12.2022	Amino acids <i>Separation of amino acids by thin layer chromatography.</i> <i>Determination of urea in serum and urine.</i>	3
14	20.12.2022	Practical test.	3
15	3.1.2022	Testing of understanding of metabolic processes. Credit.	3

Completed by: Course unit credit.

Requirements: Successful completion of practical training. If a student misses a lesson for health problems or other very serious reasons, then he / she must replace it (see Internal Standard LF UP LF-B-18/14).

Literature: Champe P. C., Harvey R.A.: Biochemistry (4th ed.), Lipincott Williams & Wilkins 2008.
Ferrier D.R. Lippincott Illustrated Reviews: Biochemistry (7th ed.), Woters Kluver 2017
Devlin T.M. Textbook of biochemistry with clinical correlations (6th ed.), John Wiley & Sons, Inc. 2006.
Dvořáčková S., et al.: Biochemistry Laboratory classes. UP 2007.