

Program of Study : General Medicine

Course : **MEDICAL CHEMISTRY**

Abbreviation : LCH/VAA11

Schedule : 45 hours of lectures
15 hours of tutorials

Course Distribution : 1st year, 1st semester

Number of Credits : 7

Course Form : Lectures, tutorials

Lectures:

Teachers : prof. Mgr. Martin Modrianský, PhD.
Mgr. Jana Franková, Ph.D.
doc. Mgr. Jiří Vrba, PhD.

	Date	Topic	No. of Less.	Teacher
1	23.9.2022	Chemical equilibrium, solutions.	2	Vrba
		Chemical thermodynamics.	2	Vrba
2	30.9.2022	Chemical kinetics.	2	Vrba
		Colloids, interface phenomenon.	2	Vrba
3	7.10.2022	Acid-base reactions.	2	Vrba
		Slightly soluble compounds, complex compounds	2	Vrba
4	14.10.2022	Reduction and oxidation reactions.	2	Vrba
		Structure of organic molecules.	2	Franková
5	21.10.2022	Reactivity of organic molecules	2	Franková
		Organic and bioorganic compounds I	2	Franková
6	4.11.2022	Organic and bioorganic compounds II	2	Franková
		and III.	2	Franková
7	18.11.2022	Heterocyclic compounds, co-factors and vitamins. Polymers. Biologically important reactions of organic molecules.	2	Franková
			2	Franková
8	25.11.2022	Aminoacids and peptides.	2	Modrianský
		Saccharides.	2	Modrianský
9	2.12.2022	Polysaccharides, proteoglycans.	2	Modrianský
		Lipids I.	2	Modrianský
10	9.12.2022	Lipids II.	2	Modrianský
		Bioelements, coordination compounds.	2	Modrianský

11	16.12.2022	Toxicity of elements and compounds. Reactive oxygen species, lipoperoxidation, antioxidants, major environmental pollutants	2 2	Modrianský Modrianský
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Tutorials :

Teachers : prof. Mgr. Martin Modrianský, PhD.
Mgr. Jana Franková, PhD.
doc. Mgr. Jiří Vrba, PhD.

	Date	Subject	No. of Less.
1	23.9.2022	Chemical calculations - concentration, dilution ionic strength. Lab safety. Working with glassware – pipetting, volumes, weights.	2
2	7.10.2022	Chemical calculations - dilution. Preparing and dilution of a simple solution. Serial dilutions: basic spectrophotometry, calibration curve.	2
3	21.10.2022	Chemical calculations – osmolarity, solubility, equilibria. Osmosis and dialysis.	2
4	4.11.2022	Chemical calculations – pH of strong acids and bases, pH of weak acids and bases. Determination of pH of a solution.	2
5	25.11.2022	Chemical calculations – buffers, titration curves. Titration of acetate buffer.	2
6	2.12.2022	Preparing a buffer, capacity of a buffer.	2
7	9.12.2022	Volumetric analysis. Calcium concentration.	2
8	16.12.2022	Test (calculations)	1

Completed by : Course-unit credit, examination

Requirements for course-unit credit: 100% tutorials attendance
Completing calculation test (minimum 70% correct)
Completing all practical parts of tutorials

Requirements for exam: completing the course – unit credit
written exam test

Literature : E. Táborská, J. Sláma et al. : Medical Chemistry I. Masaryk University, Brno, Czech Republic 2010.

J. Dostál: Medical Chemistry II. Masaryk University, Brno, Czech Republic 2010.

E. Táborská, J. Dostál: Overview of chemistry. Masaryk University,

Brno, Czech Republic, 2011

S. Dvořáčková, J. Vičar, D. Walterová: Calculations in Medical Chemistry and Biochemistry, Palacký University, Olomouc 2008.

Recommended:

R. Chang, J. Overby : General chemistry: the essential concepts, 6th Edition, ISBN 978-0-07-337563-2. McGraw-Hill 2011.

M. Hein, L. R. Best, S. Pattison, S. Arena: Introduction to General, Organic, and Biochemistry. 8th edition, ISBN 0-471-45196-7. Wiley 2004.