

Higher education institution: <i>Slovak Medical University in Bratislava</i>	
Faculty: <i>Faculty of Medicine</i>	
Course code: <i>GM 007</i>	Course title: <i>Medical chemistry</i>
Type, extent and method of educational activity: <i>Number of hours per semester: Lectures: 28/2 hours per week Practices: 42/3 hours per week</i>	
Number of credits: <i>6 credits</i>	
Recommended semester/trimester study: <i>1st</i>	
Level of higher education study: <i>1. + 2. level</i>	
Prerequisite courses: <i>Chemistry at high school level.</i>	
Requirements for completion of the course: <i>Method of assessment and completion of the course: Exam and Laboratory practice credit (Exam: attendance at lectures-optional, written test, verbal part of exam; Laboratory practice: attendance, tests, independent work). Exam A, B, C, D, E, FX Student workload is 80 hours.</i>	
Learning outcomes: <i>To improve knowledge from general, physical, inorganic and organic chemistry necessary for following study at Faculty.</i>	
Brief content of the course (syllabus): <i>LECTURES: atom composition and structure: nucleus, isotops, nuclides, quantum mechanical description of electron orbitals, electron envelope and periodic system, trends in periodic table, properties of elements, biogenic elements; chemical bonds and intermolecular interactions, molecular orbitals; matter: classification, main characteristics, phases, phase changes, physical and chemical properties, pure substances and mixtures, crystalline and amorphous matters, homogeneous and heterogeneous systems, disperse systems, processes of solution and dissociation, osmotic pressure, osmolarity; acids and bases: theories, strength, pH, neutralisation, titration, buffers, acid-base equilibria; redox processes: oxidation numbers, oxidation and reduction in chemistry and biochemistry, redox systems; energetics and kinetics of chemical reactions; organic chemistry: general characteristics and classification of organic cyclic and non-cyclic compounds, composition, structure and structural formulas, isomerism, functional groups and nomenclature, reaction types of organic compounds; characteristic properties, biologically important reactions of hydrocarbons and their main derivatives (halogen derivatives, hydroxyderivatives, thiols, disulfides, sulfides, carbonyl compounds, carboxylic acids and their functional and substitutional derivatives, amines, ethers); biologically important organic compounds (including heterocycles); short chemical view to saccharides, lipids, proteins. LABORATORY PRACTICE: laboratory order and safety rules; International System of Units, non-SI units, metric system of measurement (unit prefixes, suffixes, symbols and relationships), unit conversions; common laboratory equipment and glassware (names, parameters, classification, usage, accuracy); accuracy vs. precision; measuring the volumes of liquids; pipette techniques; weighting the right way/weighting techniques; expressings of solution composition (different ways of expressing concentrations); preparation the solution; basic, step and serial dilution; acid-base titrations; measuring the pH, pH indicators; redox reactions; basics of spectrophotometry (absorbance spectrum, Lambert-Beer law); thin-layer chromatography; centrifugation; chemical calculations: expressing concentrations of solutions, mixing equations, dilutions, ideal gas law and standard molar volume, titrations, pH, osmolarity, stoichiometry.</i>	
Recommended literature: <i>1. ORSZÁGHOVÁ, Z. – ŽITŇANOVÁ, I. et al.: Medical Chemistry, 1st edition. Comenius University Bratislava, Bratislava, 2008. ISBN 978-80-223-2426-7 2. SILBERBERG, M.: Chemistry - The Molecular Nature of Matter and Change, 4th edition. McGraw – Hill, New York, 2006. ISBN 0-07-111658-3 3. BURDGE, J.: Chemistry, 2nd edition. McGraw - Hill, New York, 2009. 4. BURNS, R.A.: Fundamentals of Chemistry, 4th edition. Prentice Hall, 2003. 5. CHANG, R.: Chemistry, 4th edition. McGraw-Hill, New York, 1991. 6. http://2012books.lardbucket.org/books/principles-of-general-chemistry-v1.0/index.html</i>	

7. <https://www.boundless.com/chemistry/>

Language requirements:-

Notes:

The course runs in Slovak and English language.

Course assessment

Assessed students in total: 0

A	B	C	D	E	FX
93%	85%	77%	69%	60%	59%

Lecturers:

Ing. Lucia Hudecová

Date of last modification: 15.06.2016

Supervised by: *prof. MUDr. Peter Šimko, CSc.*