Course Unit Descriptor

Study Programme: Chemistry
Course Unit Title: Chemical Bonding and Molecular Structure
Course Unit Code: ZMH-407
Name of Lecturer(s): Associate professor Branislav Jović
Type and Level of Studies: Bachelor Academic Studies
Course Status (compulsory/elective): Compulsory
Semester (winter/summer): Winter
Language of instruction: English
Mode of course unit delivery (face-to-face/distance learning): Face-to-face
Number of ECTS Allocated: 8
Prerequisites: None
Learning objectives The course is an advanced physical chemistry course devoted to structure of atoms and molecules, chemical bond and molecular spectroscopy. The goal of this course is to provide students with knowledge about the molecular structure based on quantum theory. It is also intended to master the theoretical basis of molecular spectroscopy and train students for its practical applications in chemistry.
Learning outcomes Full understanding of the importance of quantum chemical theories of chemical bonding, as well as the capability for independent student use of molecular spectroscopy techniques and independent decision-making relevant to the practical applications in chemistry.
Syllabus *Theoretical instruction* Atomic Structure, Covalent bonding, Ionic bonding, Coordination bonding, Hydrogen bonding, Metal bonding, Molecular structure and stereochemical rules, Molecular spectra. *Practical instruction* Experimental and theoretical exercises follow theoretical teaching.
Required Reading: 1. S. N. Vinogradov, R. H. Linell, "Hydrogen Bonding", Van Nostrand Reinhold, New York, 1971. 2. P.W. Atkins, Physilcal Chemistry, Oxford University Press, Oxford, 1998.

Weekly Contact Hours: 95	**Lectures:** 45	**Practical work:** 30+20

Teaching Methods: Lectures and laboratory work
Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	**Final exam**	points
Activity	10	Written exam	10
Lab exercises	15	Oral exam	40
Test I, II and III	25		