|  |  |  |
| --- | --- | --- |
| **Study program:** Chemistry (PhD) | | |
| **Course title: Selected Chapters in General Chemistry (H316C)** | | |
| **Name of lecturer/lecturers: Nikola D. Nikolić** | | |
| **Type of course: elective** | | |
| **Number of ECTS allocated 10** | | |
| **Course objectives**  **Introducing students to the structure of atoms, the importance of chemical bonds and the structure of molecules in chemistry as well aswith bonds in some more complex molecules. Understanding the formation of molecules, elements, and compounds. Prediction of properties of chemical species and techniques for their investigation by bond type** | | |
| **Course outcomes**  **After mastering the course program, the student will be able to:**  **• apply the acquired knowledge in the theoretical processing of chemical bonds and the structure of many molecules,**  **• connects the processes that lead to the formation of molecules and predicts the types of interactions in molecules**  **• predict the properties of molecules and the techniques and methods through which all these theoretical facts would be derived proved** | | |
| **SYLLABUS**  *Lectures*  *Fundamentals of wave mechanics, wave function, wave motion, function normalization, wave equation. A hydrogen atom. Atomic orbitals s, p, d, f. multi-electron molecules. Energy states of atoms and spectral terms. Chemical bond. Molecular orbitals. Symmetry of molecules. Symmetry of atomic I molecular orbitals. LCAO molecule A2. MO of molecules of type AB and other multi-electron one’s molecules. Theoretical calculations related to chemical bond parameters in different molecules structures and geometric structures. Valence bond theory. Ionic bond. Molecular crystals, structures metal. Intermolecular interactions. Classification of molecules according to symmetry characteristics, symmetry groups of points. Application of symmetry in molecular spectroscopy* | | |
| **References**  1. И.О. Јуранић, Хемијска веза. Хемијски факултет Београд, 1994.  2. Л. Класинц, З. Максић, Н. Тринајстић, Симетрија молекула. Школска књига, Загреб 1979.  3. J.W. Hill, R.H. Petrucci, T.W. McCreary, S.S. Perry, General Chemistry, 4th Edition, Pearson Prentice Hall, New Jersey, 2005. | | |
| **Active teaching classes** | **Lectures 105** | **Laboratory work** |
| **Teaching mode: Interactive lectures, homework, seminar work, panel discussions** | | |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** | | |
| activity during the lecture – 5 points; seminar work – 50 points; oral exam – 45 points | | |