



УНИВЕРЗИТЕТ У БАЊОЈ ЛУЦИ
UNIVERSITY OF BANJA LUKA
ПРИРОДНО-МАТЕМАТИЧКИ ФАКУЛТЕТ
FACULTY OF NATURAL SCIENCES AND MATHEMATICS



CHEMISTRY DEPARTMENT

FIRST CYCLE OF STUDY

Chemistry/Chemistry Education

Course name	Quantum Chemistry			
Course code	Course status	Semester	Hours of instruction	ECTS
1C16HOS1109	elective	VI	3+0	4
Teacher(s)	Assist.prof.dr Suzana Gotovac Atlagić			

Prerequisite course(s)	Entry requirements
General Chemistry, Physics	Passed exams

Course goals

The aim of the *Quantum Chemistry* course is to get acquainted with the boundary area between physics and chemistry, and to prepare students to approach the reading of contemporary literature in the field of quantum chemistry with greater understanding. The aim of the course is to acquaint students with quantum-chemical phenomena on which modern physico-chemical instrumental methods of analysis are based.

Learning outcomes

Students will be introduced to the possibilities and limitations of quantum chemical methods that are most widely used today. They will be able to recognize and predict types of interactions between the atoms in the structure of the compounds studied and different types of waves. They will understand the concept of quantum energy, photons, and ways of using this phenomenon in chemical analytical techniques, primarily in photoelectron spectroscopy.

Course content

Fundamentals of wave mechanics
Atomic orbitals
Molecular orbitals
Intermolecular interactions
Quantization of energy and photons
Electromagnetic radiation
Modern microscopies based on quantum phenomena
Quantum temperature uncertainty

Teaching methods

Lectures and seminars

Books and other learning materials

Petković Milena: **Applied Quantum Chemistry**, Belgrade University, Faculty for Physical Chemistry, 2013.
John Polkinghorn: **Quantum Theory**, Laguna, 2017

Course activities and grading method

Willingness to discuss and ask questions in order to expand the understanding of the lectures listened to are among the parameters of the assessment of teaching activities. In the last weeks of lectures, students in groups prepare presentations of seminar work, which are a condition for taking the final exam.

Seminar and presentation	30	Activity	10
		Final exam	60

Additional course notes

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Name of the teacher who prepared this form

Suzana Gotovac Atlagić