(Table 5.2) Course unit description

<table>
<tr><td colspan="5">Study program: Chemistry</td></tr>
<tr><td colspan="5">Type and level of studies: Master degree</td></tr>
<tr><td colspan="5">Course unit: Characterization and bio-potential of inorganic compounds</td></tr>
<tr><td colspan="5">Teacher in charge: Dr Biljana Petrovic</td></tr>
<tr><td colspan="5">Language of instruction: English</td></tr>
<tr><td colspan="5">ECTS: 5</td></tr>
<tr><td colspan="5">Prerequisites: /</td></tr>
<tr><td colspan="5">Semester: Summer</td></tr>
<tr><td colspan="5">Course unit objective
The aim of the course is to acquire knowledge regarding the application of modern experimental methods for the characterization and investigation of the biological potential of inorganic compounds, with particular focus on the interactions of complex compounds with biomolecules.</td></tr>
<tr><td colspan="5">Learning outcomes of Course unit
Upon successful completion of the course, the student will be able to explain basic laboratory operations, correctly select appropriate solvents for chemical experiments, distinguish and classify chromatographic methods, explain the principles of and apply various spectroscopic methods for compound characterization, analyze and interpret spectroscopic data, explain the types of interactions between chemical compounds and biomolecules, apply experimental methods to determine the type and strength of interactions, independently perform the synthesis and characterization of complex compounds, and critically evaluate the obtained experimental results.</td></tr>
<tr><td colspan="5">Course unit contents
Theoretical classes:
Basic laboratory operations. Solvents. Classification of chromatographic methods. Laminar (planar), column chromatography, adsorption, partition, ion-exchange, molecular sieve chromatography, affinity, paper chromatography, thin layer chromatography (TLC), gas and high-performance liquid chromatography (HPLC). Elemental (elemental) analysis. Melting point. Boiling point. Spectroscopic methods: UV-Vis, IR, fluorimetry, mass spectroscopy. NMR. EPR spectroscopy. Circular dichroism. X-ray structural analysis. Interactions with biomolecules (amino acids, peptides, nucleotides, DNA, proteins). Application of experimental methods for determining the type of interactions in the absence and presence of markers.
Practical classes:
Independent student work involving the synthesis and characterization of complex compounds using modern experimental methods (UV-VIS, IR, NMR. EPR, HPLC). Investigation of interactions of complexes with biomolecules using absorption and emission methods.</td></tr>
<tr><td colspan="5">Literature
1. W. L. Jolly, Synthesis and Characterization of Inorganic Compounds, Prentice Hall International, Hearts, 1970.
2. R. M. Roat-Malone, Bioinorganic chemistry: a short course, Wiley, 2007</td></tr>
<tr><td colspan="4">Number of active teaching hours</td><td rowspan="2">Other classes:</td></tr>
<tr><td>Lectures:
2</td><td>Practice:
2</td><td>Other forms of classes:</td><td>Independent work:</td></tr>
<tr><td colspan="5">Teaching methods
Lectures, colloquiums, seminar work, experimental work</td></tr>
<tr><td colspan="5">Examination methods (maximum 100 points)</td></tr>
<tr><td colspan="2">Exam prerequisites</td><td>No. of points</td><td>Final exam</td><td>No. of points</td></tr>
</table>

Practical classes	30	Written examination	
Tests		Oral examination	30
Homework		Other	
Seminars	20		
Project	20		

Grading system		
Grade	**No. of points**	**Description**
10	>= 91	Excellent
9	81-90	Exceptionally good
8	71-80	Very good
7	61-70	Good
6	51-60	Passing
5	<=50	Failing