Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Koordinacijska kemija
Course title:	Coordination Chemistry

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj		3.	5.
Five-year master's degree program Subject Teacher		3rd	5th

Vrsta predmeta / Course type	Izbirni / elective
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
20		10			60	3

Nosilec predmeta / Lecturer:	Matjaž Kristl

Jeziki / Languages:	**Predavanja / Lectures:**	Slovenski / Slovenian
	Vaje / Tutorial:	Slovenski / Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
Ni pogojev za vključitev v delo. Opravljene laboratorijske vaje so pogoj za pristop k izpitu	There are no prerequisites to enter the course. Laboratory exercises are required for taking the oral exam.

Vsebina:	**Content (Syllabus outline):**

- Uvod v koordinacijsko kemijo, ligandi, koordinacijska števila
- Izomerija koordinacijskih spojin
- Nomenklatura koordinacijskih spojin
- Kemijske vezi v koordinacijskih spojinah
- Barve in magnetne lastnosti koordinacijskih spojin
- Organokovinske spojine: karbonili, metaloceni
- Reakcije in stabilnost koordinacijskih spojin
- Uporaba koordinacijskih spojin

- Introduction into coordination chemistry, ligands, coordination numbers
- Isomerism of coordination compounds
- Nomenclature of coordination compounds
- Chemical bonding in coordination compounds
- Colors and magnetic properties of coordination compounds
- Organometallic compounds: carbonyls, metallocenes
- Reactivity and stability of coordination compounds
- Use of coordination compounds

Temeljni literatura in viri / Readings:

- F. Lazarini in J. Brenčič, Splošna in anorganska kemija, pogl. 11: Koordinacijske spojine (str. 241 - 261), FKKT, Univerza v Ljubljani, 2004.

Dodatna literatura / Additional Readings:

- P. W. Atkins, T. I. Overton, J. P. Rourke, M. T. Weller, F. A. Armstrong, Shriver and Atkins' Inorganic Chemistry, Fifth Edition, Oxford University Press, Oxford, 2010.

Cilji in kompetence:

Študenti se usmerjajo na področje koordinacijske kemije. Spoznajo metodiko dela, zastavitve problema in njegovega reševanja. Kritično ocenjujejo pristope in teorije.

Objectives and competences:

The student further develop basic knowledge on coordination chemistry. The student should be able to use factual knowledge and extrapolate from this to predict unknown facts and to solve the problems connected with coordination compounds.

Predvideni študijski rezultati:

Znanje in razumevanje:

Študent pozna in razume osnovne pojme in teorije s področja koordinacijske kemije, opredeljene v vsebinah in jih zna uporabiti pri analizi in reševanju problemov. Študent je sposoben razlikovati med različnimi koordinacijskimi spojinami in povezati strukturo koordinacijske spojine z njenimi lastnostmi.

Intended learning outcomes:

Knowledge and understanding:

The student is familiar with basic concepts and theories of coordination chemistry and is able to use them to analyze and solve practical and theoretical problems connected with coordination compounds. The student is able to distinguish between different coordination compounds and to link the structure of the coordination compounds with its properties.

Prenesljive/ključne spretnosti in drugi atributi:	Transferable/Key Skills and other attributes:
Študent se seznani s pristopi pri reševanju konkretnih problemov, razvija zmožnost uporabe informacijske tehnologije in sposobnost komuniciranja v strokovni javnosti.	The students knows the methods to solve practical problems, develops his informational and professional communication skills.

Metode poučevanja in učenja:	**Learning and teaching methods:**
• Predavanja • Laboratorijske vaje	• Oral lectures • Laboratory work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Ustni izpit	70	Oral exam
Laboratorijsko delo	30	Laboratory work

Reference nosilca / Lecturer's references:

1. GOLOBIČ, Amalija, DOJER, Brina, JAGODIČ, Marko, SIHER, Anja, PEGAN, Anže, KRISTL, Matjaž. Synthesis and characterization of new copper(II) coordination compounds with methylammonium cations. *Inorganics*. 2024, vol. 12, iss. 10, [article no.] 261, 17 str. ISSN 2304-6740. https://doi.org/10.3390/inorganics12100261, DOI: 10.3390/inorganics12100261. [COBISS.SI-ID 211137027]

2. KRISTL, Matjaž, OSTROŠKO, Urška, BAN, Irena, PETRINIĆ, Irena, STERGAR, Janja. Thermal study of APTES-functionalized magnetite nanoparticles with citric acid and polyacrylic acid for advanced forward osmosis systems. *Journal of thermal analysis and calorimetry*. [Online ed.]. Published: 15 March 2024, 15 str., ilustr. ISSN 1588-2926. https://dk.um.si/IzpisGradiva.php?id=89851, DOI: 10.1007/s10973-024-12983-2. [COBISS.SI-ID 189345283]

3. KRISTL, Matjaž, ŠTURM, Jaka, GOLOBIČ, Amalija, JAGLIČIĆ, Zvonko, DOJER, Brina. New copper(II) complexes with hydroxypyridines: Synthesis, structural, thermal, and magnetic properties. *Inorganica Chimica Acta*. [Print ed.]. Oct. 2023, vol. 556, 10 str. ISSN 0020-1693. DOI: 10.1016/j.ica.2023.121670. [COBISS.SI-ID 157729283]