



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Koordinacijska kemija
<b>Course title:</b>	Coordination Chemistry

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

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

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

Nosilec predmeta / Lecturer:

Jeziki / Predavanja / Lectures:   
Languages: Vaje / Tutorial:

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Prerequisites:

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**Vsebina:**

- 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, metalloceni
- Reakcije in stabilnost koordinacijskih spojin
- Uporaba koordinacijskih spojin

**Content (Syllabus outline):**

- 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.
- M. J. Winter, d-Block Chemistry, Oxford University press, Oxford, 2005.

**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.

**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.

Prenesljive/ključne spretnosti in drugi atributi:

Študent se seznanja s pristopi pri reševanju konkretnih problemov, razvija zmožnost uporabe informacijske tehnologije in sposobnost komuniciranja v strokovni javnosti.

Transferable/Key Skills and other attributes:

The students knows the methods to solve practical problems, develops his informational and professional communication skills.

**Metode poučevanja in učenja:**

- Ustna predavanja z uporabo Power Point prezentacij
- Obravnava študijskih primerov
- Delo v laboratoriju z aktivnim skupinskim delom

**Learning and teaching methods:**

- Oral lectures using Power Point presentation
- Case studies
- Active laboratory work in small groups

Delež (v %) /

**Načini ocenjevanja:**

Weight (in %)

**Assessment:**

Izpit je opravljen, če so opravljene vse obveznosti:		The student passes the examination if s(he) successfully passed all the following obligations:
Ustni izpit	70	Oral exam
Aktivno delo na predavanjih	10	Active work during lectures
Aktivno delo na vajah	20	Active laboratory work

**Reference nosilca / Lecturer's references:**

1. HOJNIK, Nuša, KRISTL, Matjaž, GOLOBIČ, Amalija, JAGLIČIČ, Zvonko, DROFENIK, Mihael. The synthesis, structure and physical properties of lanthanide(III) complexes with nicotinic acid. *Central European Journal of Chemistry*, ISSN 1895-1066, Feb. 2014, vol. 12, iss. 2, str. 220-226, ilustr., doi: [10.2478/s11532-013-0366-5](https://doi.org/10.2478/s11532-013-0366-5). [COBISS.SI-ID 17388822]
2. KRISTL, Matjaž, HOJNIK, Nuša, GYERGYEK, Sašo, DROFENIK, Mihael. Sonochemical preparation of copper sulfides with different phases in aqueous solutions. *Materials research bulletin*, ISSN 0025-5408. [Print ed.], Mar. 2013, vol. 48, iss. 3, str. 1184-1188, doi: [10.1016/j.materresbull.2012.12.020](https://doi.org/10.1016/j.materresbull.2012.12.020). [COBISS.SI-ID 16676886]

3. DOJER, Brina, PEVEC, Andrej, JAGODIČ, Marko, KRISTL, Matjaž, DROFENIK, Mihael. Three new cobalt(II) carboxylates with 2-, 3- and 4-aminopyridine : syntheses, structures and magnetic properties. *Inorganica Chimica Acta*, ISSN 0020-1693. [Print ed.], 2012, vol. 383, str. 98-104, doi: [10.1016/j.ica.2011.10.056](https://doi.org/10.1016/j.ica.2011.10.056). [COBISS.SI-ID 15502614]
4. KRISTL, Matjaž, GOLOBIČ, Amalija, DOJER, Brina, DROFENIK, Mihael. Synthesis and structure of hydroxylammonium fluoroaluminate. *Monatshefte für Chemie*, ISSN 0026-9247, 2011, vol. 142, no. 8, str. 755-762, doi: [10.1007/s00706-011-0508-4](https://doi.org/10.1007/s00706-011-0508-4). [COBISS.SI-ID 15004182]
5. KRISTL, Matjaž, BAN, Irena, DANČ, Anita, DANČ, Valerija, DROFENIK, Mihael. A sonochemical method for the preparation of cadmium sulfide and cadmium selenide nanoparticles in aqueous solutions. *Ultrasonics Sonochemistry*, ISSN 1350-4177. [Print ed.], June 2010, vol. 17, iss. 5, str. 916-922, doi: [10.1016/j.ultsonch.2009.12.013](https://doi.org/10.1016/j.ultsonch.2009.12.013). [COBISS.SI-ID 13766422]