

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PRAKTIKUM IZ ANORGANSKE KEMIJE
Course Title:	PRACTICAL COURSE IN INORGANIC CHEMISTRY

Študijski program in stopnja Study Programme and Level	Študijska smer Study Field	Letnik Academic Year	Semester Semester
VSŠP Kemijska tehnologija, 1. stopnja	/	2.	2.
PSP Chemical Technology, 1 st Cycle	/	2 nd	2 nd

Vrsta predmeta / Course Type: obvezni / Mandatory

Univerzitetna koda predmeta / University Course Code: KT112

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje Work	Druge oblike študija	Samost. delo Individual Work	ECTS
/	15	60 LV	/	/	75	5

Nosilec predmeta / Lecturer: prof. dr. Franc Perdih / Dr. Franc Perdih, Full Professor

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

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

Študent oz. kandidat mora imeti predmet opredeljen kot študijsko obveznost.

Prerequisites:

The course has to be assigned to the student.

Vsebina:

Vsebina seminarjev in vaj: Študenti bodo pri predmetu sintetizirali anorganske snovi z različnimi sintezniimi tehnikami in dobljene snovi preiskali. Spoznali bodo metode karakterizacije v anorganski kemiji, prirejene predznanju študentov: uporaba rentgenske praškovne analize, termične analize in infrardeče in UV-vidne spektroskopije ter magnetne meritve. Študenti bodo sintetizirali bazični bakrov(II) sulfat, zemeljskoalkalijske oksalate hidrate, pentafluoridomanganate(III), izomere bakrovih glicinato kompleksov in do dve snovi, ki se uporabljata pri tekočem raziskovalnem delu nosilca predmeta ali njegovih sodelavcev. Pri seminarju bodo študenti dobili potrebno teoretsko osnovo in

Content (Syllabus outline):

Syntheses and characterization of inorganic compounds. Different characterization methods used in inorganic chemistry will be studied, adapted to the knowledge level of these students: X-ray powder diffraction analysis, thermal analysis, infrared spectroscopy, UV-vis spectroscopy and measurements of magnetic susceptibility. Basic copper(II) sulphate, alkaline earth oxalates hydrates, pentafluoridomanganates(III), isomers of copper glicinato complexes and some new complexes which are subject of current research at the department of Inorganic chemistry are prepared and characterized.

navodila za sintezo.

Theoretical background is explained at seminars.

Temeljna literatura in viri / Readings:

- S. Petriček, F. Perdih, A. Demšar: Vaje iz anorganske kemije, FKKT UL, Ljubljana, 2012, pp. 1–74.

Cilji in kompetence:

Cilj predmeta je poglobitev znanja iz anorganske kemije in pridobitev posebnih laboratorijskih veščin. Specifično, študenti z laboratorijskimi vajami nadgradijo teoretično znanje iz predmeta Anorganska kemija I s praktičnimi izkušnjami s področja sinteze in karakterizacije anorganskih snovi.

Objectives and Competences:

Learning outcomes: Expanding of basic knowledge of syntheses and characterization of inorganic compounds obtained in courses of General chemistry and Inorganic Chemistry I.
Competences: Practical skills in comprehensive inorganic syntheses and characterization of inorganic compounds.

Predvideni študijski rezultati:

Znanje in razumevanje

Predmet predstavlja dopolnitev predmeta Anorganska kemija I s praktičnim delom in izkušnjami iz laboratorija. Tehnike, ki jih obvladajo študenti, bodo uporabili pri nadaljnjem študiju in pri delu.

Uporaba

Študent spozna metode sinteze spojin in določitve njihovih lastnosti. V laboratoriju dobi občutek za varno laboratorijsko delo. Nauči se uporabljati laboratorijsko opremo in instrumente. Izkušnje pri delu in občutek za snovi skupaj s teoretskim znanjem omogočajo kemiku potrebno strokovno širino.

Refleksija

Kemija je eksperimentalna veda in za diplomante tega študijskega programa je poznavanje dela v laboratoriju in kemijskem obratu posebej pomembno in hkrati motivacija pri osvajanju teoretskega znanja drugih predmetov.

Prenosljive spretnosti

Laboratorijske veščine, izkušnje in prijemi pri načrtovanju sintez so pomembni pri drugih kemijskih predmetih in pri osebni strokovni razvoju.

Intended Learning Outcomes:

Knowledge and Comprehension

Subject is a supplement of a course Chemistry I with practical work and experience in the laboratory. Techniques learned in this course will be used for further studies and work.

Application

Different synthetic methods are performed and properties of the prepared materials are determined. Laboratory skills are developed also in the field of laboratory safety. Students learn how to use laboratory equipment and instruments. Experiences and sense of materials together with theoretical knowledge enables to a chemist the necessary expertise insight.

Analysis

Chemistry is an experimental science and for graduates of this study program is the chemical and laboratory knowledge particularly important and is at the same time a motivation in acquiring theoretical knowledge of other subjects.

Skill-transference Ability

Laboratory skills, experiences and the knowledge on different synthetic approaches are important in other chemistry courses and in their personal professional development.

Metode poučevanja in učenja:

Learning and Teaching Methods:

Predmet se izvaja v obliki seminarjev in samostojnih laboratorijskih vaj. Na seminarju se tematiko vsake vaje umesti v širši kontekst anorganske kemije.

Seminars and individual laboratory practice. At the seminar, the topic of each practical assignment is presented within the broader context of inorganic chemistry.

Delež (v %) /

Weight (in %) **Assessment:**

Načini ocenjevanja:

Pisni izpit po uspešno opravljenem praktičnem delu.

100%

Written examination after successfully passed all laboratory work.

Reference nosilca / Lecturer's references:

- **F. Perdih:** Diversity of supramolecular aggregation in copper(II) pentane-2,4-dionato compounds with methyl substituted 2-aminopyridines. *J. Coord. Chem.* 2012, 65, 1850–1591.
- **F. Perdih:** Different coordination modes and supramolecular aggregations in copper(II) pentane-2,4-dionato compounds with 2-pyridone and 3-hydroxypyridine. *Monatshefte für Chemie* 2012, 143, 1011–1017.
- **F. Perdih, A. Perdih:** Lignin selective dyes : quantum-mechanical study of their characteristics. *Cellulose* 2011, 18, 1139–1150.