



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

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|----------------------|-------------------------------|
| Predmet: | Laboratorijske tehnike |
| Course title: | Laboratory technique |

| Študijski program in stopnja Study programme and level | Študijska smer Study field | Letnik Academic year | Semester Semester |
|-----------------------------------------------------------|-------------------------------|----------------------------|----------------------|
| Izobraževalna kemija / 1. stopnja | / | 2 | 4 |
| Educational Chemistry/1st level | / | | |

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

| Predavanja Lectures | Seminar Seminar | Vaje Tutorial | Lab. vaje Laboratory work | Terenske vaje Field work | Samost. delo Individ. work | ECTS |
|------------------------|--------------------|------------------|---------------------------------|--------------------------------|----------------------------------|------|
| 10 | 15 | | 25 | | 70 | 4 |

Nosilec predmeta / Lecturer:

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

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

Znanje splošne in osnovne organske ter analize kemije.

Prerequisites:

Knowledge of general chemistry, basic knowledge of organic and analytical chemistry.

Vsebina:

Šolski kemijski laboratorij.
Materiali v kemijskem laboratoriju.
Primerjalna analiza osnovnih operacij laboratorijskega dela v kurikulumih osnovnega in srednjega kemijskega izobraževanja.
Usposabljanje v tehnikah laboratorijskega dela – primeri kurikularnih eksperimentalnih sklopov osnovnega in srednjega kemijskega izobraževanja.

Content (Syllabus outline):

School chemistry laboratory.
Materials inside the chemistry laboratory.
Comparative analysis of basic laboratory technique from compulsory and secondary chemical education curriculum.
Qualification for laboratory technique - experimental content cases from compulsory and secondary chemical education curriculum.

Temeljni literatura in viri / Readings:

Sodja Božič, J., Laboratorijska tehnika, DZS, Ljubljana, 1992.
Sikirica, M., Korpar-Čolig, B., Priročnik za vježbe iz kemije 1, Osnove laboratorijske tehnike, Zagrebačka tiskara, Zagreb, 1991.
Laboratorijski priročnik, Slovensko kemijsko društvo, Ljubljana, 1967.

Cilji in kompetence:

Se seznaniti z osnovno opremo in delom v šolskem kemijskem laboratoriju.
Pozna najpogostejše materiale v kemijskem laboratoriju, njihove uporabe in omejitve.
Spozna osnovne operacije in veščine eksperimentalnega dela kot sestavine učnih načrtov/katalogov znanja v programih osnovnega in srednjega kemijskega izobraževanja;
Usvoji osnovne tehnike laboratorijskega dela

Objectives and competences:

To know the basic laboratory equipment and techniques in school chemical laboratory.
To know the most important materials used inside the chemistry laboratory, their fields of use and limitations.
Comparative knowing and performing the basic technique and experimental skills as curricular components of syllabuses for programmes at the level of compulsory and secondary education;
To acquire the basic laboratory technique

Predvideni študijski rezultati:**Znanje in razumevanje:**

Pozna teoretske osnove in obvlada tehnike eksperimentalnega dela predmetov Kemija, Naravoslovje in Strokovnih predmetov s kemijskimi vsebinami, zajetih v okviru programov osnovnega in srednjega izobraževanja.
Usposobljenost za uporabo osnovnih tehnik laboratorijskega dela zajetega v okviru eksperimentalnih vsebin aktualnih kurikulumov.

Prenesljive/ključne spretnosti in drugi atributi:

Sposobnost fleksibilne uporabe znanj in veščin za potrebe vsakodnevnega in poklicnega dela.

Intended learning outcomes:**Knowledge and understanding:**

Knowing of theoretical basis and mastering the technique of experimental work for the following subjects: Chemistry, Natural Science, Professional subjects with chemical contents such as included in the curricula of compulsory and secondary education;
Qualification to use the basic laboratory technique of curricular experimental contents.

Transferable/Key Skills and other attributes:

Ability for flexible using of knowledge and skills for everyday and professional needs.

Metode poučevanja in učenja:**Learning and teaching methods:**

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|-------------------------------------------------------------------------|----------------------------------------------------------------|
| Predavanja Seminarsko delo Laboratorijske vaje Samostojno delo | Lectures Seminar work Laboratory work Individual work |
|-------------------------------------------------------------------------|----------------------------------------------------------------|

| Načini ocenjevanja: | Delež (v %) / Weight (in %) | Assessment: |
|---------------------------------------------|--------------------------------|-----------------------------------------------|
| Izdelava in predstavitev seminarske naloge: | 25 | Preparation and presentation of seminar work: |
| Ustni zagovor: | 25 | Oral exam: |
| Laboratorijske vaje: | | Laboratory work: |
| a) kakovost načrtovanja | 30 | a) quality of planning |
| b) izvedbene spretnosti | 20 | b) performing skills |

Reference nosilca / Lecturer's references:

1. DOJER, Brina, PEVEC, Andrej, JAGLIČIĆ, Zvonko, DROFENIK, Mihael, KRISTL, Matjaž. Nickel(II) pyridinecarboxamide complexes : solvothermal synthesis, crystal structures and magnetic properties. *Inorganica Chimica Acta*, ISSN 0020-1693. [Print ed.], 2016, vol. 446, str. 124-131, doi: [10.1016/j.ica.2016.03.002](https://doi.org/10.1016/j.ica.2016.03.002). [COBISS.SI-ID [22046984](https://www.cobiss.si/id/22046984)]
2. HOJNIK, Nuša, KRISTL, Matjaž, FERK, Gregor, GOLOBIČ, Amalija, TUREL, Matejka, JAGLIČIĆ, Zvonko, DROFENIK, Mihael. Complexes of Eu(III), Tb(III) and Cu(II) with proton transfer compound between 2,6-pyridinedicarboxylic acid and 2-aminobenzothiazole : characterization of the structures and physical properties. *Journal of coordination chemistry*, ISSN 0095-8972, 2016, vol. 69, iss. 9, str. 1484-1498, ilustr., doi: [10.1080/00958972.2016.1182632](https://doi.org/10.1080/00958972.2016.1182632). [COBISS.SI-ID [19527702](https://www.cobiss.si/id/19527702)]
3. KRISTL, Matjaž, MURŠEC, Mateja, SEM, Vilma, KRISTL, Janja. Application of thermogravimetric analysis for the evaluation of organic and inorganic carbon contents in agricultural soils. *Journal of thermal analysis and calorimetry*, ISSN 1388-6150. [Print ed.], March 2016, vol. 123, iss. 3, str. 2139-2147, doi: [10.1007/s10973-015-4844-1](https://doi.org/10.1007/s10973-015-4844-1). [COBISS.SI-ID [18832918](https://www.cobiss.si/id/18832918)]