



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Eksperimenti 2
Course title:	Experiments 2

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Izobraževalna kemija / 2. stopnja	/	1	2
Educational Chemistry/2nd 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
15	15		40		80	5

Nosilec predmeta / Lecturer:

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

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

Znanje splošne kemije in laboratorijskih tehnik.

Prerequisites:

Knowledge of general chemistry and laboratory techniques.

Vsebina:

1. Razvijanje šolskih eksperimentov
2. Demonstracijski eksperiment: metodični pristopi;
3. Priprava eksperimentov za samostojno delo učencev
4. Preverjanje in ocenjevanje eksperimentalnega dela učencev

Content (Syllabus outline):

1. Developing school experiments
2. Demonstration experiment: the methodical approaches;
3. Developing experiments for students' work
4. Testing and evaluating students' Experimental work.

Temeljni literatura in viri / Readings:

Bačnik, A. (ur.) Didaktika eksperimentalnega dela za novi kurikulum, Zavod RS za šolstvo, Nova Gorica, 1999.

Ferk Savec, Vesna, Košenina, Suzana. Zagotavljanje varnosti v šolskem kemijskem laboratoriju. Varnost in zdravje na delovnem mestu, julij 2012, št. [6], str. 12-14

Jorge G. Ibanez in sod. Environmental chemistry: microscale laboratory experiments. New York : Springer Science + Business Media, 2008.

Revije:

Kemija v šoli (Ljubljana), Acta Chimica Slovenica (Ljubljana), Journal of Chemical Education (ZDA), Education in Chemistry (Velika Britanija), Chemedica (Avstralija), Chemie & Schule (Avstrija), Chemie in der Schule (Nemčija), Chemie in unserer Zeit (Nemčija);

Spletni viri

Cilji in kompetence:

Študenti v okviru študija predmeta

Eksperimenti 2:

- Predstavijo vlogo in pomen eksperimentalnega v različnih srednješolskih programih
- spoznajo aktualne metodične pristope pri izvajanju demonstracijskih eksperimentov
- pridobijo potrebno didaktično znanje za vrednotenje kakovosti eksperimentalnega dela učencev pri pouku kemije;
- se seznanijo z metodologijo razvijanja šolskih eksperimentov;

Objectives and competences:

During studying the subject Experiments 2 students:

- perform the role and importance of experimental work in different secondary school programmes
- get knowledge about methodical approaches for performing demonstrative experiments;
- acquire the needed didactic knowledge for the evaluation of students' chemistry experimental work;
- acquire the methodology of developing school experiments;

Predvideni študijski rezultati:

Znanje in razumevanje:

- vsebina in metodika eksperimentalnega pouka v srednješolskih programih
- timsko razvijanje in izvajanje novih eksperimentov
- evalvacija samostojnega eksperimentalnega dela učencev
- (samo)kritičen pristop do laboratorijskih vaj
- evalvacija kakovosti seminarских nalog

Intended learning outcomes:

Knowledge and understanding:

- Contents and methodology of experimental work in secondary schools
- team developing and performing of new experiments
- evaluation of students' experimental work
- (self)critical approach to the laboratory work
- evaluation of quality of seminar work

Metode poučevanja in učenja:

Learning and teaching methods:

Eksperimentalna predavanja Laboratorijske vaje Samostojno delo	Experimental lectures Laboratory work Individual work
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	Delež (v %) / Weight (in %)	Assessment:
Načini ocenjevanja: Seminarsko delo	50	Seminar work
Didaktične eksperimentalne vaje	50	Didactical experimental work

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)]
4. CHILINGAROV, Norbert, KNOT'KO, A. V., SHLYAPNIKOV, Igor, MAZEJ, Zoran, KRISTL, Matjaž, SIDOROV, Lev Nikolaevich. Cerium tetrafluoride : sublimation, thermolysis and atomic fluorine migra. *The journal of physical chemistry. A, Molecules, spectroscopy, kinetics, environment, & general theory*, ISSN 1089-5639, 2015, vol. 119, no. 31, str. 8452-8460, doi: [10.1021/acs.jpca.5b04105](https://doi.org/10.1021/acs.jpca.5b04105). [COBISS.SI-ID [18832150](https://www.cobiss.si/id/18832150)]
5. KRISTL, Matjaž, GYERGYEK, Sašo, KRISTL, Janja. Synthesis and characterization of nanosized silver chalcogenides under ultrasonic irradiation. *Materials express*, ISSN 2158-5849. [Print ed.], Avg. 2015, vol. 5, no. 4, str. 359-366, doi: [10.1166/mex.2015.1245](https://doi.org/10.1166/mex.2015.1245). [COBISS.SI-ID [18695958](https://www.cobiss.si/id/18695958)]