UČNI NAČRT

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Mehke veščine in strokovni razvoj
Course title:	Soft skills and professional development

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
MAG Kemija, 2. stopnja	Materiali za shranjevanje in pretvorbo energije	2.	3.
USP Chemistry, 2nd Cycle	Materials for Energy Storage and Conversion	2st	3rd

Vrsta predmeta / Course type	Obvezni / Mandatory
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	30	/	/	/	60	4

Nosilec predmeta / Lecturer:	izr. prof. dr. Robert Dominko/ dr. Robert Dominko, Associate Professor

Jeziki / Languages:	**Predavanja / Lectures:**	**angleški/ English**
	Vaje / Tutorial:	**angleški/ English**

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

Predmet imajo opredeljen kot študijsko obveznost študenti, ki so vključeni v projekt "Materiali za shranjevanje in pretvorbo energije +" (MESC+). Lahko ga vpišejo tudi drugi tuji študenti na mednarodni izmenjavi na UL. Študenti morajo biti vpisani na MŠP Kemija, 2. stopnja, ali imeti podpisan učni sporazum (LA) med UL FKKT in drugimi tujimi izobraževalnimi ustanovami.

Prerequisites:

This course will be assigned to the students who are part of the “Materials for Energy Storage and Conversion +” (MESC+) project. It is available to other foreign international exchange students as well. Students must be enrolled to the USP Chemistry, 2nd Cycle or have signed learning agreement between UL FKKT and other foreign educational institution.

Vsebina:

- Predstavitev rezultatov
- Poročanje o rezultatih
- Predstavitvena retorika
- Profesionalni razvoj
- Različne vrste iskalnikov za bibliografijo
- Klasifikacija raziskovalne literature
- Zaščita znanja, definicija intelektualne lastnine
- Pisanje patentne prijave
- Razlika med patentnimi prijavami
- Od znanstvene ideje do obsežnega projekta
- Vodenje projektov in poročanje
- Industrijski projekti

Content (Syllabus outline):

- Results presentation
- Results reporting
- Presentation rhetoric
- Professional development
- Different types of bibliography search engines
- Classification of research literature
- Knowhow protection, intellectual property definition
- Patent application writing
- Difference between patent applications
- From scientific idea to large scale project
- Project coordination and reporting
- Industrial projects

Temeljni literatura in viri / Readings:

1.) Getting Skills Right: Skills for Jobs Indicators, OECD, DOI:https://dx.doi.org/10.1787/9789264277878-en ISBN: 978-92-64-27786-1 (print version) (20%)
2.) Key competences for lifelong learning; EU Commission document; 2019 ISBN: 978-92-76-00475-2 (20%)
3.) Najnovejša literatura (ključne beside: kako napisati znanstveno poročilo, … (10%)
4.) https://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/applying-for-funding/submit-proposals_en.htm (20%)

5.) L. Bently and B. Sherman, Intellectual Property Law, Oxford University Press; 3rd edition (November 15, 2008), ISBN-13: 978-0199292042 (20%)
6.) Najnovejša literature (ključne beside: kako napisati uspešen projekt, kako pripraviti patentno vlogo, … (10%)

Cilji in kompetence:

Ob koncu tega predmeta so študentje sposobni:

- strukturiranja rezultatov v izčrpno poročilo / predlog članka / magistrsko delo;
- poročanja o rezultatih pred različnimi skupnostmi (strokovna, nestrokovna ali laična javnost);
- priprave poročil in predstavitve, ki je razumljiva, brez balasta, gladka in logična;
- študenti bodo dobili vpogled v strokovni razvoj s poudarkom na možnostih doktorskega študija in potencialnem podoktorskem študiju.
- iskanja literature z različnimi iskalniki;
- pisanja projektnih predlogov;
- ustrezne zaščite intelektualne lastnine;
- priprave patentne prijave;
- predloga projekta za industrijskega partnerja.

Objectives and competences:

At the end of this course students are able to:

- structure results into the comprehensive report/manuscript/thesis;
- report results in front of different communities (professional, public or lay community);
- preparation of the reports and presentation which is understandable, without ballast, smooth and logical;
- students will get insights about professional development, with a focus on possibilities in the PhD study and potential postdoctoral research studies.
- search for the literature by using different search engines;
- write a proposal for governmental founds;
- apply proper protection of intellectual property;
- draft a patent application;
- convince an industrial partner to invest in their research.

Predvideni študijski rezultati:

Znanje in razumevanje:

Študenti se naučijo predstaviti rezultate na razumljiv način, kako pisati poročila, magistrska in doktorska dela, predloge člankov. Študentje dobijo nekaj vpogleda v možnost razvoja po magistrskem študiju v akademskem in zasebnem sektorju.

Študenti se bodo naučili, kako iskati literaturo, katere iskalnike je mogoče uporabiti, kako

Intended learning outcomes:

Knowledge and Comprehension

Students learn how to present results in the understandable way, how to write reports, theses, manuscripts, policy of publishers. Students get some insights about possibility of carrier development after master study in academia and private sector.

Students will learn how to search for the literature, which search engines can be used,

razvrstiti raziskovalno literaturo in kako prepoznati zanesljive rezultate. Izvedeli bodo o različnih možnostih za zaščito intelektualne lastnine, kako izpolniti patentne prijave, kaj je pomembno in kakšne so razlike med različnimi možnostmi. Zadnji del predmeta bo namenjen pisanju projektov: individualni – različne štipendije in obsežni projekti. Kako delati v velikih konzorcijih in kako dobiti neposredne pogodbe z industrijo. <u>Uporaba:</u> Pridobljeno znanje bo uporabljeno pri kariernem in osebnem razvoju. <u>Refleksija:</u> Pridobljeno znanje je orodje, ki študentom pomaga pri njihovem poklicnem in osebnem razvoju. <u>Prenosljive spretnosti:</u> Pridobljeno znanje je zelo koristno v prihodnjih študijah, razvoju nosilcev in v osebnem življenju.	how to classify research literature and how to recognize trustable results. They will get explanations about different possibilities to protect intellectual property, how to fill in patent applications, what is important and what are differences between different options. Last part of the course will be devoted to writing projects: small – individual fellowships and large-scale collaboration projects. How to work in large consortiums and how to get direct contracts with industry. <u>Application</u> Acquired knowledge will be used in carrier and personal development. <u>Analysis</u> The acquired knowledge is a tool that helps students in their personal carrier development. <u>Skill-transference Ability</u> Acquired knowledge is widely useful in future studies, carrier development, and in personal life.

Metode poučevanja in učenja:	**Learning and teaching methods:**
Predavanja, seminarji	Lectures and seminars.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**

Izpit (pisni del)/	**60%**	Research proposal (Written part)
Seminar (prezentacija, diskusija)	**40%**	Research proposal (Presentation, Discussion)

Reference nosilca / Lecturer's references:

(1) A. Vižintin, J. Bitenc, A. Kopač Lautar, K. Pirnat, J. Grdadolnik, J. Stare, A. Randon-Vitanova, R. Dominko, Probing electrochemical reactions in organic cathode materials via in operando infrared spectroscopy. Nature communications, ISSN 2041-1723, Feb. 2018, vol. 9, str. 1-7

(2) Vizintin, A.; Lozinšek, M.; Chellappan, R. K.; Foix, D.; Krajnc, A.; Mali, G.; Drazic, G.; Genorio, B.; Dedryvère, R.; Dominko, R. Fluorinated Reduced Graphene Oxide as an Interlayer in Li–S Batteries. Chem. Mater. 2015, 27 (20), 7070–7081. https://doi.org/10.1021/acs.chemmater.5b02906.

(3) Mccala, E.; Abakumov, A. M.; Saubanere M.; Foix, D.; Berg E. J.; Rousse G.; Doublet M.-L.; Gonbeau D.; NOVÁK P.; VAN Tendeloo G.; Dominko R.; Tarascon J.-M. Visualization of O-O peroxo-like dimers in high-capacity layered oxides for Li-ion batteries. Science, ISSN 0036-8075, Dec. 2015, vol. 350, no. 6267, str. 1516-1521.

(4) Dominko R., Premikanje meja čez obzorja. ilustracija Adriano Janežič. Volkswagen revija, 2016, št. 4, str. 80, ilustr. [COBISS.SI-ID 5912090]

(5) Dominko R., Silicates and titanates as high-energy cathode materials for Li-ion batteries. V: DHAR, Nibir K. (ur.). Energy harvesting and storage : materials, devices,and applications : proceedings of SPIE : 5-6 April 2010, Orlando, Florida, United States, (Proceedings of SPIE, ISSN 0277-786X, vol. 7683). Bellingham: SPIE. 2010, 8 str., ilustr., doi: 10.1117/12.850801.

(6) Dominko R. (intervjuvanec), "Smiselno je raziskovanje materialov, ki pri pridobivanju ne zahtevajo veliko energije." : dr. Robert Dominko. Gea : poljudnoznanstvena revija, ISSN 0353-782X. [Tiskana izd.], feb. 2016, let. 26, str. 40-43, ilustr. [COBISS.SI-ID 512344442]./

(7) Član komisije za inovacije na Kemijskem inštitutu, Ljubljana, Slovenija in konzultant industriji na področju materialov in kemije v prostem času.

(8) Bele M.; Dominko R.; Pivko M.; Gaberšček M.; A two-step synthesis method for the preparation of composites of insertion active compounds for lithium-ion batteries : patent : EP2619137 (B1), 2016-07-20. Hague: European Patent Office, 2016. 14 str., ilustr. [COBISS.SI-ID 5966618]

patentna družina: WO 2012/039687 (A1), 2012-03-29; SI23488 (A), 2012-03-30

(9) Pavia D.; Lemaitre M.; Dominko R.; Engelen R.; Jacques P.; Jarva K.; Malkamaki M.; Clean energy industrial forum : reinventing regional and local sustainable value chains : lecture at the EU Industry Days 2019, Brussels, 5-6 February 2019. [COBISS.SI-ID 6572570]

(10) Dominko R. New generation of the high energy density lithium batteries : [lecture at conference] Research policy within the european cohesion policy, 17-18 November, 2011, Brdo pri Kranju, Slovenia. Brdo pri Kranju: Government office for local self-government and regional policy, 2011. [COBISS.SI-ID 4861210]

(11) Dominko R. Future trends in battery material technologies : invited lecture at the EIC Prize: Innovative Batteries, 12 May, 2017, Brussels, Belgie. [COBISS.SI-ID 6151962]

(12) Dominko R. Coordination of EU FP7 project - experience from Eurolis : lecture at Fourth Regional Symposium on Electrochemistry, South-East Europe, May 26-30, 2013, Ljubljana, Slovenia. Ljubljana