

Predmetnik doktorskega študija 3. stopnje: **Okoljske in regionalne študije**

1. letnik, 1. semester										
Zap. št.	Učna enota	Nosilec	Kontaktne ure					Sam. delo študenta	Ure skupaj	ECTS
			Pred.	Sem.	Vaje	Klinične vaje	Druge obl. š.			
1	Skupni obvezni: *DT001-ZNANSTVENE METODE V OKOLJSKIH IN REGIONALNIH ŠTUDIJAH	Doc. dr. Rok Ciglič, zr. prof. dr. Simona Kralj-Fišer	15*	20*	10*			90*	135*	4,5*
2	Skupni obvezni: *DT02-OKOLJSKI VIDIKI TRAJNOSTNEGA RAZVOJA	Izr. prof. dr. Urban Šilc	40*	20*				120*	90*	3
3	Skupni obvezni: *DT005-Samostojno raziskovalno delo 1.	mentor						315*	315*	10,5*
4	Izbirni predmet 1								180	6
5	Izbirni predmet 2								180	6
SKUPAJ									900	30
DELEŽ									100%	100%

* V prvem in drugem semestru *označuje ure in ECTS v posameznem semestru. Kandidat_ka dobi priznane ECTS v seštevku 1. in 2. Semestra, ko opravi vse obveznosti učne enote označene z *.

1. letnik, 2. semester										
Zap. št.	Učna enota	Nosilec	Kontaktne ure					Sam. delo študen ta	Ure skupaj	ECTS
			Pred.	Sem.	Vaje	Klinične vaje	Druge obl. š.			
1	Skupni obvezni: *DT001-ZNANSTVENE METODE V OKOLJSKIH IN REGIONALNIH ŠTUDIJAH	Doc. dr. Rok Ciglič, Izr. prof. dr. Simona Kralj Fišer	15*	10*	10*		10*	90*	135*	4,5*
2	Skupni obvezni: *DT02-OKOLJSKI VIDIKI TRAJNOSTNEGA RAZVOJA	Izr. prof. dr. Urban Šilc	20*	10*				60*	90*	3*
2	Skupni obvezni: DT003-RAZISKOVALNI SEMINAR 1	Doc. dr. Jani Kozina, doc. dr. Nika Razpotnik Visković	10	30	10		10	120	180	6
4	Skupni obvezni: *DT005-Samostojno raziskovalno delo 1.	mentor						315*	315*	10,5*
5	Izbirni predmet 3								180	6
SKUPAJ									900	30
DELEŽ									100%	100%

* V prvem in drugem semestru *označuje ure in ECTS v posameznem semestru. Kandidat_ka dobi priznane ECTS v seštevku 1. in 2. Semestra, ko opravi vse obveznosti učne enote označene z *.

2. letnik, 1. in 2. semester										
Zap. št.	Učna enota	Nosilec	Kontaktne ure					Sam. delo študenta	Ure skupaj	ECTS
			Pred.	Sem.	Vaje	Klinične vaje	Druge obl. š.			
1	Skupni obvezni: DT004-RAZISKOVALNI SEMINAR 2	Doc. dr. Jani Kozina, doc. dr. Nika Razpotnik Visković		60				210	270	9
2	Skupni obvezni: DT006-Samostojno raziskovalno delo 2	mentor						1170	1170	39
3	Izbirni predmet 4								180	6
4	Izbirni predmet 5								180	6
SKUPAJ									1800	60
DELEŽ									100%	100%

3. letnik, 1. in 2. Semester										
Zap. št.	Učna enota	Nosilec	Kontaktne ure					Sam. delo študenta	Ure skupaj	ECTS
			Pred.	Sem.	Vaje	Klinične vaje	Druge obl. š.			
1	Skupni obvezni: DT007-Samostojno raziskovalno delo 3	Mentor						900	900	30
2	Doktorska disertacija	Mentor						900	900	30
SKUPAJ								1800	1800	60
DELEŽ								100%	100%	100%

Izbirni predmeti										
Zap. št.	Predmet	Nosilec	Kontaktne ure					Sam. delo študenta	Ure skupaj	ECTS
			Pred.	Sem.	Vaje	Klinične vaje	Druge obl. š.			
1	Skupni izbirni: DI001-PROJEKTNI MANAGEMENT	Doc. dr. Janez Nared	30	30				120	180	6
2	Skupni izbirni: DI002-GIS IN PROSTORSKE ANALIZE V OKOLJSKIH IN REGIONALNIH ŠTUDIJAH	Doc. dr. Žiga Kokalj	10		20		10	120	160	6
3	Skupni izbirni: DI003- DALJINSKO ZAZNAVANJE V OKOLJSKIH IN REGIONALNIH ŠTUDIJAH	Doc. dr. Žiga Kokalj	20		20		20	120	180	6
4	Skupni izbirni: DI004-RAZVOJ IN UPRAVLJANJE REGIJ	Doc. dr. Janez Nared	60					120	180	6
5	Skupni izbirni: DI005-SODOBNE OKOLJSKE SPREMEMBE V POKRAJINI	Doc. dr. Aleš Smrekar	30	10			20	120	180	6
6	Skupni izbirni: DI006-POKRAJINSKI VIDIKI NARAVNIH NESREČ	Doc. dr. Mateja Ferk, doc. dr. Blaž Komac	60					120	180	6
7	Skupni izbirni: DI007-TRAJNOSTNO UPRAVLJANJE POKRAJIN	Doc. dr. Blaž Komac, doc. dr. Mateja Šmid Hribar	40	20				120	180	6

8	Skupni izbirni: DI008 -POTENCIALI NARAVNE IN KULTURNE DEDIŠČINE	Doc. dr. Mateja Ferk, doc. dr. Aleš Smrekar	30	10			20	120	180	6
9	Skupni izbirni: DI009 -GLOBALNE SPREMEMBE IN OKOLJSKA ZGODOVINA	Izr. prof. dr. Matija Zorn	30	30				120	180	6
10	Skupni izbirni DI010 -NARAVNA IN ANTROPOGENA DEGRADACIJA POKRAJINE	Doc. dr. Mateja Breg Valjavec, doc. dr. Rok Ciglič	30	10			20	120	180	6
11	Skupni izbirni: DI011 -BIODIVERZITETA IN GLOBALNE SPREMEMBE	Izr. prof. dr. Urban Šilc	30	15			15	120	180	6
12	Skupni izbirni: DI012 -NARAVOVARSTVO	Izr. prof. dr. Urban Šilc	30	15			15	120	180	6
13	Skupni izbirni: DI013 -UVOD V EKOSISTEMSKO STORITVE	Doc. dr. Mateja Šmid Hribar, doc. dr. Daniela Alexandra Teixeira da Costa Ribeiro	30		20		10	120	180	6
14	Skupni izbirni: DI014 -PODNEBNE SPREMEMBE	Izr. prof. dr. Matija Zorn	30		20		10	120	180	6
15	Skupni izbirni: DI015 -GEOMORFOLOGIJA KRASA	Doc. dr. Mateja Ferk	30		20		10	120	180	6
16	Skupni izbirni: DI016 -IZBRANE ŠTUDIJE KRASOSLOVJA	Doc. dr. Nataša Viršek Ravbar	30	5	10		15	120	150	6

17	Biodiverziteta in ekologija: DIB01 -ZNANSTVENA METODA V BIOLOŠKIH ZNANOSTIH	Doc. dr. Matjaž Gregorič	30	15			15	120	180	6
18	Biodiverziteta in ekologija: DIB02 -IZBRANA POGLAVJA IZ EKOLOGIJE RASTLIN	Red. prof. dr. Andraž Čarni	30		15		15	120	180	6
19	Biodiverziteta in ekologija: DIB03 -IZBRANA POGLAVJA IZ EKOLOGIJE ŽIVALI	Izr. prof. dr. Simona Fišer Kralj	20	25			15	120	180	6
20	Biodiverziteta in ekologija: DIB04 -VEDENJE ŽIVALI	Izr. prof. dr. Simona Fišer Kralj	30	15			15	120	180	6
21	Biodiverziteta in ekologija: DIB05 -INTEGRATIVNA ZOOLOGIJA	Doc. dr. Matjaž Gregorič	20	25			15	120	180	6
22	Biodiverziteta in ekologija: DIB06 -ARAHNOLOGIJA: UVOD V TERENSKE IN LABORATORIJSKE RAZISKAVE	Doc. dr. Matjaž Gregorič	5	10	40		5	120	180	6
23	Biodiverziteta in ekologija: DIB07 -EKOTOKSIKOLOGIJA	Doc. dr. Paula Pongrac	30	15			15	120	180	6
24	Biodiverziteta in ekologija: DIB08 -PLITVI PODZEMELJSKI HABITATI: EKOLOGIJA, EVOLUCIJA IN NARAVOVARSTVO	Izr. prof. dr. Tanja Pipan	30	15			15	120	180	6

25	Paleobiologija in sedimentarna geologija: DIP01-BIOKRONOLOGIJA IN STRATIGRAFSKA KORELACIJA	Doc. dr. Špela Goričan	30	30	30			180	270	9
26	Paleobiologija in sedimentarna geologija: DIP02-PALEOBIOLOGIJA IN EVOLUCIJA VREtenČARJEV	Izr. prof. dr. Aleksander Horvat	30	30	30			180	270	9
27	Paleobiologija in sedimentarna geologija: DIP03-IZBRANA POGLAVJA IZ PALEONTOLOGIJE	Doc. dr. Špela Goričan	20	10	30			120	180	6
28	Paleobiologija in sedimentarna geologija: DIP04-PALEOEKOLOGIJA IN TAFONOMIJA	Izr. prof. dr. Aleksander Horvat	30	10	20			120	180	6
29	Paleobiologija in sedimentarna geologija: DIP05-PALEOBOTANIKA IN PALINOLOGIJA	Doc. dr Maja Andrič	30	10	20			120	180	6
30	Paleobiologija in sedimentarna geologija: DIP06-GEOLOGIJA KARBONATOV	Doc. dr. Andrea Martín-Pérez	30	30	30			180	270	9

31	Paleobiologija in sedimentarna geologija: DIP07 -GEOKEMIJA SEDIMENTNIH KARBONATOV	Doc. dr. Špela Goričan, izr. prof. dr. Aleksander Horvat	30	10	20			120	180	6
32	Regionalne študije: DIR01 -PARTICIPATIVNO RAZISKOVANJE IN PLANIRANJE	Doc. dr. David Bole	40	20				120	180	6
33	Regionalne študije: DIR02 -GOSPODARSKA GEOGRAFIJA	Doc. dr. Jani Kozina	40	20				120	180	6
34	Regionalne študije: DIR03 -EVROPSKA REGIONALNA POLITIKA	Doc. dr. Janez Nared	60					120	180	6
35	Regionalne študije: DIR04 -SODOBNI DEMOGRAFSKI PROCESI	Doc. dr. Nika Razpotnik Visković	40	20				120	180	6
36	Regionalne študije: DIR05 -PROSTORSKA SOCIOLOGIJA	Doc. dr. Pavel Gantar	40	20				120	180	6
37	Regionalne študije: DIR06 -STRATEŠKO PROMETNO NAČRTOVANJE	Doc. dr. Matej Gabrovec	40	20				120	180	6
38	Regionalne študije: DIR07 -PROSTORSKO NAČRTOVANJE	Doc. dr. Nika Razpotnik Visković	40	20				120	180	6

39	Regionalne študije: DIR08 -IZBRANA POGLAVJA IZ RAZVOJA PODEŽELJA	Doc. dr. Nika Razpotnik Visković	40	20				120	180	6
40	Regionalne študije: DIR09 -REGIONALNA EKONOMIKA IN REGIONALNO EKONOMSKO MODELIRANJE	Doc. dr. Janez Nared	40	20				120	180	6
41	Regionalne študije: DIR10 -ŠTUDIJE DRUŽBENIH UČINKOV POSEGOV V PROSTOR	Doc. dr. Pavel Gantar	40		20			120	180	6
42	Regionalne študije: DIR11 -IZBRANA POGLAVJA IZ PREUČEVANJA NARAVNIH NESREČ	Doc. dr. Mateja Ferk, doc. dr. Blaž Komac	60					120	180	6
43	Regionalne študije: DIR12 -IZBRANA POGLAVJA IZ PREUČEVANJA DRUŽBENO- OKOLJSKIH PROCESOV	Doc. dr. Aleš Smrekar	40	20				120	180	6
44	Regionalne študije: DIR13 -URBANA PREOBRAZBA: TEORIJA IN PRAKSA	Doc. dr. David Bole	40	20				120	180	6
SKUPAJ										
DELEŽ										

Delež izbirnosti po letnikih (razmerje med ECTS točkami, ki jih študent pridobi z obveznimi in izbirnimi vsebinami)

Letnik	Obvezne vsebine	Izbirne vsebine	Praktično usposabljanje	Doktorska disertacija
1. letnik	21 ECTS obvezne vsebine (dva obvezna predmeta in raziskovalni seminar), 21 ECTS samostojno raziskovalno delo	18 ECTS		
2. letnik	9 ECTS obvezne vsebine (raziskovalni seminar), 39 ECTS samostojno raziskovalno delo	12 ECTS		
3. letnik	30 ECTS samostojno raziskovalno delo			30 ECTS
Skupaj	30 ECTS obvezne vsebine, 90 ECTS samostojno raziskovalno delo	30 ECTS		30 ECTS

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	ZNANSTVENE METODE V OKOLJSKIH IN REGIONALNIH ŠTUDIJAH
Course title:	METHODOLOGY IN ENVIRONMENTAL AND REGIONAL STUDIES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni	1	1 in 2
Environmental and Regional Studies, doctoral study 3 rd level	Common	1	1 and 2

Vrsta predmeta / Course type

Obvezni /Mandatory

Univerzitetna koda predmeta / University course code:

DT001

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	30	20		10	180	9

Nosilec predmeta / Lecturer:

Doc. dr. Rok Ciglič, izr. prof. dr. Simona Kralj-Fišer
(ostali izvajalci: dr. Drago Perko, doc. dr. Mateja Ferk, doc. dr. David Bole, Primož Pipan, dr. Peter Kumer, dr. Primož Gašperič, dr. Mimi Urbanc, dr. Manca Volk Bahun; izr. prof. dr. Urban Šilc, red. prof. dr. Andraž Čarni, doc. dr. Matjaž Gregorič, dr. Mitja Prelovšek, doc. dr. Špela Goričan)

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Finished second Bologna level in the appropriate field or University degree VII.

Vsebina:

Uvod

Temelji znanstvenega dela

Organiziranost znanosti v Sloveniji
Spletni informacijski viri (Web of Science, Google Scholar, Mendeley)
Zasnova znanstvene raziskave
Veljavnost in zanesljivost rezultatov
Pisanje znanstvenih člankov, monografij in disertacije

Content (Syllabus outline):

Introduction

Essentials of the research work

Organization of science in Slovenia
Web information sources (Web of Science, Google Scholar, Mendeley)
Research methods
Validity and reliability of the results

Etika v znanosti

Pregled kvantitativnih in kvalitativnih metod

Podatki

Izbrane kvantitativne metode v naravoslovju in humanistiki

Izbrane kvalitativne metode v naravoslovju in humanistiki

Osnove geografskih informacijskih sistemov

Uvod v geografske informacijske sisteme

Daljinsko zaznavanje

Prostorska statistika in pokrajinske mere

Klasifikacija, podpora odločanju

Terensko delo in GIS

Kartografija in spletni GIS-i

Izbrani podatkovni viri ter programska oprema

Digitalni viri podatkov

Arhivski viri

Programska oprema za analizo pokrajine

Zasnova in izvedba testov v naravoslovnih znanostih

Specifike eksperimentalnega načrtovanja v naravoslovnih znanostih

Napake in etični pomisleki v načrtovanju eksperimentov

Osnovni raziskovalni pristopi v raziskavah biodiverzitete, ekologije in evolucije; predstavitev metod iz študijskih primerov terenskih in laboratorijskih raziskav

Osnovni raziskovalni pristopi v paleontologiji in sedimentologiji (specifika geoloških znanosti, analitične tehnike v paleontologiji, stratigrafiji in sedimentologiji, osnovna pravila taksonomske nomenklature, osnovna pravila stratigrafske nomenklatur)

Reporting research outcomes: how to write scientific papers, monographs and doctoral thesis

Ethical considerations in science

Overview of quantitative and qualitative methods

Types of data

Selected quantitative methods in natural and human sciences

Selected qualitative methods in natural and human sciences

Basics of geographical information systems

Introduction into GIS

Remote sensing

Spatial statistics and landscape metrics

Classification, decision support

Field work and GIS

Cartography and web GIS

Selected sources of data and software

Digital sources of data

Archival sources

Software for landscape research

Essentials of the method in natural sciences

Specifics of experimental design in natural sciences

Reasoning, confounding factors and specific ethical considerations in natural sciences

The basics of research methodology in biodiversity, ecology and evolution research; case studies method presentation using field work and laboratory approaches

The basics of research methodology in palaeontology and sedimentary geology (Specific reasoning in Earth Science, Specific analytical techniques in paleontology, stratigraphy and sedimentology, Basic rules of

Osnovni raziskovalni pristopi v krasoslovju (primeri geološko-geomorfoloških, hidrogeoloških, meteoroloških, fizikalnih, laboratorijsko-kemičnih in prostorsko-geografskih metod)

Vaje

Uvod v uporabo izbranih računalniških programov
Kritična diskusija o uporabi znanstvenih metod na primeru izbranih objavljenih študij GIS

Seminar

Predstavitev izbranih primerov raziskovalnih projektov

Terenske vaje

Raziskovalno delo na terenu s področja humanistike
Raziskovalno delo na terenu in v laboratoriju s področja naravoslovja

taxonomic nomenclature, Basic rules of stratigraphic nomenclature)

The basics of research methodology in karstology: examples of geological-geomorphological, hydrogeological, meteorological, physical, chemical (laboratory) and geographical (spatial) methods

Laboratory work

Introduction into selected computer programmes
Critical discussion of the methods used in selected scientific studies
GIS

Seminar

Presentation of an example of research project

Field work

Research work in the field (human science)
Research work in the field and in the laboratory (natural science)

Temeljni literatura in viri / Readings:

Izbrana poglavja iz:

- Ruxton, G., & Colegrave, N. (2017). Experimental design for the life sciences. Oxford University Press. 4th Edition. Chapters I – VI.
- Vrišer, I. 2002: Uvod v geografijo. Ljubljana. Chapters 1, 3, 4
- Guides for researchers. URL: <http://www.rgs.org/> (selected websites)
- Rogerson, P. 2006: Statistical methods for geography: a student guide. London. Chapters 1, 2, 10
- Dillman, D. A., Smyth, J. D., Christian, L. M. 2014: Internet, Phone, Mail, and Mixed Mode Surveys: The Tailored Design Method. Hoboken. Chapters 1, 3
- Burrough, P. A., McDonnell, R. A., Lloyd, C. D. 2015: Principles of geographical information systems. Oxford. Chapters 1–6, 11
- Campbell, J. B. 1996: Introduction to remote sensing. London. Chapters 1, 11, 12
- Brewer, C. A. 2005: Designing better maps. A guide for GIS users. Redlands. Chapters 1–4

Izbrani članki iz znanstvenih revij. / Selected articles from scientific journals.

- Ager, D.V. 1993. The nature of the stratigraphic record (3rd edition). Wiley and Sons.
- Frodeman R. 1995. Geological reasoning: Geology as an interpretive and historical science. GSA Bulletin 107 (8), 960–968.
- Cochran, W., Fenner, P., Hill, M. 1979. Geowriting. A guide to writing, editing, and printing in Earth science (3rd edition). American Geological Institute. (or a later edition of this manual)
- Tucker, M. 1988. Techniques in Sedimentology. Blackwell Scientific Publications.
- The International Code of Nomenclature for algae, fungi, and plants (ICN, 2012); The International Code of Zoological Nomenclature (ICZN, 4th edition, 1999) (both in free online access).
- Salvador, A. (Ed.) 1994. International Stratigraphic Guide. A guide to stratigraphic classification, terminology, and procedure (2nd edition). International Subcommission on Stratigraphic Classification of IUGS International Commission on Stratigraphy

Cilji in kompetence:

Splošno

Cilj predmeta je predstaviti načela in metode znanstvenega dela (koraki v raziskavi) od identifikacije/zasnove znanstvenega vprašanja do pisanja znanstvenih publikacij. Predmet bo razložil principe načrtovanja in izvedbe raziskav, vključno s pogostimi napakami in etičnimi pomisleki, predstavil uporabnost kvantitativnih in kvalitativnih metod, metod geografskega informacijskega sistema, zajemanje podatkov, pisanje in vzpostavitev kritičnosti do prebranega gradiva ter pisanje prijav na projekte.

Objectives and competences:

General part

The objective of this course is to help students to embrace the concepts and methods in science from research problem identification to reporting research outcomes. The course will introduce students to the common scientific concepts, to experimental design, data acquisition and statistical analyses. Special emphasis will be laid on scientific ethics. The courses will overview the quantitative and qualitative methods, geographic information systems and data collection. In order to disseminate results effectively, the course will teach scientific

Cilj je tudi predstavitev zasnov raziskav ter njihovo kritično vrednotenje.

Specifično

Študentje se bodo na izbranih primerih podrobneje seznanili s tem, kako zasnujemo in izvedemo poskuse v znanosti.

Specifični cilji:

- poznavanje metod raziskovanja v naravoslovju, predvsem metod na področjih biodiverzitete, ekologije in evolucije, paleontologiji in sedimentologiji ter krasoslovju
- poznavanje metod raziskovanja v humanistiki, predvsem na področjih geografije
- poznavanje kvantitativnih in kvalitativnih metod,
- sposobnost snovanja raziskovalnega dela,
- sposobnost samostojnega raziskovalnega dela (s sodobnimi metodami),
- sposobnost predstavljanja znanstvenih rezultatov,
- sposobnost zbiranja različnih vrst gradiv,

Kompetence

Študent bo imel znanja za samostojno raziskovalno delo.

dissemination. Our objective is to present selected research studies to students and to teach the student for critical reasoning in science.

Specific part

Students will learn how to set and realize research.

Specific goals:

- overview of research methods in natural science, in particularly in the fields of biodiversity, ecology and evolution research, palaeontology and sedimentary geology and karstology
- overview of research methods in humanities, particularly in geography
- overview of quantitative and qualitative methods,
- capability of designing research work plan,
- capability of independent research work (with modern methodology),
- capability of presenting research results,
- capability of collecting data and materials.

Competences

Student will have adequate skills for independent research work.

Predvideni študijski rezultati:

- Poznavanje metod in načel raziskovanja v naravoslovju na področjih biodiverzitete, ekologije in evolucije, paleontologije in sedimentologije ter krasoslovja in humanistiki
- Sposobnost zasnove raziskovalnega dela
- Praktično poznavanje izbranih računalniških programov za raziskovalno delo

Intended learning outcomes:

- Knowledge of methods and concepts in natural (biodiversity, ecology and evolution research, palaeontology and sedimentary geology, karstology) and human sciences
- Ability to design sound research work
- Basic experiences with software used in research
- Ability to use GIS in research

- Sposobnost dela z GIS-om
- Praktične izkušnje z raziskovalnim delom s širokega področja naravoslovnih in humanističnih znanosti
- Sposobnost pisati in kritično uporabljati znanstvene članke

- Practical experiences with research work in natural and human sciences
- Ability to write and critically review scientific literature

Metode poučevanja in učenja:

- Predavanja
- Seminar
- Vaje
- Terenske vaje
- E-učenje

Learning and teaching methods:

- Lectures
- Seminars
- Laboratory work (work with computers)
- Field work
- E-learning

Načini ocenjevanja:

- Način (pisni izpit, ustno izpraševanje, naloge, projekt)
- Izpit
 - Ocene iz vaj

Delež (v %) /
Weight (in %)

80
20

Assessment:

- Type (examination, oral, coursework, project):
- Exam
 - Laboratory work

Reference nosilca / Lecturer's references:

Rok Ciglič

1. Perko, D. (urednik), Ciglič, R. (urednik), Zorn, M. (urednik) 2020: The geography of Slovenia: small but diverse. World regional geography book series. Cham, Springer Nature. doi: 10.1007/978-3-030-14066-3
2. Ciglič, R. (glavni urednik) 2020: Acta geographica Slovenica. Ljubljana, Založba ZRC. url: <https://ojs.zrc-sazu.si/ags/>
3. Ciglič, R., Štrumbelj, E., Češnovar, R., Hrvatin, M., Perko, D. 2019: Evaluating existing manually constructed natural landscape classification with a machine learning-based approach. Journal of spatial information science 18. doi: 10.5311/JOSIS.2019.18.464
4. Ciglič, R., Perko, D. 2017: A method for evaluating raster data layers according to landscape classification scale. Ecological informatics 39. doi: 10.1016/j.ecoinf.2017.03.004.
5. Ciglič, R., Perko, D. 2015: Modelling as a method for evaluating natural landscape typology : the case of Slovenia. Landscape analysis and planning: geographical perspectives. Heidelberg [etc.].
6. Ciglič, R., Oštir, K. 2014: Application of MODIS products to analyze forest phenophases in relation to elevation and distance from sea. Journal of applied remote sensing 8, 1. doi: 10.1117/1.JRS.8.083669.
7. Ciglič, R. 2014: Analiza naravnih pokrajinskih tipov Slovenije z GIS-om. Geografija Slovenije 28. Ljubljana.
8. Ciglič, R., Perko, D. 2013: Europe's landscape hotspots/Pokrajinske vroče točke Evrope. Acta geographica Slovenica 53, 1. doi: 10.3986/AGS53106

9. Ciglič, R. 2012: Evaluation of digital data layers for establishing natural landscape types in Slovenia. *Geopolitics, history, and international relations* 4, 2.

Simona Kralj-Fišer

1. Kralj-Fišer, S., Čandek, K., Lokovšek, T., Čelik, T., Cheng, R. C., Elgar, M. A., & Kuntner, M. (2016). Mate choice and sexual size dimorphism, not personality, explain female aggression and sexual cannibalism in raft spiders. *Animal Behaviour*, 111, 49-55.
2. Kralj-Fišer, S., Hebets, E. A., & Kuntner, M. (2017). Different patterns of behavioral variation across and within species of spiders with differing degrees of urbanization. *Behavioral Ecology and Sociobiology*, 71(8), 125.
3. Kralj-Fišer, S., & Gregorič, M. (2019). Spider Welfare. In *The Welfare of Invertebrate Animals* (pp. 105-122). Springer, Cham.
4. Kralj-Fišer, S., Laskowski, K. L., & Garcia-Gonzalez, F. (2019). Sex differences in the genetic architecture of aggressiveness in a sexually dimorphic spider. *Ecology and evolution*, 9(18), 10758-10766.
5. Kralj-Fišer, S., Premate, E., Copilaș-Ciocianu, D., Volk, T., Fišer, Ž., Balázs, G., ... & Fišer, C. (2020). The interplay between habitat use, morphology and locomotion in subterranean crustaceans of the genus *Niphargus*. *Zoology*, 139, 125742.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	OKOLJSKI VIDIKI TRAJNOSTNEGA RAZVOJA
Course title:	ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni	1	1
Environmental and Regional Studies, doctoral study 3 rd level	Common	1	1

Vrsta predmeta / Course type

Obvezni / Mandatory

Univerzitetna koda predmeta / University course code:

DT002

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

Izr. prof. dr. Urban Šilc
(Ostali izvajalci: dr. Katarina Polajnar Horvat, doc. dr. Mateja Breg Valjavec, doc. dr. Blaž Komac)

Jeziki /
Languages:

Predavanja /
Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Finished second Bologna level in the appropriate field or University degree VII.

Vsebina:

- biodiverziteta in njeno vrednotenje
- razlogi za propadanje biodiverzitete
- osnovna orodja varstvene biologije/varstva narave
- viri obremenjevanja okolja, njihovo delovanje in vplivi na okolje (promet, kmetijstvo, industrija in rudarstvo, energetika, gospodinjstva)
- odzivi družbe na človekovo delovanje v okolju in razvoj okoljske paradigme trajnostnega razvoja

Content (Syllabus outline):

- biodiversity, evaluation of biodiversity
- reasons for biodiversity loss
- basic methodology of conservation biology / nature conservation
- sources of environmental pollution, their operation and environmental impacts (transport, agriculture, industry and mining, energy, households)
- society's responses to human impacts on the environment, environmental paradigm for sustainable development

- sodobni okoljski problemi v mestih in vloga zelenih površin
- razumevanje naravnih nesreč kot dela sodobne pokrajine in kot omejevalnega ter spodbujevalnega dejavnika ekonomskega razvoja
- sodobno upravljanje naravnih nesreč
- povezava med propadanjem biotske pestrosti zaradi obremenjevanja okolja in součinkovanje vplivov narave na družbo v obliki naravnih nesreč zaradi negativnega delovanja človeka

- modern environmental problems in cities and the role of green spaces
- understanding natural disasters as part of the modern landscape, natural disasters as a limiting and stimulating factor for economic development
- modern management of natural disasters
- the link between the biodiversity loss due to environmental pollution and impact of nature on society through natural hazards because of negative human actions

Temeljni literatura in viri / Readings:

- Kryštufek, B., 1999: Osnove varstvene biologije. Tehniška založba Slovenije. Ljubljana.
- Pullin, A.S., 2002: Conservation Biology, Cambridge University Press, Cambridge.
- Dennis, R. L. H., 2010: A Resource-Based Habitat View for Conservation: Butterflies in the British Landscape, Wiley-Blackwell, Oxford.
- Smrekar, A., Breg Valjavec, M., Polajnar Horvat, K., Tiran, J. 2019: The geography of urban environmental protection in Slovenia: The case of Ljubljana. Geoscapes 1. Ljubljana.
- Nauser, M., Steiner, D. 2016: Human Ecology. London, New York. Routledge.
- Komac, B., Zorn, M. 2007: Pobočni procesi in človek [Slope processes and man]. Geografija Slovenije 15. Založba ZRC, Ljubljana.
- Keller, E. A. DeVecchio, D. E., Blodgett, R. H. 2019: Natural hazards : Earth's processes as hazards, disasters, and catastrophes. London, New York. Routledge.

Cilji in kompetence:

- pozna osnove naravovarstvenih problemov in možnega reševanja
- prepozna temeljne vire obremenjevanja okolja ter razume njihovo delovanje in vplive na okolje
- pozna temeljno soodvisnost prostorskega razvoja družbe in naravnih procesov, kot se kaže na primeru naravnih nesreč
- je sposoben obravnavati mesto kot ekosistem in je seznanjen s pomenom zelenih površin v mestih, vključno z razumevanjem mesta kot dela širše pokrajine

Objectives and competences:

- basic knowledge of the nature conservation challenges and their solutions
- basic knowledge of environmental pollution sources and understanding their operation and impacts on the environment
- understanding of the fundamental interdependence between spatial development of society and natural processes in the case of natural hazards
- ability to comprehend the city as an ecosystem and awareness of the importance of green spaces in cities, understanding city as a part of a wider landscape

- je seznanjen s paradigmo trajnostnega razvoja in njenim pomenom za upravljanje sodobnih mest

- understanding the paradigm of sustainable development and its importance for the management of modern cities

Predvideni študijski rezultati:

- razumevanje vrednotenja vzorcev biodiverzitete in funkcioniranja ekosistemov
- poglobljeno razumevanje izbranih sodobnih naravovarstvenih in okoljskih problemov, kot odsevajo tudi v naravnih nesrečah, in načinov njihovega reševanja
- sposobnost prepoznavanja virov obremenjevanja okolja in njihovih pokrajinskih učinkov
- sposobnost prepoznati dolgoročno součinkovanje naravnih in družbenih elementov pokrajine na primeru kompleksnega sistema naravnih nesreč
- sposobnost celostnega vrednotenja mestnega okolja in zelenih površin v mestih, tudi z vidika podnebnih sprememb
- sposobnost razumevanja kompleksnosti paradigme trajnostnega razvoja in njenega vključevanja v človekovo delovanje

Intended learning outcomes:

- understanding the evaluation of biodiversity patterns and the ecosystems functioning
- in-depth understanding of selected modern nature conservation and environmental issues, as reflected in natural disasters, and their management
- the ability to identify sources of environmental pollution and their impacts on landscape
- the ability to identify the long-term interaction between natural and social elements of the landscape in the case of a complex system such as natural disasters
- the ability to comprehensively evaluate the urban environment and green spaces in cities, e.g. in the light of climate change
- ability to understand the complexity of the paradigm of sustainable development and its integration into human activity

Metode poučevanja in učenja:

- predavanja
- seminarji
- e-izobraževanje

Learning and teaching methods:

- lectures
- seminars
- e-learning

Načini ocenjevanja:

- Način (pisni izpit, ustno izpraševanje, naloge, projekt)
- Ustni izpit
 - Seminarska naloga

Delež (v %) /
Weight (in %)

80

20

Assessment:

- Type (examination, oral, coursework, project):
- Oral exam
 - Written paper

Reference nosilca / Lecturer's references:

1. Chytrý, M., Tichý, L., Hennekens, S. M., Knollová, I., Janssen, J. A., Rodwell, J. S., ... **Šilc, U.** ... & Hájek, M. (2020). EUNIS Habitat Classification: Expert system, characteristic species combinations and distribution maps of European habitats. *Applied Vegetation Science*, <https://doi.org/10.1111/avsc.12519>
2. **Šilc, U.**, Vreš B., Čelik T., Gregorič M. (2020). *Biodiversity of Slovenia. The Geography of Slovenia*. Springer, pp. 109-124.
3. Pogačar, M., Fakin Bajec, J., **Polajnar Horvat, K.**, Smrekar, A., Tiran, J. 2020: Promises and limits of participatory urban greens development: experience from Maribor, Budapest, and Krakow. V: Nared, Janez (ur.), Bole, David (ur.). *Participatory research and planning in practice*, Springer, 75-89.
4. **Polajnar Horvat, K.** 2015: *Okolju prijazno vedenje*. Georitem 26. Založba ZRC. Ljubljana.
5. Smrekar, A., **Breg Valjavec, M.**, **Polajnar Horvat, K.** 2020: Human-induced degradation in Slovenia. V: Perko, D. (ur.), Ciglič, R. (ur.), Zorn, M. (ur.). *The geography of Slovenia : small but diverse*. Springer Nature, 303-312.
6. **Komac B.**, Ferk M., Pipan P., Tičar J., Zorn M. (2020) Natural Hazards in Slovenia. In: Perko D., Ciglič R., Zorn M. (eds) *The Geography of Slovenia. World Regional Geography Book Series*. Springer, Cham. https://doi.org/10.1007/978-3-030-14066-3_17
7. **Breg Valjavec, M.**, **Komac, B.** 2018: *Novodobna poselitev hudourniških vršajev in nevarnost drobirskih tokov : primer Zgornjesavske doline. Pokrajina v visoki ločljivosti*. Ljubljana.
8. **Komac, B.** 2017: *Prožna mesta - trajnostni razvoj in naravne nesreče*. [Resilient cities – sustainable development and natural hazards] *Trajnostni razvoj mest in naravne nesreče*. Naravne nesreče 4. Ljubljana.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	RAZISKOVALNI SEMINAR 1
Course title:	RESEARCH SEMINAR 1

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	skupni	1	2
Environmental and Regional Studies, doctoral study 3 rd level	Common	1	2

Vrsta predmeta / Course type

Obvezni/Mandatory

Univerzitetna koda predmeta / University course code:

DT003

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
	60				120	6

Nosilec predmeta / Lecturer:

doc. dr. Jani Kozina, doc. dr. Nika Razpotnik Visković

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII. stopnje.

Prerequisites:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- študenti prvega letnika, katerim je predmet namenjen, se seznaniijo s temeljno metodološko literaturo znanstvenega raziskovanja
- študenti prvega letnika prisostvujejo predstavitev doktorskih tez študentov drugega letnika
- razprava, vodena s strani mentorjev doktorskih študentov in študentov drugega letnika, ki predstavljajo svoje doktorske teze

Content (Syllabus outline):

- First-year students for whom the course is intended are acquainted with the basic methodological literature of scientific research
- First-year students attend presentations of doctoral theses of second-year students
- Discussion led by mentors of doctoral students and second-year students presenting their doctoral theses

Temeljni literatura in viri / Readings:

- Hilpert, U. 2019: Diversities of Innovation. London, New York: Routledge.

- Anderson, J. 2015: Understanding Cultural Geography: Places and Traces. Abingdon, Routledge.
- Moulaert, F., MacCallum, D., Mehmood, A. and Hamdouch, A. 2013: The International Handbook on Social Innovation: Collective Action, Social Learning and Transdisciplinary Research. Cheltenham, Northampton, Massachusetts: Edward Elgar.
- Phillips, R., Johns, J. 2012: Fieldwork for human geography. London, Sage.
- Coe, N. M., Kelly, P. F., Yeung, H. W. C. 2007: Economic geography: A contemporary introduction. Oxford, Blackwell Publishing.

Cilji in kompetence:

Slušatelji, študentje prvega letnika, se bodo seznanili s praktičnimi primeri znanstvenega raziskovanja in uporabo raznovrstnih znanstvenih metod ter nasveti za učinkovito pripravo svojih doktorskih disertacij, kar bo uporabno tudi širše: za pripravo predlogov projektov ter pisanje znanstvenih člankov. Ob tem se bodo seznanili s temeljno metodološko literaturo znanstvenega raziskovanja in prisostvovali predstavitev doktorskih tez študentov drugega letnika, ki bodo predstavili osnovna izhodišča svojih raziskovalnih vprašanj, oblikovanja hipoteze, uporabljenih metod ter pričakovanih rezultatov. Prek razprave, ki jo bodo vodili mentorji in študenti drugega letnika, bodo dobili zamisli in nasvete za pripravo lastnih doktorskih tez (glej Raziskovalni seminar 2).

Objectives and competences:

First-year students will get acquainted with practical examples of scientific research and the use of various scientific methods and tips for the effective preparation of their doctoral dissertations, which will be useful more widely: for preparing project proposals and writing scientific articles. To this end, they will get acquainted with the basic methodological literature of scientific research and attend presentations of doctoral theses of second-year students, who will present the basic principles of their research questions, hypothesis formulation, methods used and expected results. Through a discussion led by mentors and second-year students, they will receive ideas and advice for preparing their own doctoral theses (see Research Seminar 2).

Predvideni študijski rezultati:

Usposabljanje študentov prvega letnika za:

- organizacijo znanstvenega dela
- pripravo projektnih predlogov
- pisanje znanstvenih in strokovnih člankov
- pripravo predstavitve svojega dela

Intended learning outcomes:

First-year students will be trained to:

- Organize their research work
- Prepare project proposals
- Write research and discussion articles
- Prepare presentations of their work

Metode poučevanja in učenja:

- Predstavitve doktorskih tez s strani študentov drugega letnika
- Vodena razprava s strani mentorjev in študentov drugega letnika
- e-izobraževanje

Learning and teaching methods:

- Presentations of doctoral theses by second-year students
- Discussions led by mentors and second-year students
- e-learning

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
• Seminarsko poročilo	100	• Written paper

Reference nosilca / Lecturer's references:

- Poljak Istenič, S., Kozina, J. 2020: Participatory planning in a post-socialist urban context: Experience from five cities in Central and Eastern Europe. In Nared, J., Bole, D. (eds.). Participatory research and planning in practice (pp. 31-50). Cham: Springer International Publishing AG. DOI: 10.1007/978-3-030-28014-7_3
- Kozina, J., Clifton, N. 2019: City-region or urban-rural framework: what matters more in understanding the residential location of the creative class? Acta Geographica Slovenica, 59(1), 127-143. DOI: 10.3986/AGS.513
- Kozina, J., Poljak Istenič, S., Komac, B. 2019: Green creative environments – contribution to sustainable urban and regional development. Acta Geographica Slovenica, 59(1), 105-112. DOI: 10.3986/AGS.7030
- Bole, D., Kozina, J., Tiran, J. 2019: The variety of industrial towns in Slovenia: A typology of their economic performance. Bulletin of Geography, Socio-Economic Series, 46, 71-83. DOI: 10.2478/bog-2019-0035
- Kozina, J., Bole, D. 2018: The impact of territorial policies on the distribution of the creative economy: tracking spatial patterns of innovation in Slovenia. Hungarian Geographical Bulletin, 67(3), 259-273. DOI: 10.15201/hungeobull.67.3.4
- Šmid Hribar, M., Kozina, J., Bole, D., Urbanc, M. 2018: Public goods, common-pool resources, and the commons: The influence of historical legacy on modern perceptions in Slovenia as a transitional society. Urbani izziv, 29(1), 96-109. DOI: 10.5379/urbani-izziv-en-2018-29-01-004
- Kozina, J. 2018: Demographic Characteristics of Creative Workers: Under-activated Development Potentials in Slovenia? Acta Geographica Slovenica, 58(2), 111-121. DOI: 10.3986/AGS.4602
- Urbanc, M., Gašperič, P., Kozina, J. 2015: Geographical Imagination of Landscapes: Analysis of the Book of Photographs Slovenian Landscapes. Acta Geographica Slovenica, 55(1), 99-125. DOI: 10.3986/AGS.836
- Kozina, J. and Urbanc, M. 2014: Contemporary Processes in Peripheral Rural Areas in Slovenia. In Calcatinge, A. (ed.) Critical Spaces: Perspectives in Urban, Spatial and Landscape Studies (pp. 147-166). Zürich, Münster: LIT-Verlag.
- Kozina, J. 2010: Transport Accessibility to Regional Centres in Slovenia. Acta Geographica Slovenica, 50(2), 231-251. DOI: 10.3986/AGS50203
- Zorn, M., Razpotnik Visković, N., Repolusk, P., Ferk, M. 2013: Prostorski in regionalni razvoj Sredozemlja - enotni pristop in izbrana orodja. Georitem 22. Založba ZRC SAZU. Ljubljana.
- Razpotnik Visković, N. 2011: Vpliv stopnje urbaniziranosti na dohodkovne vire družinskih kmetij v Sloveniji. 83-1. Ljubljana.
- Razpotnik, N., Urbanc, M., Nared, J. 2009: Prostorska in razvojna vprašanja Alp. Georitem 12. Založba ZRC. Ljubljana.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	RAZISKOVALNI SEMINAR 2
Course title:	RESEARCH SEMINAR 2

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	skupni	2	2
Environmental and Regional Studies, doctoral study 3 rd level	Common	2	2

Vrsta predmeta / Course type

Obvezni/Mandatory

Univerzitetna koda predmeta / University course code:

DT004

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
	60				210	9

Nosilec predmeta / Lecturer:

doc. dr. Jani Kozina, doc. dr. Nika Razpotnik Visković

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končan prvi letnik doktorskega študija.

Prerequisites:

Finished first year of doctoral study.

Vsebina:

- študenti drugega letnika predstavljajo doktorske teze
- predstavljalec priprava izhodišč za diskusijo med udeleženci seminarja (študentje prvega in drugega letnika)
- razprava, vodena s strani mentorjev doktorskih študentov, ki predstavljajo teze

Content (Syllabus outline):

- Second-year students present their doctoral dissertations; mandatory attendance by first-year students
- Presenter prepares starting points for discussion among participants (first-year and second-year students)
- Discussion led by the advisors of the doctoral students presenting their dissertations

Temeljni literatura in viri / Readings:

- Hilpert, U. 2019: Diversities of Innovation. London, New York: Routledge.
- Anderson, J. 2015: Understanding Cultural Geography: Places and Traces. Abingdon, Routledge.

- Moulaert, F., MacCallum, D., Mehmood, A. and Hamdouch, A. 2013: The International Handbook on Social Innovation: Collective Action, Social Learning and Transdisciplinary Research. Cheltenham, Northampton, Massachusetts: Edward Elgar.
- Phillips, R., Johns, J. 2012: Fieldwork for human geography. London, Sage.
- Coe, N. M., Kelly, P. F., Yeung, H. W. C. 2007: Economic geography: A contemporary introduction. Oxford, Blackwell Publishing.

Cilji in kompetence:

Na primeru svojih doktorskih tez bodo študentje drugega letnika predstavili osnovna izhodišča svojih raziskovalnih vprašanj, oblikovanja hipoteze, uporabljenih metod ter pričakovanih rezultatov. S pomočjo usmerjene razprave bodo s strani poslušateljev (študentov prvega letnika) in mentorjev dobili dopolnitve in predloge za morebitno izboljšavo predstavljenih tez. Poslušatelji, študentje prvega letnika, se bodo seznanili s praktičnimi primeri znanstvenega raziskovanja in uporabo raznovrstnih znanstvenih metod ter nasveti za učinkovito organizacijo dela, kar bo uporabno tudi širše: za pripravo predlogov projektov ter pisanje znanstvenih člankov (glej Raziskovalni seminar 1).

Objectives and competences:

Based on their doctoral dissertations, second-year students will present the basic starting points for their research questions, hypothesis formulation, the methods used, and anticipated results. In guided discussions, they will receive comments and suggestions from the first-year students and advisors attending the discussion regarding any improvements to the dissertations presented. The first-year students attending the discussions will become familiar with practical research examples, the application of diverse research methods, and advice for efficiently organizing work, which will also be applicable at a wider level: in preparing projects and writing research papers (see Research Seminar 1).

Predvideni študijski rezultati:

Usposabljanje študentov za:

- organizacijo znanstvenega dela
- pripravo projektnih predlogov
- pisanje znanstvenih in strokovnih člankov
- priprava predstavitve svojega dela

Intended learning outcomes:

Student will be trained to:

- Organize their research work
- Prepare project proposals
- Write research and discussion articles
- Prepare presentations of their work

Metode poučevanja in učenja:

- Predstavitve s strani študentov
- Vodena razprava s strani mentorjev
- e-izobraževanje

Learning and teaching methods:

- Student presentations in class
- Discussions led by advisors
- e-learning

Načini ocenjevanja:

- Ustna predstavitve

Delež (v %) /
Weight (in %)

100

Assessment:

- Oral presentation

Reference nosilca / Lecturer's references:

1. Špoljak Istenič, S., Kozina, J. 2020: Participatory planning in a post-socialist urban context: Experience from five cities in Central and Eastern Europe. In Nared, J., Bole, D. (eds.). Participatory research and planning in practice (pp. 31-50). Cham: Springer International Publishing AG. DOI: 10.1007/978-3-030-28014-7_3
2. Kozina, J., Clifton, N. 2019: City-region or urban-rural framework: what matters more in understanding the residential location of the creative class? *Acta Geographica Slovenica*, 59(1), 127-143. DOI: 10.3986/AGS.513
3. Kozina, J., Poljak Istenič, S., Komac, B. 2019: Green creative environments – contribution to sustainable urban and regional development. *Acta Geographica Slovenica*, 59(1), 105-112. DOI: 10.3986/AGS.7030
4. Bole, D., Kozina, J., Tiran, J. 2019: The variety of industrial towns in Slovenia: A typology of their economic performance. *Bulletin of Geography, Socio-Economic Series*, 46, 71-83. DOI: 10.2478/bog-2019-0035
5. Kozina, J., Bole, D. 2018: The impact of territorial policies on the distribution of the creative economy: tracking spatial patterns of innovation in Slovenia. *Hungarian Geographical Bulletin*, 67(3), 259-273. DOI: 10.15201/hungeobull.67.3.4
6. Šmid Hribar, M., Kozina, J., Bole, D., Urbanc, M. 2018: Public goods, common-pool resources, and the commons: The influence of historical legacy on modern perceptions in Slovenia as a transitional society. *Urbani izziv*, 29(1), 96-109. DOI: 10.5379/urbani-izziv-en-2018-29-01-004
7. Kozina, J. 2018: Demographic Characteristics of Creative Workers: Under-activated Development Potentials in Slovenia? *Acta Geographica Slovenica*, 58(2), 111-121. DOI: 10.3986/AGS.4602
8. Urbanc, M., Gašperič, P., Kozina, J. 2015: Geographical Imagination of Landscapes: Analysis of the Book of Photographs Slovenian Landscapes. *Acta Geographica Slovenica*, 55(1), 99-125. DOI: 10.3986/AGS.836
9. Kozina, J. and Urbanc, M. 2014: Contemporary Processes in Peripheral Rural Areas in Slovenia. In Calcatinge, A. (ed.) *Critical Spaces: Perspectives in Urban, Spatial and Landscape Studies* (pp. 147-166). Zürich, Münster: LIT-Verlag.
10. Kozina, J. 2010: Transport Accessibility to Regional Centres in Slovenia. *Acta Geographica Slovenica*, 50(2), 231-251. DOI: 10.3986/AGS50203
11. Zorn, M., Razpotnik Visković, N., Repolusk, P., Ferk, M. 2013: Prostorski in regionalni razvoj Sredozemlja - enotni pristop in izbrana orodja. *Georitem 22*. Založba ZRC SAZU. Ljubljana.
12. Razpotnik Visković, N. 2011: Vpliv stopnje urbaniziranosti na dohodkovne vire družinskih kmetij v Sloveniji. 83-1. Ljubljana.
13. Razpotnik, N., Urbanc, M., Nared, J. 2009: Prostorska in razvojna vprašanja Alp. *Georitem 12*. Založba ZRC. Ljubljana.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PROJEKTI MANAGEMENT
Course title:	PROJECT MANAGEMENT

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	skupni	2	1, 2
Environmental and Regional Studies, doctoral study 3 rd level	Common	2	1, 2

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DI001

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	30				120	6

Nosilec predmeta / Lecturer:

doc. dr. Janez Nared
(ostali izvajalci: dr. Petra Rus)

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- Vrste, značilnosti in življenjski cikel projektov
- namen, obseg in cilji projektov
- udeleženci projektov in njihove vloge
- osebnostne lastnosti in veščine managerjev projektov
- začetek/snovanje projekta - proces snovanja in naročilo projekta, programi pridobivanja sredstev za projekte
- planiranje aktivnosti, rokov, stroškov, ljudi in drugih virov in obvladovanje projektnih tveganj

Content (Syllabus outline):

- Types, characteristics and life cycle of projects
- purpose, scope and objectives of projects
- project participants and their roles
- personal qualities and skills of project managers
- start/design of a project - the process of drafting and contract a project, programmes for obtaining funds for a projects
- planning of activities, deadlines, costs, human and other resources and management of project risks

- deležniki projekta, pristojnosti in odgovornosti
- vodenje projektnega tima - stili vodenja, timsko delo, motiviranje, komuniciranje v timu, reševanje konfliktov
- spremljanje in vrednotenje projekta
- zaključevanje projekta, dokumentiranje, administrativni zaključek, razpustitev tima

- project stakeholders, jurisdictions and responsibilities
- management of a project team - leadership styles, team work, motivation, communication within the team, resolving conflicts
- monitoring and evaluation of a project
- finalization of the project documentation, administrative closure, dissolution of the team

Temeljni literatura in viri / Readings:

- Zwikaël, O, Smyrk, J. R. (eds.) (2019) Project Management. A Benefit Realisation Approach. Cham: Springer Nature.
- A Guide to the Project Management Body of Knowledge (6th edition), Project Management Institute, 2017.
- Stare, A. (2011). Projektni management: teorija in praksa. Agencija Poti.
- Hauc, A. (2007). Projektni management, 2., spremenjena in dopolnjena izdaja. GV založba.
- Heagney, J. (2012). Fundamentals of project management. Amacom.
- Burke R. (2006). Project management : planning and control Techniques. Burke Pub.
- Gray, C.F., Larson, E.W. (2006). Project management : the managerial process. McGraw-Hill/Irwin.

Cilji in kompetence:

Namen predmeta je seznaniti študente s koncepti projektnega managementa. Predmet bo opredelil osnovne pojme, metode, tehnike in procese na področju projektnega managementa. Razvijal bo sposobnosti reševanja problemov z rabo znanstvenih metod in sposobnosti rabe znanj in veščin v praksi. Pridobljena znanja bodo študentom koristila pri izvajanju raziskovalnih projektov, kot tudi pri načrtovanju in izvajanju razvojnih projektov v regijah.

Objectives and competences:

The purpose of the course is to acquaint students with the concepts of project management. The course will define the basic concepts, methods, techniques and processes in the field of project management. The course will develop the ability to solve problems through the use of scientific methods and the ability to use knowledge and skills in practice. Students will benefit from the acquired knowledge in the field of implementation of research projects, as well as in the planning and implementation of development projects in the regions.

Predvideni študijski rezultati:

- poznavanje teorij, konceptov, modelov in metod s področja projektnega managementa

Intended learning outcomes:

- knowledge of the theories, concepts, models and methods in the field of project management

• sposobnost opredeljevanja ključnih razvojnih teženj, navezava le teh na razvojne teorije ter njihova aplikacija s pomočjo postopkov projektnega managementa • sposobnost prepoznavanja ključnih akterjev ter načinov za njihovo vključevanje v razvojne procese • identificiranje metodoloških pristopov pri iskanju razvojnih rešitev	• the ability of identifying the key development trends, connecting it with developmental theories and their application through processes of project management • the ability to identify key stakeholders and ways for their integration in development processes • - identification of methodological approaches in the search for development solutions
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Metode poučevanja in učenja:

• Predavanja • Seminarji • e-izobraževanje
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Learning and teaching methods:

• Lectures • Seminars • e-learning
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Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
• Izpit • Projekt	40	• Exam
	60	• Written paper

Reference nosilca / Lecturer's references:

1. Nared, J., Kavaš, D. 2009: Spremljanje in vrednotenje regionalne politike v Sloveniji, (Georitem, 10). Ljubljana: Založba ZRC. 2. Miklavčič, T., Nared, J. 2009: Vloga transnacionalnih programov pri doseganju razvojnih ciljev Slovenije. Razvojni izzivi Slovenije, Regionalni razvoj 2. Ljubljana: Založba ZRC. 3. Nared, J. 2014: Environmental planning recommendations, Participatory planning. Managing cultural heritage sites in Southeastern Europe. Založba ZRC. 4. Alfarè, L., Nared, J. 2014: Environmental planning recommendations, Leading a participatory process. Managing cultural heritage sites in Southeastern Europe. Založba ZRC. 5. Nared, J., Bole, D. (eds.) 2020: Participatory research and planning in Practice. Cham: Springer.
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UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	GIS IN PROSTORSKE ANALIZE V OKOLJSKIH IN REGIONALNIH ŠTUDIJAH
Course title:	GIS AND SPATIAL ANALYSIS IN ENVIRONMENTAL AND REGIONAL STUDIES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	skupni		
Environmental and Regional Studies, doctoral study 3 rd level	common		

Vrsta predmeta / Course type

Izbirni / Elective

Univerzitetna koda predmeta / University course code:

DI002

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Lab. work	Druge oblike študija	Samost. delo Individ. work	ECTS
10		20		10	120	6

Nosilec predmeta / Lecturer:

doc. dr. Žiga Kokalj

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

- Predmet ne predvideva posebnih predhodnih znanj. Osnovne izkušnje z GIS in kartiranjem so zaželeni.
- Vaje so ocenjene pozitivno, če so pozitivno ocenjeni vsi posamezni zahtevani elaborati vaj.
- Pogoji za pristop k izpitu je pozitivna ocena vaj.

Prerequisite:

- This course does not assume any specific prior experience. Basic experience in mapping and GIS is beneficial.
- Exercises are rated positively if all exercise reports are rated positively.
- Positive assessment of exercises is essential for attendance at the exam.

Vsebina:

- Uvod v analizo prostorskih podatkov:
 - kako zemljevidi in prostorske analize prežemajo naš svet
 - kdo uporablja prostorske podatke, zemljevide in GIS, kako ter zakaj.
- Koordinatni sistemi, projekcije, orodja.
- Prostorski podatki:
 - načini pridobivanja (talne meritve, zajem na daljavo),

Content (Syllabus outline):

- Introduction to spatial analysis:
 - how maps and spatial analysis pervade our world,
 - who uses spatial data, maps and GIS, how and what for.
- Spatial reference systems, projections, tools.
- Spatial data:

- vrste prostorskih podatkov,
- lastnosti.
- Upodobitve prostorskih entitet:
 - diskretni prostorski objekti in zvezni podatki,
 - karakteristike rastrskih in vektorskih podatkov.
 - več-časovne predstavitve prostorskih podatkov.
- Interpretacija zemljevidov.
- Delo z rastrskimi podatki.
- Delo z vektorskimi podatki.
- Uvod v simbole in kartografijo.
- Izdelava zemljevidov.
- Statistika, geostatistika.
- Modeliranje in prostorske analize.
- Analiza časovnih vrst.
- Vizualizacija.
- Ocena kakovosti.

- ways of acquisition (ground measurements, remote acquisition),
- types of spatial data,
- data properties.
- Representing spatial features:
 - discrete spatial objects and continuous surfaces,
 - characteristics of the two primary data formats (vector and raster)
 - multi-temporal representations of spatial data.
- Interpreting maps.
- Working with raster layers.
- Working with vector layers.
- Introduction to symbology and cartography.
- Making maps.
- Statistics, geostatistics.
- Modelling and spatial analysis.
- Time-series analysis.
- Visualisation.
- Quality assessment.

Temeljni literatura in viri / Readings:

- Burrough, Peter A., Rachael A. McDonnell and Christopher D. Lloyd. 2015. *Principles of Geographical Information Systems*. New York: Oxford University Press.
- Kalkhan, Mohammed A. 2011. *Spatial Statistics: Geospatial Information Modeling and Thematic Mapping*. Boca Raton (FL): Taylor & Francis.
- Longley, Paul A., Mike Goodchild, David J. Maguire and David W. Rhind. 2010. *Geographic Information Systems and Science*. Chichester: John Wiley & Sons.
- Muehlenhaus, Ian. *Web Cartography: Map Design for Interactive and Mobile Devices*. Boca Raton (FL): CRC Press, Taylor & Francis Group.
- 1994-. *Geografski informacijski sistemi v Sloveniji*. Ljubljana: Založba ZRC.
- Izbrani aktualni pregledni in izvirni raziskovalni članki iz revij (*International Journal of Geographical Information Science, Progress in Human Geography, Geographical Analysis, Transactions in GIS, ISPRS International Journal of Geo-Information, ISPRS Journal of Photogrammetry and Remote Sensing, Acta Geographica Slovenica*).

Cilji in kompetence:

Objectives and competences:

Cilj predmeta je pridobiti znanje o metodoloških in praktičnih izhodiščih o prostorskih analizah in prostorski statistiki z geografskimi informacijskimi sistemi. Študent pridobi naslednje predmetno specifične kompetence:

- uporabi moderne tehnologije kartiranja,
- pozna in razume ključne principe izdelave zemljevidov,
- obdela in upravlja z različnimi zapisi in oblikami prostorskih podatkov,
- uporabi GIS kot orodje v pisnem in ustnem poročilu o prostorskih analizah problemov v naravoslovnih znanostih ali humanistiki,
- obvlada številna in različna tehnična orodja v prostorskih analizah za reševanje praktičnih primerov, kot so na primer modeliranje porečij, raziskovanje ekosistemov, ekologija divjih živali, upravljanje z vodnimi viri, spremembe v rabi tal in pokrovnosti,
- zna samostojno uporabiti metode in tehnike v konkretni aplikaciji,
- razume stopnjo kakovosti (položajna natančnost, semantična popolnost) izvedenih informacij.

The objective of the course is to give methodological and practical knowledge in spatial analyses and spatial statistics with geographic information systems.

Students will acquire the following course specific competences:

- using modern mapping technologies,
- producing and interpreting basic thematic maps using GIS,
- understanding and applying fundamental principles of map design,
- using GIS as a tool in written and oral reports of spatial analyses concerning issues in natural sciences humanities,
- mastering a large and diverse suite of technical tools in geospatial data analysis, that can be used to solve practical problems, such as in watershed modelling, ecosystem science, wildlife ecology, water resource management, landscape ecology, conservation biology, and land-use and land-cover change, and
- conducting a competent practical assignment
- understanding a relevancy and quality of outputs (spatial accuracy, semantic accuracy).

Predvideni študijski rezultati:

Znanje in razumevanje

Znanje in razumevanje osnovnih konceptov povezanih z geografskimi informacijskimi sistemi in kartografijo.

Intended learning outcomes:

Knowledge and understanding

Students will be able to explain fundamental concepts related to cartography and geographic information systems.

Metode poučevanja in učenja:

- Predavanja: prosojnice, grafične ponazoritve, demonstracije, primeri iz prakse.
- Praktične vaje: računalniška učilnica
- e-izobraževanje

Learning and teaching methods:

- Lectures: in the classroom, use of modern teaching methods (slides, illustrations, demonstrations, case studies).
- Practical exercises: computer lab with professional equipment.
- e-learning

Načini ocenjevanja:

Delež (v %) /

Assessment:

Weight (in %)		
- Izpit (teoretičen del) in/ali projekt (seminarska naloga). - Naloge in sprotno delo (ocena vaj).	60 % 40 %	- Written exam (theoretical part) and/or a seminar project. - Exercises and diagnostic assessment.

Reference nosilca / Lecturer's references:

- Kokalj, Ž., & Hesse, R. (2017).** *Airborne laser scanning raster data visualization: a guide to good practice* (Vol. 14). Založba ZRC.
- Kokalj, Ž., & Somrak, M. (2019).** Why not a single image? Combining visualizations to facilitate fieldwork and on-screen mapping. *Remote Sensing*, 11(7), 747.
- Somrak, M., Džeroski, S., & **Kokalj, Ž. (2020).** Learning to classify structures in ALS-derived visualizations of ancient Maya Settlements with CNN. *Remote Sensing*, 12(14), 2215.
- Verbovšek, T., Popit, T., & **Kokalj, Ž. (2019).** VAT Method for Visualization of Mass Movement Features: An Alternative to Hillshaded DEM. *Remote Sensing*, 11(24), 2946.
- Stančič, L., Oštir, K., & **Kokalj, Ž. (2020).** Fluvial gravel bar mapping with spectral signal mixture analysis. *European Journal of Remote Sensing*, 1-16.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	DALJINSKO ZAZNAVANJE V OKOLJSKIH IN REGIONALNIH ŠTUDIJAH
Course title:	REMOTE SENSING IN ENVIRONMENTAL AND REGIONAL STUDIES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	skupni		
Environmental and Regional Studies, doctoral study 3 rd level	common		

Vrsta predmeta / Course type

izbirni/elective

Univerzitetna koda predmeta / University course code:

DI003

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Druge oblike študija	Samost. delo Individ. work	ECTS
10		20		10	120	6

Nosilec predmeta / Lecturer:

doc. dr. Žiga Kokalj

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Ni posebnih pogojev.

Prerequisite:

No special Prerequisite.

Vsebina:

Definicija daljinskega zaznavanja
Kratka zgodovina daljinskega zaznavanja
Elektromagnetno valovanje
Spekter elektromagnetnega valovanja
Interakcija z atmosfero
 Sipanje
 Absorpcija
Interakcija s površjem
 Spektralni podpis
Ločljivost snemalnih sistemov
 Prostorska ločljivost
 Spektralna ločljivost
 Radiometrična ločljivost
 Časovna ločljivost

Content (Syllabus outline):

Definition of remote sensing
A brief history of remote sensing
Electromagnetic waves
Electromagnetic spectrum
Interactions with the atmosphere
 Scattering
 Absorption
Interacting with the surface
 Spectral signature
Resolution of imaging systems
 Spatial resolution
 Spectral resolution
 Radiometric resolution
 Temporal resolution

Optični senzorji
Radar
Lidar
Satelitski sistemi za opazovanje Zemlje
 Vremenski sateliti
 Sateliti za opazovanje kopnih površin
 Sateliti za opazovanje morja
Interpretacija podob
Vizualna interpretacija
Predobdelava podob
Izboljšanje podob
Transformacije podob
Klasifikacija podob
Veččasovne analize podob
Združevanje in integracija podatkov
Primeri uporabe (v geologiji, biologiji,
arheologiji, gozdarstvu, kmetijstvu, študijah
kopenskega in morskega okolja, naravnih in
drugih nesrečah)

Optical sensors
Radar
Lidar
Satellite systems for Earth Observation
 Weather satellites
 Satellites for observing the Earth's land
 surface
 Satellites for observing the sea
Image interpretation
Visual interpretation
Image pre-processing
Image Enhancement
Image Transformations
Classification
Time-series analysis
Data fusion and integration
Examples of use (in geology, biology,
archaeology, forestry, agronomy,
environmental studies of land and sea, natural
and man-made hazards)

Temeljni literatura in viri / Readings:

- Campbell, James B. and Randolph H. Wynne. 2011. Introduction to Remote Sensing. The Guilford Press. Mather, Paul and Magaly Koch. 2011. Computer Processing of Remotely-Sensed Images: An Introduction. Wiley.
- Oštir, Krištof. 2006. Daljinsko zaznavanje. Ljubljana: Založba ZRC.
- Remote Sensing
- Remote Sensing of Environment
- ISPRS Journal of Photogrammetry and Remote Sensing

Cilji in kompetence:

Študenti pridobijo znanje o daljinskem zaznavanju kot pomembnem viru podatkov o prostoru. Spoznajo tehnike zajemanja podatkov iz različnih senzorjev na letalih in satelitih, načine interakcije valovanja z atmosfero in površjem, način prenosa podatkov. Podrobno spoznajo postopke iskanja (repozitoriji in katalogi), prenosa, obdelave in interpretacije podob. Seznanijo se s primeri uporabe daljinskega zaznavanja.

Objectives and competences:

Students acquire knowledge about remote sensing as an important source of information about the space, learn the techniques of capturing data from various sensors on aircraft and satellites, methods of electromagnetic radiation interaction with the atmosphere and the surface. They learn about the data transmission. They learn about satellite image hubs and catalogs (search), download, data processing and interpretation. They get

	acquainted with examples of the use of remote sensing.
Predvideni študijski rezultati: Znanje in razumevanje daljinskega zaznavanja in strokovne terminologije. Razumevanje procesa daljinskega zaznavanja po fazah. Poznavanje vrst virov daljinskega zaznavanja in njihovih značilnosti. Študenti se naučijo uporabljati tehnike digitalne obdelave podob. Vsa teoretična poglavja se tesno povezujejo s praktičnimi primeri. Študenti se naučijo uporabljati teorijo v praksi, sposobni so se odločati in izbirati primerne metode in podatkovne vire za določeno uporabo.	Intended learning outcomes: Knowledge and understanding of the remote sensing and scientific terminology. Understand the remote sensing procedure in all stages. Knowledge of sources of remote sensing and their characteristics. Students learn to use techniques of image processing. All theoretical chapters are closely associated with practical examples. Students learn to apply theory in practice, they are able to make decisions and choose appropriate methods and data sources for a specific application.
Metode poučevanja in učenja: ● Predavanja: prosojnice, grafične ponazoritve, demonstracije, primeri iz prakse. ● Praktične vaje: računalniška učilnica z ustrezno programsko opremo. ● e-učenje	Learning and teaching methods: ● Lectures: in the classroom, use of modern teaching methods (slides, illustrations, demonstrations, case studies). ● Practical exercises: computer lab with professional equipment. ● e-learning
Načini ocenjevanja: ● Izpit (teoretičen del) in/ali projekt (seminarska naloga). ● Naloge in sprotno delo (ocena vaj).	Assessment: ● Written exam (theoretical part) and/or a seminar project. ● Exercises and diagnostic assessment.

Reference nosilca / Lecturer's references:

1. **Kokalj, Ž.**, & Hesse, R. (2017). *Airborne laser scanning raster data visualization: a guide to good practice* (Vol. 14). Založba ZRC.
2. **Kokalj, Ž.**, & Somrak, M. (2019). Why not a single image? Combining visualizations to facilitate fieldwork and on-screen mapping. *Remote Sensing*, 11(7), 747.
3. Somrak, M., Džeroski, S., & **Kokalj, Ž.** (2020). Learning to classify structures in ALS-derived visualizations of ancient Maya Settlements with CNN. *Remote Sensing*, 12(14), 2215.
4. Verbovšek, T., Popit, T., & **Kokalj, Ž.** (2019). VAT Method for Visualization of Mass Movement Features: An Alternative to Hillshaded DEM. *Remote Sensing*, 11(24), 2946.
5. Stančič, L., Oštir, K., & **Kokalj, Ž.** (2020). Fluvial gravel bar mapping with spectral signal mixture analysis. *European Journal of Remote Sensing*, 1-16.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: RAZVOJ IN UPRAVLJANJE REGIJ

Course title: DEVELOPMENT AND MANAGEMENT OF REGIONS

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni		
Environmental and Regional Studies, doctoral study 3 rd level	Common		

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

DI004

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
60					120	6

Nosilec predmeta / Lecturer:

Doc. dr. Janez Nared
(ostali izvajalci: doc. dr. David Bole, doc. dr. Nika Razpotnik
Visković, Damjan Kavaš; vabljeni tuji predavatelji)

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant track or a university (level VII) degree

Vsebina:

- Regionalni razvoj in regionalna politika: definicije, cilji, strategije, instrumenti
- teorije regionalnega razvoja ((neo)klasična in endogena teorija gospodarske rasti, ...)
- koncepti regionalnega razvoja
- regionalni management in upravljanje regij
- government vs. governance
- regionalni kapital
- razvojni cikel: planiranje, izvajanje, spremljanje, vrednotenje

Content (Syllabus outline):

- regional development and regional policy: definitios, goals, strategies, instruments
- regional development theories ((neo)classical and endogenous theory of economic growth, ...)
- concepts of regional development
- regional management and regional governance
- government vs. governance
- regional capital

- regionalne politike v Sloveniji in v primerljivih državah (Finska, Avstrija, Danska, Irska ...)
- institucije
- četverna vijačnica
- regionalni/lokalni trgi dela
- regionalne inovacijske strategije (pametna specializacija)
- Industrija 4.0
- digitalizacija (IKT, nove tehnologije, novi poslovni modeli, vpliv na regionalni razvoj)
- aktivno staranje in srebrna ekonomija
- prožnost regij

- development cycle in regional planning: programming, implementation, monitoring, evaluation
- regional policies in Slovenia and comparable countries (Finland, Austria, Denmark, Ireland, ...)
- Institutions
- Quadruple helix
- regional/local labour markets
- regional innovation strategies (smart specialization)
- Industry 4.0
- digitalization (ICT, new technologies, new business models, impact on regional development)
- active ageing and silver economy
- regional resilience

Temeljna literatura in viri / Readings:

- Sotarauta, M., Beer, A. (eds.) 2021: Handbook on City and Regional Leadership. Cheltenham: Edward Elgar Publishing. (selected chapters)
- Dutt, A. K., Mookherjee, D., Thakur, R. R., Sommers, B., Benhart, J. 2020: Regional Development and Planning: An Overview. Urban and Regional Planning and Development pp 23-58. Cham: Springer.
- Passi, A., Harrison, J., Jones, M. 2018: Handbook on the Geographies of Regions and Territories. Cheltenham: Edward Elgar Publishing. (selected chapters)
- Clark, J. 2014: Working Regions. Reconnecting Innovation and Production in the Knowledge Economy. Routledge.
- Huggins, R. (ed.), Thompson, P. (ed.) 2017: Handbook of Regions and Competitiveness: Contemporary Theories and Perspectives on Economic Development. Edward Elgar.
- Pike, A.; Rodriguez-Pose, A., Tomaney, J. 2017: Local and Regional Development: second edition. Routledge.
- OECD, 2018: Rethinking Regional Development Policy-making. OECD.
- OECD, 2018: Job Creation and Local Economic Development 2018: Preparing for the Future of Work. OECD.
- Cooke, P. (ed.), 2014: Re-framing Regional Development. Evolution, Innovation and Transition. Routledge.
- Jones, M. (ed.), Paasi, A. (ed.) 2015: Regional Worlds: Advancing the Geography of Regions. Routledge..
- Rodríguez-Pose, A. 2009: Do institutions matter for regional development in the EU? London School of Economics.
- OECD, 2011: *OECD Territorial Reviews: Slovenia 2011*. OECD.

- OECD, 2012: *Promoting Growth in All Regions: Lessons from across of OECD*. OECD.
- OECD, 2014: *Regional Outlook 2014: Regions and Cities: Where Policies and People Meet*. OECD.
- Bellini, N., Danson, M., Halkier, H. 2013: *Regional Development Agencies: The Next Generation? Networking, Knowledge and Regional Policies*. Routledge

Cilji in kompetence:

Predmet bo študente usmeril v preučevanje razvojnih procesov v regijah, pri čemer bodo študenti prepoznavali ključne akterje, politike ter smernice razvoja ter jih razlagali s pomočjo sodobnih razvojnih konceptov ter teorij. Pri tem bo preučevanje usmerjeno v strukturne in procesne vidike razvoja, in sicer bodo študenti na podlagi poznavanja prostorskih, socialnih in ekonomskih dejavnikov prepoznavali dobre prakse razvoja in upravljanja regij.

Objectives and competences:

The course will direct the students into studying development processes in regions, where the students will be able to recognize main actors, policies, and tendencies and explain them in relation to contemporary development concepts and theories. The study will cover structural and processual aspects of development and will raise students' capacity to analyse, interpret and use available good practices and development tools.

Predvideni študijski rezultati:

- poznavanje teorij, konceptov, modelov in metod s področja regionalnih študij
- sposobnost opredeljevanja ključnih razvojnih teženj ter navezava le teh na razvojne teorije
- sposobnost prepoznavanja ključnih akterjev ter načinov za njihovo vključevanje v razvojne procese
- identificiranje metodoloških pristopov, s katerimi je možna znanstvena obravnava razvojnih procesov na izbranem območju

Intended learning outcomes:

- knowledge on theories, concepts, models and methods in the field of regional studies
- capacity to define key development tendencies in region and to interlink them with contemporary theories
- capacity to recognize key development actors and to include them into the development processes
- identification and effective use of methodological approaches for analysing, planning and managing regional processes

Metode poučevanja in učenja:

- Predavanja
- Seminarji

Learning and teaching methods:

- Lectures
- Seminars

Načini ocenjevanja:

- Ustni izpit

Delež (v %) /
Weight (in %)

100

Assessment:

- Oral exam

Reference nosilca / Lecturer's references:

1. Nared, J. 2007: *Prostorski vplivi slovenske regionalne politike*, (Geografija Slovenije, 16). Založba ZRC.

2. Brozzi, R., Lapuh, L., Nared, J., Streifeneder, T. 2015: Towards more resilient economies in Alpine regions. *Acta geographica Slovenica*, 55- 2. Založba ZRC.
3. Ravbar, M., Bole, D., Nared, J. 2005: A creative milieu and the role of geography in studying the competitiveness of cities: the case of Ljubljana = Ustvarjalno okolje in vloga geografije pri proučevanju konkurenčnosti mest: primer Ljubljane. *Acta geographica Slovenica*, 45-2. Založba ZRC.
4. Nared, J., Kavaš, D. 2009: Spremljanje in vrednotenje regionalne politike v Sloveniji, (Georitem, 10). Ljubljana: Založba ZRC.
5. Nared, J. (ur.), Razpotnik Visković, N. (ur.) 2012: Moving people : towards sustainable mobility in European metropolitan regions. Potsdam: Joint Spatial Planning Department Berlin-Brandenburg.
6. Nared, J. 2020: Regional development in Slovenia. *The geography of Slovenia : small but diverse*. Cham: Springer.
7. Rus, P., Nared, J., Bojnec, Š. 2018: Forms, areas, and spatial characteristics of intermunicipal cooperation in the Ljubljana urban region. *Acta geographica Slovenica* 58-2, Ljubljana.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	SODOBNE OKOLJSKE SPREMEMBE V POKRAJINI
Course title:	CONTEMPORARY ENVIRONMENTAL CHANGES IN THE LANDSCAPE

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni		
Environmental and Regional Studies, doctoral study 3 rd level	common		

Vrsta predmeta / Course type

Izbirni / elective

Univerzitetna koda predmeta / University course code:

DI005

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	10	-	-	20	120	6

Nosilec predmeta / Lecturer:

Doc. dr. Aleš Smrekar

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant track or a university (level VII) degree

Vsebina:

- razumevanje naravnih in antropogenih procesov v sodobni pokrajini (s sestavinami okolja in njihovo pestrostjo),
- načela in cilji varstva okolja v pokrajini,
- družbene vrednote in vloga okoljske zavesti skozi razvoj okoljske misli,
- temeljna zakonodaja, ki obravnava pokrajino (nacionalna in EU),
- zakonodajni postopki posegov v prostor,
- obremenjevanje okolja po dejavnostih in pokrajnotvornih sestavinah (konfliktnost interesov različnih dejavnosti v pokrajini),

Content (Syllabus outline):

- understanding of natural and anthropogenic processes in contemporary landscape (with the components of the environment and their diversity),
- the principles and objectives of the environmental protection in landscape,
- social values and the role of environmental awareness through the development of environmental thought,
- the basic legislation, which deals with landscape (national and EU),
- legislative procedures of spatial interventions,

- ukrepi za zmanjšanje okoljskih obremenitev v pokrajini,
- spremljanje stanja okolja z indikatorji okolja,
- metodološke prakse.

- environmental pollution by activities and landscape elements (conflict of interests between different activities in the landscape),
- actions to reduce environmental burdening in landscape,
- environmental monitoring by using environmental indicators,
- methodological practices.

Temeljni literatura in viri / Readings:

- Elliott, C., Udovč, A. 2005. Nature Conservation and spatial planning in Slovenia: continuity in transition. Land use policy 22. Ljubljana.
- Glasson, J., Therivel, R., Chadwick, A. 2012. Introduction to environmental impact assessment. New York.
- Hong, S. K., Nakagoshi, N. (ed.) 2017: Landscape Ecology for Sustainable Society. Springer.
- Kirn, A. 2004: Narava – družba – ekološka zavest. Ljubljana.
- Meadows, D., Meadows, J., Meadows, D. 2004: Limits to Growth: The 30-Year Update. White River Junction.
- Mercuri, A., M., Florenzano, A. (ed.) 2019: The Long-Term Perspective of Human Impact on Landscape for Environmental Change and Sustainability. MDPI.
- Redclift, M. 1999: Pathways to sustainability : Issues, Politics and Theories, Planning Sustainability London-New York.
- Veljavni zakoni in drugi predpisi s področja varstva okolja in urejanja pokrajine / Applicable laws and other regulations relating to environmental protection and landscape planning
Izbrani članki iz znanstvenih revij / Selected papers from scientific journals

Cilji in kompetence:

Temeljni cilj predmeta je podati študentu interdisciplinarno znanje o razumevanju sodobne pokrajine kot celostnega sistema, v katerega je človek bistveno in nekritično posegal. Študent razume krepitev trajnostno naravnane paradigme, ki jo v zadnjih desetletjih vedno bolj podpirajo evropske in državne politike ter pridobi teoretična in praktična znanja varstva okolja, ki se bistveno in intenzivno spreminjajo. Študent pridobi s predmetom naslednje kompetence:

- znanje o problematiki varstva okolja,
- znanje o razumevanju pokrajine kot temeljne prostorske enote,

Objectives and competences:

The basic aim of the course is to provide students with an interdisciplinary knowledge of contemporary understanding of landscape as an integrated system, which was significantly and uncritically intervened by humans. Students understand the strengthening of sustainable paradigm in recent decades which is increasingly supported by European and national policies and obtains theoretical and practical knowledge of environmental protection, which are intensively changing. Participation in the course will bring the student:

- usposobljenost iskanja ustreznih virov in izvedbe selektivnega izbora informacij,
- zna kritično prepoznati, razumeti in interpretirati pereča družbena vprašanja okoljskih posledic človekovih posegov v pokrajino,
- obvlada analizo praktičnega okoljevarstvenega problema in zanj predlaga ustrezne rešitve, ki pomagajo k trajnostni pokrajini.

- the knowledge of the issues of environmental protection,
- the knowledge of understanding the landscape as the fundamental spatial unit,
- the ability for searching proper resources and implementation of the selective information,
- can critically recognizes, understands and interprets the topical social issues of environmental consequences of human intervention in the landscape,
- can practically analyze environmental problems and propose appropriate solutions that help to create a sustainable landscape.

Predvideni študijski rezultati:

- obnovitev temeljnega študentovega znanja o varstvu okolja in pokrajine ter njegova interdisciplinarna nadgradnja,
- razumevanje (ne)obnovljivosti naravnih virov,
- informiranost o stanju okolja in posledicah človekovega delovanja v pokrajini,
- poznavanje sodobnih pristopov pri varstvu okolja,
- sposobnost uporabe najprimernejših metodoloških pristopov,
- razumevanje zakonodajnega okvira evropskih in slovenskih predpisov ter procesov, s katerimi se oblikujejo politike,
- celostno vrednotenje sodobne pokrajine,
- praktična znanja o kritičnem prepoznavanju, vrednotenju in načrtovanju trajnostno naravnih posegov v pokrajino.

Intended learning outcomes:

- overview of student's basic knowledge about the protection of the environment and the landscape and its interdisciplinary upgrade,
- understanding the (non)renewability of natural resources,
- information about the state of the environment and the effects of human activities in landscape,
- the knowledge of contemporary approaches to environmental protection,
- the ability to use the most appropriate methodological approaches,
- the understanding of the legislative framework of European and Slovenian rules and processes, which help to develop policies,
- a comprehensive evaluation of the contemporary landscape,
- the practical knowledge of critical identification, evaluation and design of sustainable interventions in the landscape.

Metode poučevanja in učenja:

- predavanja,
- terenska predavanja,

Learning and teaching methods:

- lectures,
- field courses,

● seminarsko delo, ● vaje na izbranih študijah primerov, ● individualno delo v okviru izbrane raziskave ● e-izobraževanje.	● seminar, ● work on selected case studies, ● individual work within the framework of the chosen research ● e-learning.
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Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
● ustni izpit, ● seminarska naloga.	50 50	● oral exam, ● seminar.

Reference nosilca / Lecturer's references:

1. Smrekar, A. 2006: Zavest ljudi o pitni vodi. Geografija Slovenije 12. Ljubljana.
2. Smrekar, A. 2007: Divja odlagališča odpadkov na območju Ljubljane. Georitem 1. Ljubljana.
3. Smrekar, A. 2011: From environmental awareness in word to environmental awareness in deed: the case of Ljubljana. Acta geographica Slovenica 51-2. Ljubljana.
4. Smrekar, A., Tiran, J. 2013: Pomen zelenih površin za kakovost bivanja v mestih : razvoj misli skozi čas. Geografski vestnik 85-2. Ljubljana.
5. Smrekar, A., Breg Valjavec, M. 2014: Vrednotenje nekdanje in sedanje proizvodnje nevarnih odpadkov v Ljubljani z vidika obremenjevanja podtalnice. Geografski vestnik 86-2. Ljubljana.
6. Polajnar Horvat, K., Smrekar, A., Zorn, M. 2017: Environmental thought in Slovenia. Environmentalism in Central and Southeastern Europe : historical perspectives.
7. Smrekar, A., Breg Valjavec, M., Polajnar Horvat, K., Tiran, J. 2019: The geography of urban environmental protection in Slovenia : the case of Ljubljana. Acta geographica Slovenica 59-3.
8. Smrekar, A., Breg Valjavec, M., Polajnar Horvat, K. 2019: Human-induced degradation in Slovenia. The geography of Slovenia : small but diverse.
9. Smrekar, A., Breg Valjavec, M., Polajnar Horvat, K., Ribeiro, D. 2019: Slovenia's protected areas. The geography of Slovenia : small but diverse.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	POKRAJINSKI VIDIKI NARAVNIH NESREČ
Course title:	LANDSCAPE PERSPECTIVES OF NATURAL HAZARDS

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni		
Environmental and Regional Studies, doctoral study 3 rd level	Common		

Vrsta predmeta / Course type

Izbirni / Elective

Univerzitetna koda predmeta / University course code:

DI006

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
60					120	6

Nosilec predmeta / Lecturer:

Doc. dr. Mateja Ferk, doc. dr. Blaž Komac
(ostali izvajalci: doc. dr. Rok Ciglič, Matjaž Geršič, Mauro
Hrvatini, Drago Perko, Primož Pipan, izr. prof. dr. Matija Zorn)

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

Naravne nesreče so predstavljene kot del
pokrajine in kot pomembna tema tudi v
tehnizirani in individualizirani sodobni
družbi. Naravne nesreče so zaradi pestrosti
in številnih učinkov, ki povzročajo omejitve
za družbo pogosto spregledan, a pomemben
dejavnik razvoja. Predstavljeni so
najpomembnejši vzročni (vplivni dejavniki,
součinkovanje), prostorsko-časovni
(razporeditev pojavov, pogostost),
magnituda pojavov (in njena spremenljivost)

Content (Syllabus outline):

Natural disasters are presented as part of the
landscape and as an important topic in
technicized and individualized modern society.
Natural disasters are often overlooked but
important factors for development due to the
diversity and high number of effects that cause
limitations to society. Featured are the most
important causal (influential factors, the
combination), space-time (spatial arrangement
of events, frequency), magnitude of the
phenomenon (and its variability) and major

ter poglavitni fizičnogeografski (vrste pojavov v Sloveniji in po svetu) in humanogeografski vidiki (upravljanje naravnih nesreč, ranljivost-nevarnost in ogroženost zaradi naravnih nesreč, komuniciranje, izobraževanje, spomin, psihologija, kultura) naravnih nesreč ter temeljne metode za njihovo sodobno preučevanje.

physical-geographic (types of events in Slovenia and around the world) and human-geographic aspects (disaster management, vulnerability, hazard and risk of natural disasters, communication, education, memory, psychology, culture) of natural disasters and the basic methods of modern science in the field of natural hazards.

Temeljni literatura in viri / Readings:

- Keller, E. A., DeVecchio, D. E., Blodgett, R. H. 2019: Natural hazards : Earth's processes as hazards, disasters, and catastrophes. London, New York. Routledge.
- Burby, R. I. 1998: Cooperating with nature – confronting natural hazards with land-use planning for sustainable communities. Washington.
- Mikoš, M., Fazarinc, R., Majes, B. 2007: Delineation of risk area in Log pod Mangartom due to debris flows from the Stože landslide. Acta geographica Slovenica 47-2.
- Walker, G., Whittle, R., Medd, W., Watson, N. 2010: Risk governance and natural hazards. http://eprints.lancs.ac.uk/49475/1/WP2_final.pdf
- Wisner, B., Blaikie, P., Cannon, T., Davis, I. 1994: At risk – natural hazards, people's vulnerability and disasters. Routledge.
- Komac, B., Zorn, M. 2007: Pobočni procesi in človek. Geografija Slovenije 15. Ljubljana.

Cilji in kompetence:

Namen predmeta je seznanitev študentov s ključnimi poudarki naravnih nesreč, pri čemer so v ospredju načela trajnostnega razvoja, celostnega razumevanja, ki vsebuje prostorske, ekonomske in družbene vidike naravnih nesreč, posebej njihove vzroke in učinke.

Na podlagi pridobljenih znanj bodo študenti celovito vrednotili pomen in (morebitne) učinke naravnih nesreč na krajevni, regionalni in državni ravni ter se seznanili s temelji pristopa EU do problematike. Obvladali bodo najnovejše teorije in koncepte pristopov do naravnih nesreč in razumeli sodobne trende.

Objectives and competences:

The aim of the course is to present the key issues on natural disasters with the focus on sustainable development, and holistic understanding with spatial, economic and social aspects of natural disasters, particularly their causes and effects.

Based on the acquired knowledge, students will be able to comprehensively evaluate the importance and the (possible) effects of natural disasters on the local, regional and national levels and become familiar with the fundamentals of the EU's approach to the problem.

They will master the latest theories and concepts/approaches to natural hazards and understand modern trends.

Predvideni študijski rezultati:

Intended learning outcomes:

● poznavanje teorij, konceptov, modelov in metod s področja preučevanja naravnih nesreč ● sposobnost opredeljevanja ključnih vplivnih dejavnikov in njihove umestitve v pokrajino ● sposobnost celovitega razumevanja problematike ● sposobnost upravljanja naravnih nesreč ● poznavanje ustreznih metodoloških pristopov, s katerimi je možna znanstvena obravnava naravnih nesreč na izbranem območju ● poznavanje konceptov ranljivosti, nevarnosti in ogroženosti ter sposobnost njihove celovite analize na izbranem območju, vključno z geografskimi informacijskimi sistemi	● Knowledge of the theories, concepts, models and methods in the field of studying natural hazards ● The ability to identify key influencing factors and their placement in the landscape ● The ability of a comprehensive understanding of the problem ● The ability of disaster management ● Knowledge of relevant methods enabling students to study natural hazards in a selected area ● Knowledge of the concepts of vulnerability, hazard and risk, and the ability of their comprehensive analysis of the selected area, including geographical information systems
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Metode poučevanja in učenja:

● Predavanja ● Seminar ● E-izobraževanje
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Learning and teaching methods:

● Lectures ● Seminar ● E-learning

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

● Ustni izpit	100	● Oral exam
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Reference nosilca / Lecturer's references:

1. Komac, B. 2020: Domači odzivi na globalne izzive v Sloveniji in Evropi. Naravne nesreče 5. Ljubljana. 2. Ciglič, R., Ferk, M. 2020. Opazovanje pobočnih procesov z brezpilotnim letalnikom na primeru plazov v Slovenskih goricah. Modeliranje pokrajine. Ljubljana. 3. Ferk, M., Ciglič, R., Komac, B., Lóczy, D. 2020: Management of small retention ponds and their impact on flood hazard prevention in the Slovenske Gorice Hills. Acta geographica Slovenica 60-1. 4. Breg Valjavec, M., Komac, B. 2018: Novodobna poselitev hudourniških vršajev in nevarnost drobirskih tokov: primer Zgornjesavske doline. Pokrajina v visoki ločljivosti. Ljubljana. 5. Komac, B. 2017: Prožna mesta - trajnostni razvoj in naravne nesreče. Trajnostni razvoj mest in naravne nesreče. Naravne nesreče 4. 6. Zorn, M., Komac, B. 2012: Damage caused by natural disasters in Slovenia and globally between 1995 and 2010. Acta geographica Slovenica 51-1.

7. Komac, B., Zorn, M., Kušar, D. 2012: New possibilities for assessing the damage caused by natural disasters in Slovenia: the case of the Real Estate Record. Geographical tidbits from Slovenia. Geografski vestnik 84-1.
8. Kuhlicke, C., Komac, B., Zorn, M. et al. 2011: Perspectives on social capacity building for natural hazards: outlining an emerging field of research and practice in Europe. Environment science & policy 14- 7.
9. Komac, B., Zorn, M., Ciglič, R. 2011: Izobraževanje o naravnih nesrečah v Evropi. Georitem 18. Ljubljana.
10. Komac, B., Natek, K., Zorn, M. 2008: Geografski vidiki poplav v Sloveniji. Geografija Slovenije 20. Ljubljana.
11. Zorn, M., Komac, B. 2008: Zemeljski plazovi v Sloveniji. Georitem 8. Ljubljana.
12. Komac, B., Zorn, M. 2007: Pobočni procesi in človek. Geografija Slovenije 15. Ljubljana.
13. Komac, B., Lapuh, L. 2014: Nekaj misli o konceptu prožnosti v geografiji naravnih nesreč. Geografski vestnik 86-1.
14. Zorn, M., Komac, B. 2007: Probabilistično modeliranje plazovitosti. Acta geographica Slovenica 47-2. Ljubljana.
15. Zorn, M., Komac, B. 2004: Deterministično modeliranje ogroženosti zaradi zemeljskih plazov in skalnih podorov. Acta geographica Slovenica 44-2. Ljubljana.
16. Zorn, M., Komac, B. 2007: Naravni procesi v svetih knjigah. Geografski vestnik 79-2. Ljubljana.
17. Natek, K., Komac, B., Zorn, M. 2003: Mass movements in the Julian Alps (Slovenia) in the aftermath of the Easter earthquake on April 12, 1998. Studia Geomorphological Carpatho-Balcanica 37. Krakow.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	TRAJNOSTNO UPRAVLJANJE POKRAJIN
Course title:	SUSTAINABLE GOVERNANCE OF LANDSCAPES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni		
Environmental and Regional Studies, doctoral study 3 rd level	common		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DI007

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

Doc. dr. Blaž Komac, doc. dr. Mateja Šmid Hribar

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- pokrajina kot prostorski sistem součinkovanja človeka in narave
- pokrajinski elementi in njihove funkcije v preteklosti in sodobnosti
- trajnostni razvoj kulturne pokrajine kot sinergija med varovanjem in razvojem
- upravljanje naravnih in družbenih virov na primeru trajnostnega upravljanja skupnih virov in naravnih nesreč
- pomen in varovanje materialne in nematerialne dediščine v pokrajini
- ekosistemske storitve, ki jih nudijo pokrajine

Content (Syllabus outline):

- landscape as a spatial system of interaction between man and nature
- landscape elements and their functions in the past and the present
- sustainable development of cultural landscapes as a synergy between security and development
- management of natural and social resources in the case of sustainable management of shared resources and natural disasters
- importance and protection of tangible and intangible heritage in the landscape

- | | |
|--|--|
| <ul style="list-style-type: none">• zgodovinski razvoj upravljanja pokrajin in primerjava načinov upravljanja pri nas in v drugih (predvsem sosednjih, npr. alpskih) državah | <ul style="list-style-type: none">• ecosystem services provided by the landscape• historical development of land management and comparison of management practices in Slovenia and in other (mainly neighboring, for example, Alpine) countries |
|--|--|

Temeljni literatura in viri / Readings:

- Biggs, R. M. Schlüter, M.L. Schoon (eds) (2015). Principles for Building Resilience - Sustaining Ecosystem Services in Social-Ecological Systems. Cambridge University Press.
- Bogataj, N. (ed) (2013). Znamenja trajnosti. Ljubljana. Internet: http://arhiv.acs.si/publikacije/Znamenja_trajnosti_ACS_mini_za_objavo_na_www.pdf (10. 2. 2015).
- Burby, R. I. 1998: Cooperating with nature – confronting natural hazards with land-use planning for sustainable communities. Washington.
- Duraipah, A. K., Asah, S. T., Brondizio, E. S., Kosoy, N., O'Farrell, P. J., Prieur-Richard, A., Subramanian, S. M., Takeuchi, K. (2014). Managing the mismatches to provide ecosystem services for human well-being: a conceptual framework for understanding the New Commons. Current Opinion in Environmental Sustainability 7. Amsterdam.
- Fisher, B., Turner, R. K., Morling, P. (2009). Defining and classifying ecosystem services for decision making. Ecological Economics 68-3. Amsterdam.
- Mikoš, M., Fazarinc, R., Majes, B. 2007: Delineation of risk area in Log pod Mangartom due to debris flows from the Stože landslide. Acta geographica Slovenica 47-2.
- Ostrom, E. (2005). Understanding Institutional Diversity. Princeton University Press.
- Petek, F., Urbanc, M. (2007). Skupna zemljišča v Sloveniji. Geografski vestnik 79-2. Ljubljana.
- Renn, O. 2008: Risk governance – coping with uncertainty in a complex world. London.
- Walker, G., Whittle, R., Medd, W., Watson, N. 2010: Risk governance and natural hazards. http://eprints.lancs.ac.uk/49475/1/WP2_final.pdf
- Wisner, B., Blaikie, P., Cannon, T., Davis, I. 1994: At risk – natural hazards, people's vulnerability and disasters. Routledge.
- Zhou, H., Wang, J., Wan, J., Jia, H. 2010: Resilience to natural hazards: a geographic perspective. Natural Hazards 53-1.
- Zorn, M., Komac, B. 2015: Naravne nesreče kot razvojni izziv. Globalni izzivi in regionalni razvoj. Ljubljana.

Cilji in kompetence:

Objectives and competences:

Namen predmeta je seznaniti študente s konceptom pokrajine kot družbeno-naravnim sistemom, pri katerem ima pomembno vlogo interakcija človeka in narave.

Cilj predmeta je študentom pokazati, da s spreminjanjem pokrajine človek spreminja tudi njene funkcije in procese v njej. To med drugim vpliva na ekosistemske storitve in hidro-geomorfne procese, ki povzročajo naravne nesreče.

Pri trajnostnem upravljanju je ključno poznavanje pokrajinskih elementov in njihovih funkcij ter s tem povezanih procesov, na katere lahko vplivamo z upravljanjem. Ker je upravljanje trajnostno naravnana dejavnost, bo spoznavanja materialne in nematerialne dediščine v pomoč pri spoznavanju pokrajine in procesov v njej, posebej z ozirom na njihovo varovanje.

Študentom bodo predstavljeni tudi pomen upravljanja s skupnimi viri in prilagoditve na naravne nesreče.

Študentje bodo s sintezo pridobljenega znanja in primerjalnimi metodami dobili vpogled v delovanje pokrajine in transdisciplinarno raziskovanje.

The aim of the course is to present the concept of landscape as a socio-natural system with interactions of man and nature on several levels.

The aim of the course is to demonstrate that by the changing landscapes man also changes its functions and processes. and among other things, on ecosystem services and hydro-geomorphic processes that cause natural disasters.

Proper understanding of landscape elements, their functions and related processes that can be influenced by management is vital in sustainable management. Knowledge on tangible and intangible heritage is helpful in understanding the landscape and process, particularly with regard to their protection, since management is a sustainable activity.

The importance of shared resources management and adaptation to natural disasters will also be presented to students. Students will be able to understand the landscape and transdisciplinary research with the synthesis of the knowledge and comparative methods.

Predvideni študijski rezultati:

- Poznavanje metod in konceptov pri razumevanju pokrajine
- Poznavanje sodobnih raziskovalnih področij pri trajnostnem upravljanju pokrajine
- poznavanje temeljnih metod upravljanja s pokrajino
- poznavanje temeljnih procesov v pokrajini in njihove soodvisnosti

Intended learning outcomes:

- Knowledge of methods and concepts in the understanding of the landscape
- Knowledge of advanced research in the areas of sustainable management of the landscape
- Knowledge of fundamental methods of landscape governance
- Knowledge of the basic processes in the region and their interdependence

Metode poučevanja in učenja:

- Predavanja
- Seminarji

Learning and teaching methods:

- Lectures
- Seminars

- e-izobraževanje

- e-learning

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
• Seminaraska naloga • Ustni zagovor	90 10	• Exam • Written paper

Reference nosilca / Lecturer's references:

1. Komac, B., Zorn, M. 2007: Pobočni procesi in človek. Geografija Slovenije 15. Ljubljana.
2. Komac, B., Zorn, M., Ciglič, R. 2011: Izobraževanje o naravnih nesrečah v Evropi. Georitem 18. Ljubljana.
3. Komac, B., Zorn, M., Erhartič, B. 2011: Loss of natural heritage from the geomorphological perspective : do geomorphic processes shape or destroy the natural heritage? Acta geographica Slovenica 51- 2. Ljubljana.
4. Kuhlicke, C., Komac, B., Zorn, M. et al. 2011: Perspectives on social capacity building for natural hazards: outlining an emerging field of research and practice in Europe. Environment science & policy 14- 7.
5. SMREKAR, Aleš, ŠMID HRIBAR, Mateja, ERHARTIČ, Bojan. Stakeholder Conflicts in The Tivoli, Rožnik Hill, and Šiška Hill Protected Landscape Area. Acta Geografica Slovenica 56–1 (2016). (in press)
6. ŠMID HRIBAR, Mateja, FERK, Mateja. The Role and Importance of the Landscape Park Udin Boršt. Acta geographica Slovenica 56–1 (2016). (in press)
7. ŠMID HRIBAR, Mateja, URBANC, Mimi, BOLE, David. Public And Common Goods in the Cultural Landscape. Geografski vestnik 87 (2015). (in press)
8. ŠMID HRIBAR, Mateja, URBANC, Mimi. The nexus between landscape elements and traditional practices for cultural landscape management (2015). (in press as a chapter in a book on Biocultural diversity, Springer Verlag)

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	POTENCIALI NARAVNE IN KULTURNE DEDIŠČINE
Course title:	POTENTIALS OF NATURAL AND CULTURAL HERITAGE

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni		
Environmental and Regional Studies, doctoral study 3 rd level	common		

Vrsta predmeta / Course type	Izbirni / elective
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Univerzitetna koda predmeta / University course code:	DI008
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Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	10	-	-	20	120	6

Nosilec predmeta / Lecturer:	Doc. dr. Mateja Ferk, doc. dr. Aleš Smrekar
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Jeziki / Languages:	Predavanja / Lectures:	slovenščina, angleščina / Slovene, English
	Vaje / Tutorial	slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant track or a university (level VII) degree

Vsebina:

- zgodovina razvoja varstva naravne in kulturne dediščine,
- zvrsti in register naravnih vrednot in kulturne dediščine,
- nacionalni in mednarodni vidiki zavarovanih in varovanih območij, pravno varstvo (nacionalno, EU, globalno),
- simbolna vloga naravne in kulturne dediščine,
- upravljanje zavarovanih območij,
- konfliktnost interesov v zavarovanih območjih,

Content (Syllabus outline):

- history of environmental protection and cultural heritage,
- types and the register of natural monuments and cultural heritage,
- national and international aspects of protected areas and the legal protection (national, EU, global),
- the symbolic role of natural and cultural heritage,
- management of protected areas,
- conflict of interest in protected areas,
- challenges in establishing a balance between exploitation (several levels of degradation) and use (several levels of

- izzivi vzpostavitve ravnovesja med izrabo (več stopenj degradacije) in rabo (več stopenj ohranjanja) naravne in kulturne dediščine,
- prepoznavanje, vrednotenje in interpretiranje naravne in kulturne dediščine,
- dinamično stanje geodiverzitete – sočasnost razdiralnih in oblikotvornih geomorfnih procesov,
- metodološke prakse.

- conservation) of natural and cultural heritage,
- identification, evaluation, and interpretation of natural and cultural heritage,
- dynamics of geodiversity – co-occurrence of destructional and morfogenic processes,
- methodological approaches.

Temeljni literatura in viri / References:

- Advancing the National Park Idea. National Parks Second Century. National Parks Conservation Association. 2009. Washington DC.
- Berginc, M., Kremesec Jevšenak, J., Vidic, J. 2007. Sistem varstva narave v Sloveniji. Ljubljana.
- Gray, M. 2004. Geodiversity, valuing and conserving abiotic nature. London.
- Komac, B., Zorn, M., Erhartič, B. 2011. Loss of natural heritage from the geomorphological perspective – do geomorphic processes shape or destroy the natural heritage? *Acta geographica Slovenica* 51, 2. Ljubljana.
- Smrekar, A., Šmid Hribar, M., Tiran, J., Erhartič, B. 2014. *Interpretacija okolja na primeru Ljubljanskega barja*, Georitem 24. Ljubljana.
- Veverka, J. 2011: Interpretive master planning. Edinburgh.
- Stepišnik, U., Trenchovska, A. 2018. A new quantitative model for comprehensive geodiversity evaluation : the Škocjan Caves regional park, Slovenia. *Geoheritage* 10, 1.
- Veljavni zakoni in drugi predpisi s področja varstva okolja in urejanja pokrajine
- Izbrani članki iz znanstvenih revij

Cilji in kompetence:

Temeljni cilj predmeta je seznaniti študenta z izzivi obravnavanja naravne in kulturne dediščine. Ta je povezana v spremenljiv sistem naravnih danosti in človekove aktivnosti v pokrajini ter izpostavljena nestalnemu odnosu družbe do naravne in kulturne dediščine. Študent se s poglobljenim spoznavanjem okoliščin usposobi za upravljanja z dediščino. Seznan se tudi z navzkrižji interesov v obstoječih ali potencialnih zavarovanih območjih ter prepozna potenciale za nadaljni (ne)razvoj.

Objectives and competences:

The main aim of the course is to present the challenges of researching natural and cultural heritage to students. It involves the understanding of changeable systems of natural conditions and human impact on the landscape, and the exposure to variable public perception of natural and cultural heritage. Students will gain profound knowledge and management skills in working with the heritage. They will be familiarized with common conflicts of interest in protected areas and potential protected areas as well as with methods to identify these potential areas.

Študent pridobi s predmetom naslednje kompetence:

- poznavanje razvoja miselnosti vrednotenja in varovanja naravne in kulturne dediščine;
- -sposobnost prepoznavanja strateških prednosti posameznih načinov varovanja naravne in kulturne dediščine,
- poznavanje motivov interesnih skupin,
- sposobnost samostojnega vrednotenja naravne in kulturne dediščine,
- sposobnost izbire najustreznejših metodoloških pristopov za časovno-finančno učinkovito raziskovanje.

The students will receive following skills:

- knowledge about the perception development of evaluation and natural and cultural heritage protection;
- capability to identify strategic advantages of individual approaches of natural and cultural heritage protection;
- to distinguish the motives of different interest groups;
- capability to individually value natural and cultural heritage;
- competency to define the time-economic most efficient methodological approach for researching these topics.

Predvideni študijski rezultati:

- poglobitev znanja o teoretičnih izhodiščih naravne in kulturne dediščine,
- informiranost o stanju naravne in kulturne dediščine,
- razumevanje zakonodajnega okvira evropskih in slovenskih predpisov ter procesov, s katerimi se oblikujejo politike,
- pridobitev izkušenj s teoretičnimi in praktičnimi pristopi varovanja naravne in kulturne dediščine,
- pridobitev izkušenj s teoretičnimi in praktičnimi pristopi upravljanja z naravno in kulturno dediščino,
- celostno vrednotenje dediščine v pokrajini,
- izdelava individualnega načrta raziskave s področja vsebine predmeta,
- izvedba raziskave s področja vsebine predmeta.

Intended learning outcomes:

- profound knowledge about the theoretical background of natural and cultural heritage,
- up to date knowledge about the current state of natural and cultural heritage,
- understanding of EU and national policy strategies formation,
- gain experiences in theoretical and practical methods of natural and cultural heritage preservation,
- gain experiences in theoretical and practical methods of natural and cultural heritage management,
- complex evaluation of heritage in the regions,
- assessment of individual research plan in the field of the course,
- carry out a research from the field of the course.

Metode poučevanja in učenja:

- kabinetna predavanja,
- terenska predavanja,
- seminarsko delo,
- individualno delo v okviru lastne raziskave,

Learning and teaching methods:

- lectures,
- field work,
- tutorial work,
- work on individual research topics
- e-learning.

- E-izobraževanje.

Načini ocenjevanja:		Delež (v %) / Weight (in %)	Assessment:
• ustni izpit • individualno delo v okviru lastne raziskave		75	• oral exam • work on individual research topic
		25	

Reference nosilca / Lecturer's references:

1. Ferk, M., Stepišnik, U. 2011. Geomorfološke značilnosti Rakovega Škocjana. Georitem 17. Ljubljana.
2. Smrekar, A., Erhartič, B., Šmid Hribar, M. 2011. Pomen zavarovanih območij v mestnih središčih na primeru krajinskega parka Tivoli, Rožnik in Šišenski hrib. V: Razvoj zavarovanih območij v Sloveniji. Regionalni razvoj 3. Ljubljana.
3. Smrekar, A., Šmid Hribar, M., Tiran, J., Erhartič, B., Resnik Planinc, T. Interpretacija okolja na primeru Ljubljanskega barja. Georitem 24. Ljubljana.
4. Smrekar, A., Urbanc, M. 2011. The Lipica studfarm, Slovenia: is a golf course acceptable at a cultural monument of national importance?. V: The Second International Conference on Conservation of Architecture, Urban Areas, Nature & Landscape: Towards a Sustainable Survival of Cultural Landscape, Amman.
5. Šmid Hribar, M., Ferk, M. 2015. Vloga in pomen Krajinskega parka Udin boršt. Acta geographica Slovenica 56-1, Ljubljana.
6. Tičar, J., Komac, B., Zorn, M., Ferk, M., Hrvatin, M., Ciglič, R. 2017. From urban geodiversity to geoheritage : the case of Ljubljana (Slovenia). *Quaestiones Geographicae* 36-3, Poznań.
7. Lipar, M., Stepišnik, U., Ferk, M. 2019. Multiphase breakdown sequence of collapse doline morphogenesis : an example from Quaternary aeolianites in Western Australia. *Geomorphology* 327.
8. Ferk, M., Lipar, M., Šmuc, A., Drysdale, R. N., Zhao, J. 2019. Chronology of heterogeneous deposits in the side entrance of Postojna Cave, Slovenia. *Acta geographica Slovenica* 59-1, Ljubljana.
9. Smrekar, A., Breg Valjavec, M., Polajnar Horvat, K., Tiran, J. 2019: The geography of urban environmental protection in Slovenia : the case of Ljubljana. *Acta geographica Slovenica* 59-3.
10. Smrekar, A., Breg Valjavec, M., Polajnar Horvat, K., Ribeiro, D. 2019: Slovenia's protected areas. The geography of Slovenia : small but diverse.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	GLOBALNE SPREMENBE IN OKOLJSKA ZGODOVINA
Course title:	GLOBAL CHANGE AND ENVIRONMENTAL HISTORY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni		
Environmental and Regional Studies, doctoral study 3 rd level	Common		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DI009

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. Vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	30				120	6

Nosilec predmeta / Lecturer:

Doc. dr. Matija Zorn

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje

Prerequisite:

Finished 2nd bologna level (masters degree) in
appropriate field or equivalent program of
study

Vsebina:

- Študent/-ka spozna pomen pokrajinskih sprememb pri preučevanju sodobnih naravnih procesov, metode in tehnike okoljsko-zgodovinskega preučevanja ter možnosti, ki jih okoljska zgodovina nudi na področju preučevanja naravnih nesreč.
- Študent/-ka poglobi poznavanje (globalnih) pokrajinskih sprememb v predzgodovinski in zgodovinski dobi ter sodobnosti. Spozna tudi možne scenarije prihodnjih pokrajinskih sprememb.

Content (Syllabus outline):

- Students get to know the importance of landscape changes in studying recent natural processes, and environmental historical methods and techniques for the study of natural disasters.
- Students deepen the knowledge of (global) landscape changes in prehistoric and historic times as well as in modern times. They learn about the possible scenarios of future landscape changes.
- Students get to know key global cases in which changes to the natural balance in

- Študent/-ka spozna temeljne svetovne primere, pri katerih so spremembe naravnega ravnovesja v predzgodovinski in zgodovinski dobi privedle do obsežnih sprememb v pokrajini.
- Študent/-ka spozna poglobitve značilnosti naravnih nesreč v Sloveniji v luči okoljske zgodovine, pri čemer so posebej izpostavljene tiste naravne nesreče, ki so pomembne za družbeno-gospodarski razvoj Slovenije.
- Na primerih iz geološke zgodovine, predzgodovinske dobe in zgodovinske dobe se študent/-ka seznani s poglobitvami vzroki za naravne nesreče v Sloveniji ter z njihovimi posledicami.
- Študent/-ka se seznani s sodobnimi podnebnimi spremembami in poudarjanjem njihovega pomena za vse pogostejše naravne nesreče. Študent/-ka kritično vrednoti poudarjanje pomena sodobnih podnebnih sprememb za vse pogostejše naravne nesreče s pomočjo okoljsko-zgodovinskih študij, ki kažejo na veliko pogostost naravnih nesreč tudi pred sodobnimi podnebnimi spremembami.

- the prehistoric and historical era led to extensive changes in the landscape.
- Students get to know the main features of natural disasters in Slovenia in the light of environmental history. Highlighted are those natural disasters, which are important for socio-economic development of Slovenia.
 - For the case studies in geological history, prehistoric and historic era students get to know the main causes for natural disasters in Slovenia and their consequences.
 - Students get to know modern climate change and its importance to the increasing number of natural disasters. Students can critically evaluate the importance of contemporary climate change to an increasing number of natural disasters through environmental historical studies that show a high frequency of natural disasters well before modern climate change.

Temeljni literatura in viri / Readings:

- Alcantara-Ayala, I., Goudie, A. S. (ur.) 2010: Geomorphological Hazards and Disaster Prevention. Cambridge University Press.
- Alexandrov, V., Gajdusek, M. F., Knight, C. G., Yotova, A. (ur.) 2010: Global Environmental Change: Challenges to Science and Society in Southeastern Europe. Dordrecht: Springer.
- Delort, R., Walter, F. 2002: Povijest evropskog okoliša. Zagreb: Barbat.
- Diamond, J. M.. 2008: Propad civilizacij: kako družbe izberejo pot do uspeha ali propada. Tržič: Učila International.
- Hughes, J. D. 2009: An Environmental History of the World: Humankind's Changing Role in the Community of Life. London, New York: Routledge.
- IPCC Fifth Assessment Report, 2013. UN.
- Komac, B. 2009: Social memory and geographical memory of natural disasters. Acta geographica Slovenica 49-1, str. 199–226.
- Ogrin, D. 2005: Spreminjanje podnebja v holocenu. Geografski vestnik 77-1, str. 57–66.

- Ogrin, D. 2007: Severe storms and their effects in sub-Mediterranean Slovenia from the 14th to the mid-19th century. *Acta geographica Slovenica* 47-1, str. 7–24.
- Petrić, H. 2008: Što je povijest okoliša? *Historični seminar* 6. Ljubljana: Založba ZRC, str. 157–176.
- Radkau, J. 2000: *Natur und Macht: Eine Weltgeschichte der Umwelt*. München: Beck.
- Štih, P., Zwitter, Ž. (ur.) 2014: *Man, Nature and Environment Between the Northern Adriatic and the Eastern Alps in Premodern Times*. Ljubljana: Znanstvena založba Filozofske fakultete.
- Wignall, P. B. 2015: *The Worst of Times: How Life on Earth Survived Eighty Million Years of Extinctions*. Princeton University Press.
- Worster, D. 1988: *The Ends of the Earth: Perspectives on Modern Environmental History*. Cambridge: Cambridge University Press.
- Zwitter, Ž., Mrak, I. 2017: Postopno prilagajanje tradicionalne kulturne pokrajine pobočnim procesom: primer iz Podolševe v Karavanka. *Geografski obzornik* 64, 3-4, str. 40–47.

Cilji in kompetence:

- študent/-ka spozna teorije, teoretične modele ter metodološke pristope in orodja za poglobljeno in kritično spoznavanje, raziskovanje in razumevanje vzrokov in posledic sprememb v pokrajini s poudarkom na vzrokih in posledicah naravnih nesreč;
- študent/-ka spozna uporabo in aplikacijo zgodovinskih virov/dejstev za preučevanje vzrokov, posledic in prilagoditev na naravne nesreče;
- študent/-ka razume in ovrednoti razmerja med naravnimi procesi oziroma naravnimi nesrečami in človekom;
- študent/-ka razume potrebo po ohranjanju naravnega dinamičnega ravnovesja, ter prilagoditve novemu dinamičnemu ravnovesju, če se staro poruši;
- študent/-ka razume vlogo človeka in njegovih dejavnosti skozi zgodovino v luči spreminjanja pokrajine in njenih prilagoditev človekovim posegom;
- študent/-ka prepozna naravnogeografske in

Objectives and competences:

- Students get to know the theory, theoretical models and methodological approaches and tools for in-depth and critical understanding and research of the causes and consequences of landscape changes, with an emphasis on the causes and consequences of natural disasters;
- Students get to know the use and application of historical sources/facts for the study of the causes, consequences and adaptation to natural disasters;
- Students get to understand and evaluate the relationship between natural processes/natural disasters and man;
- Students understand the need to preserve the natural dynamic balance and adapt to the new dynamic equilibrium if the old bursts;
- Students understand of the role of man and his activity throughout history in the light of the changing landscape and its adaptation to human intervention;
- Students recognize physical geographical and human geographical processes in the landscape, which have an impact on the

družbenogeografske procese v pokrajini, ki vplivajo na vzroke in posledice naravnih nesreč;

- študent/-ka prepozna vidike, ki so pomembni za preventivo in ukrepanje v primeru naravnih nesreč;
- študent/-ka pridobi zmožnost kritične ocene prostorskega in regionalnega razvoja v preteklosti ter načrtovanje prihodnjega razvoja v luči sodobnih globalnih sprememb.

causes and consequences of natural disasters;

- Students recognize the aspects which are important for preventing and responding to natural disasters;
- Students can critically assess spatial and regional development in the past and can plan the future development in the light of contemporary global changes.

Predvideni študijski rezultati:

- študent/-ka pozna temeljne značilnosti sprememb v pokrajini v predzgodovinskem in zgodovinskem času ter pozna vzroke in pokazatelje (kazalce) teh sprememb;
- študent/-ka razume posledice sprememb pokrajine v predzgodovinskem in zgodovinskem času ter jih aplicira na sedanjost in prihodnost;
- študent/-ka pozna značilnosti in razsežnosti naravnih nesreč v predzgodovinskem in zgodovinskem času v povezavi s konkretno (kompleksno) pokrajinsko stvarnostjo (v prostoru in času);
- študent/-ka zna ovrednotiti pokrajino z vidika naravnih nesreč v predzgodovinskem in zgodovinskem času ter razume tradicionalne prilagoditve in ukrepanja v primeru naravnih nesreč;
- študent/-ka razume sodobne globalne (podnebne) spremembe in njihov vpliv na pojavnost prihodnjih naravnih nesreč ter spremembe v pokrajini.

Intended learning outcomes:

- Students know the fundamental characteristics of landscape changes in prehistoric and historic times and the causes and indicators of these changes;
- Students understand the consequences of landscape changes in prehistoric and historic times and can apply them to the present and the future;
- Students are familiar with the characteristics and extent of natural disasters in prehistoric and historic time in relation to the concrete (complex) landscape realities (in space and time);
- Students are able to evaluate the landscape in terms of natural disasters in prehistoric and historic times, understand traditional adaptation to natural disasters and are familiar with actions needed in the case of natural disasters;
- Students understand the contemporary global (climate) change and its impact on the future frequency and magnitude of natural disasters as well as the consequences in the landscape.

Metode poučevanja in učenja:

- Predavanja
- Seminarji

Learning and teaching methods:

- Lectures
- Seminars

- E-izobraževanje

- E-learning

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
• Izpit • Seminarska naloga	70 30	• Exam • Written paper

Reference nosilca / Lecturer's references:

1. Gašperič, P., Šolar, R., ZORN, 2020: Kartografski zakladi slovenskega ozemlja = Cartographic treasures of Slovenian territory. Ljubljana: Založba ZRC. DOI: 10.3986/9789610504276
2. Hudson, P. F., ZORN, M. 2019: The role of historic human impacts on modern environmental processes and management: Introduction to special issue. Land Degradation and Development. DOI: 10.1002/ldr.3328
3. Komac, B., Natek, K., ZORN, M. 2008: Geografski vidiki poplav v Sloveniji. Geografija Slovenije 20. Ljubljana: Založba ZRC.
4. Komac, B., ZORN, M. 2007: Pobočni procesi in človek. Geografija Slovenije 15. Ljubljana: Založba ZRC.
5. Perko, D., Ciglič, R., ZORN, M. (ur.) 2020: The Geography of Slovenia: Small but Diverse. Cham: Springer. DOI: 10.1007/978-3-030-14066-3
6. Tošić, I., ZORN, M., Ortar, J., Unkašević, M., Gavrilov, M. B., Marković, S. B. 2016: Annual and seasonal variability of precipitation and temperatures in Slovenia from 1961 to 2011. Atmospheric research 168, str. 220-233. DOI: 10.1016/j.atmosres.2015.09.014
7. ZORN, M. 2009: Uporaba zgodovinskih virov pri sorodnih vedah zgodovine. V zlatih črkah v zgodovini. Kronika 57, str. 383–400.
8. ZORN, M. 2018: Natural disasters and less developed countries. Nature, Tourism and Ethnicity as Drivers of (De)marginalization: Insights to Marginality from Perspective of Sustainability and Development. Cham: Springer, str. 59–78. DOI: 10.1007/978-3-319-59002-8_4
9. ZORN, M., Komac, B. 2007: Naravni procesi v svetih knjigah. Geografski vestnik 79-2, str. 97–117.
10. ZORN, M., Komac, B. 2008: Zemeljski plazovi v Sloveniji. Georitem 8. Ljubljana: Založba ZRC.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	NARAVNA IN ANTROPOGENA DEGRADACIJA POKRAJINE
Course title:	NATURAL AND ANTHROPOGENIC LANDSCAPE DEGRADATION

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni		
Environmental and Regional Studies, doctoral study 3 rd level	common		

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

DI010

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	10			20	120	6

Nosilec predmeta / Lecturer:

Doc. dr. Rok Ciglič, doc. dr. Mateja Breg Valjavec

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant track or a university (level VII) degree

Vsebina:

- opredelitev pojmov degradacija pokrajine in degradirano območje(DO),
- naravna degradacija pokrajine in njen družbenoekonomski vidik (erozija-kmetijstvo, žled-gozdarstvo, poplave-poselitev-gospodarstvo, potres-infrastruktura; graviklastični procesi-turizem itd.),
- antropogena degradacija pokrajine (pridobivanje mineralnih surovin, industrijska proizvodnja, odlaganje odpadkov, emisije plinov in odpadnih vod, itd.) in njen družbenoekonomski vidik,

Content (Syllabus outline):

- Definition of landscape degradation, land degradation and degraded land (area),
- Socio-economic aspects of naturally induced land degradation (erosion-agriculture, sleet-forestry, flood-settlement-economy, earthquakes-infrastructure, graviclastic processes-tourism etc.),
- Socio-economic aspects of anthropogenic/ human induced land degradation (excavation of mineral resources, industry, waste disposal, gas and sewage emissions, etc.),

- | | |
|---|---|
| <ul style="list-style-type: none">• pokrajinsko pogojene stopnje ranljivosti okolja (vodovarstvena območja, gosto poseljena območja, specifične značilnosti kraških pokrajin),• učinki naravne in antropogene degradacije na osnovne pokrajinske prvine (relief, prst, vegetacija, površinske in podzemne vode, zrak,...),• metode daljinskega zaznavanja in ostale najsodobnejše GIS metode za določanje DO ter sodobne terenske metode določanja in merjenja stopnje degradacije,• pregled primerov DO v Sloveniji in po svetu (degradirana urbana območja/DUO, degradirana antropogena območja zunaj mestnih območij, naravno degradirana območja itd.),• paradigme, metode in postopki za oživljanje degradiranih območij glede na tip DO (fitoremediacija, sanacija odlagališča, vzpostavitev prvotne rabe, gradbeni posegi pri eroziji, kulturna industrija, itd),• primeri dobrih in slabih praks oživljanja (reaktivacije) DO v Sloveniji in tujini. | <ul style="list-style-type: none">• Environmental vulnerability of different landscapes (water protection zones, densely populated areas, karst landscapes etc.),• The impacts of anthropogenic land degradation on landscape elements (relief, soil, vegetation, surface and ground waters, air,...),• Remote sensing and advanced GIS methods for detection of land degradation and degraded lands & in-situ methods for measuring the level of degradation,• Examples of good practises from Slovenia and abroad (urban brownfields, rural brownfields, naturally induced degraded land),• Paradigms, methods and approaches for reactivation of degraded land considering the type of landscape degradation (phytoremediation, reactivation, land use improvement, construction measures, cultural industries etc.)• Examples of good practices of reactivation of degraded land in Slovenia and Europe. |
|---|---|

Temeljni literatura in viri / Readings:

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|--|
| <ul style="list-style-type: none">• Breg Valjavec, M., ZORN, M. 2015: Degraded karst relief : waste-filled dolines. V: DANIELS, Justin A. (ur.). Advances in environmental research. Vol. 40.• Breg Valjavec, M. 2013: Nekdanja odlagališča odpadkov v vrtačah in gramoznicah. Geografija Slovenije 26.• Chrysochoou, M., Brown, K., Dahal, G. et al. (2012). A GIS and indexing scheme to screen brownfields for areawide redevelopment planning. Landscape and Urban Planning 105:187198.• Gibbs H.K., Salmon J.M., 2015. Mapping the world's degraded lands. Applied Geography 57.• Koželj, J. 1998. Degradirana urbana območja. Ljubljana.• Smrekar, A., Breg Valjavec, M. 2014: Vrednotenje nekdanje in sedanje proizvodnje nevarnih odpadkov v Ljubljani z vidika obremenjevanja podtalnice. Geografski vestnik 86-2.• Zorn, M., Komac, B. Land degradation. V: Bobrowsky, P. T. (ur.). Encyclopedia of natural hazards, (Encyclopedia of earth sciences series, ISSN 13884360), (Springer |
|--|

reference). Dordrecht etc.: Springer, cop. 2013, str. 580583, ilustr.
<http://www.springerreference.com/docs/html/chapterbid/347905.html>

Cilji in kompetence:

Temeljni cilj predmeta je študenta seznaniti z najpogostejšimi oblikami degradacije v pokrajini ter ga usposobiti za strokovno in samostojno delo na različnih področjih, kjer je potrebno izvajati odločitve in ukrepe v zvezi z upravljanjem, razvojem in ponovnim oživljanjem različnih tipov degradiranih območij.

Študent pridobi s predmetom naslednje kompetence:

- je sposoben prepoznati in razločevati območja naravne in antropogene degradacije v pokrajini
- zna določiti naravne ali družbene procese, ki so povzročili degradacijo pokrajine
- zna kritično prepoznati vpliv degradacije na posamezne pokrajinske prvine
- pozna obstoječe načine prenove degradiranih območij in lahko kritično sodeluje pri odločanju o razvoju degradiranih območij
- pozna različne terenske metode za določanje stopnje degradacije (npr. vzorčenje prsti, merjenje električne upornosti tal, fitopopis itd.)

Objectives and competences:

The main goal of course is to introduce a student with the most common types of land degradation and to train him for professional and autonomous work at different planning and management levels considering degraded lands.

During the course the student will achieve following knowledge and competences:

- be able to recognize and separate the areas of natural and anthropogenic landscape degradation
- know how to determine natural and societal processes that are causing land degradation
- be able to recognize the impacts of land degradation on different natural landscape elements (relief, soil, vegetation, water, air)
- Know all available types of reactivation of degraded lands and can be critically involved in decision processes regarding further development of degraded areas
- Is familiar with different field methods for determination and evaluation of degradation level (soil sampling, electrical resistivity measurements, ecological evaluation etc.)

Predvideni študijski rezultati:

- poznavanje najsodobnejših pristopov in metod pri preučevanju degradacije pokrajine,
- poznavanje stanja okolja in posledic človekovega delovanja v pokrajini,
- razumevanje prostora kot neobnovljivega naravnega vira,

Intended learning outcomes:

- Understanding of most advanced approaches and methods in the field of land degradation,
- Understanding the environment and the consequences of human activities in landscape,

- sposobnost uporabe najprimernejših metodoloških pristopov pri odločanju o ponovnem razvoju posameznega degradiranega območja,
- celostno in interdisciplinarno vrednotenje degradacije pokrajine in njenih učinkov na okolje, družbo in gospodarstvo,
- praktična znanja in izkušnje o kritičnem prepoznavanju, vrednotenju in načrtovanju trajnostnih posegov v degradirano pokrajino.

- Understanding of space/landscape as a non-renewable natural resource,
- Be able of using/applying the most appropriate methodological approaches as decision support to redevelopment of degraded lands,
- Integrated and interdisciplinary evaluation of landscape degradation and their impacts on environment, society and economy,
- Practical knowledge and experiences in the field of critical recognition, evaluation and planning of sustainable interventions in to degraded landscape.

Metode poučevanja in učenja:

- predavanja
- seminarji
- e-izobraževanje

Learning and teaching methods:

- lectures
- seminars
- e-learning

Načini ocenjevanja:

- Način (pisni izpit, ustno izpraševanje, naloge, projekt)
- Ustni izpit
 - Seminarska naloga

Delež (v %) /
Weight (in %)

70
30

Assessment:

- Type (examination, oral, coursework, project):
- Oral exam
 - Written paper

Reference nosilca / Lecturer's references:

1. Breg Valjavec, M., Janža, M., Smrekar, A. 2018: Environmental risk resulting from historical land degradation in alluvial plains considered for dam planning. Land degradation & development 29-11.
2. Breg Valjavec, M., Zorn, M., Čarni, A. 2018: Human-induced land degradation and biodiversity of Classical Karst landscape : on the example of enclosed karst depressions (dolines). Land degradation & development 29-10.
3. Breg Valjavec, M., Zorn, M., Čarni, A. 2018: Bioindication of human-induced soil degradation in enclosed karst depressions (dolines) using Ellenberg indicator values (Classical Karst, Slovenia). Science of the total environment 640/641.
4. Breg Valjavec, M., Zorn, M. 2015: Degraded karst relief : waste-filled dolines. V: DANIELS, Justin A. (ur.). Advances in environmental research. Vol. 40.
5. Breg Valjavec, M. 2014: Odkrivanje prikritih odlagališč odpadkov v prodni ravnini z geomorfometrično analizo in LiDAR DMR. Acta geographica Slovenica 54-1.
6. Breg Valjavec, M. 2013: Nekdanja odlagališča odpadkov v vrtačah in gramoznicah. Geografija Slovenije 26.

7. Ciglič, R., Komac, B., Zorn, M. 2012: Škoda in pokrajinski učinki večjih naravnih nesreč = Damage and landscape effects of major natural disasters. Ujma 26, str. 70-79, ilustr., graf. prikazi, zvd. <http://www.sos112.si/slo/tdocs/ujma/2012/070.pdf>.
8. Ciglič, R., Zorn, M., Komac, B. 2011: Primerjava različnih načinov modeliranja plazovitosti. V: ZORN, Matija (ur.), et al. Neodgovorna odgovornost, str. 39-50, ilustr., zvd. <http://giam.zrc-sazu.si/sites/default/files/Naravne-nesrece-02.pdf>.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	BIODIVERZITETA IN GLOBALNE SPREMEMBE
Course title:	BIODIVERSITY AND GLOBAL CHANGES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni		
Environmental and Regional Studies, doctoral study 3 rd level	common		

Vrsta predmeta / Course type

Izbirni / Elective

Univerzitetna koda predmeta / University course code:

DI011

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	15			15	120	6

Nosilec predmeta / Lecturer:

Izr. prof. dr. Urban Šilc

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Opravljen prva stopnja študija biologije ali ekvivalentne smeri.

Prerequisite:

Finished bachelor's degree in Biology or equivalent program of study.

Vsebina:

- Globalni vzorci biotske pestrosti
- Merjenje vrstne pestrosti
- Genska diverziteta
- Ekosistemi
- Klimatska variabilnost, klimatske spremembe in efekt tople grede
- Biotska ranljivost, odgovor in adaptacije na klimatske spremembe
- Vpliv klimatskih sprememb v prihodnosti

Content (Syllabus outline):

- Global patterns of biodiversity
- Measuring species diversity
- Genetic diversity
- Ecosystems
- Climate variability, climate change and the greenhouse effects
- Biotic vulnerability, response and adaptations to climate change
- Future impact of climate change

Temeljni literatura in viri / Readings:

- Rosenzweig M.L. (1995). *Species diversity in space and time*. Cambridge University Press.
- Lovejoy T. E., Hannah L. J. (2005). *Climate Change and Biodiversity*. Yale University Press.

Cilji in kompetence:

Objectives and competences:

S tem predmetom se bodo študenti seznanili z globalnimi vzorci diverzitete in njenim merjenjem na več ravneh, od genetske do ekosistemske. Študenti bodo razumeli mehanizme, ki ustvarjajo biodiverzitetu in kako klimatske spremembe vplivajo na te mehanizme danes in v prihodnosti. Študenti se bodo seznanili s podnebjem in razumeli efekt tople grede, spoznali že opažen vpliv nedavnih klimatskih sprememb in napovedi za njihov vpliv v prihodnosti. Spoznali bodo tudi moderne pristope v napovedovanju prihodnjih globalnih sprememb.

Through the course, students will be familiarized with the global patterns of biodiversity and its measurement, from the genetic to ecosystem level. Students will understand the mechanisms that generate biodiversity and how these mechanisms are affected by climate change today and in the future. The course will explain the climate system and the greenhouse effect, the observed impact of recent climate changes, future projections of the impact of climate change, and modern approaches for predicting future global changes.

Predvideni študijski rezultati:

- Razumevanje kako se spreminja vrstna diverziteta in diverziteta združb v odvisnosti od časa in prostora in kako jo meriti.
- Študenti bodo razumeli kako se biota odziva na globalne spremembe: kakšni so odzivi posameznih vrst in kako se spreminjajo celotne združbe in ekosistemi.
- Študenti bodo pridobili vpogled v moderne pristope v raziskovanju vpliva klimatskih sprememb.

Intended learning outcomes:

- Understanding how diversity of species and communities is changing in space and time and how to measure it.
- Students will understand how biota responds to climate change: what is the response of single species and how whole communities and ecosystems are affected.
- Students will gain insight into modern trends in climate change research.

Metode poučevanja in učenja:

- Predavanja
- Seminar
- e-učenje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
• Seminar • Izpit	20 80	• Seminar • Exam

Reference nosilca / Lecturer's references:

1. Šilc, U., Ačić, S., Škvorc, Ž., Krstonošić, D., Franjić, J., & Dajić Stevanović, Z. (2014). Grassland vegetation of the Molinio-Arrhenatheretea class in the NW Balkan Peninsula. Applied vegetation science, 17(3), 591-603.
2. Marinšek, A., Šilc, U., & Čarni, A. (2013). Geographical and ecological differentiation of Fagus forest vegetation in SE Europe. Applied Vegetation Science, 16(1), 131-147.

3. Šilc, U., Vrbničanin, S., Božić, D., Čarni, A., & Stevanović, Z. D. (2009). Weed vegetation in the north-western Balkans: diversity and species composition. *Weed Research*, 49(6), 602-612.
4. Šilc, U., & Čarni, A. (2005). Changes in weed vegetation on extensively managed fields of central Slovenia between 1939 and 2002. *Biologia*, 60, 4, 409-416.
5. Šilc, U., Vreš B., Čelik T., Gregorič M. (2020). Biodiversity of Slovenia. *The Geography of Slovenia*. Springer, pp. 109-124.
6. Šilc, U., Stešević D., Luković M., Čaković D. (2020). Changes of a sand dune system and vegetation between 1950 and 2015 on Velika plaža (Montenegro, E Mediterranean). *Regional Studies in Marine Science* 35, 101139.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	NARAVOVARSTVO
Course title:	NATURE CONSERVATION

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni		
Environmental and Regional Studies, doctoral study 3 rd level	Common		

Vrsta predmeta / Course type

Izbirni / Elective

Univerzitetna koda predmeta / University course code:

DI012

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	15			15	120	6

Nosilec predmeta / Lecturer:

Izr. prof. dr. Urban Šilc

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Opravljen prva stopnja študija biologije ali ekvivalentne smeri.

Prerequisite:

Finished bachelor's degree in Biology or equivalent program of study.

Vsebina:

- Varstvena biologija (disciplina in njena načela)
- Ravni biotske raznovrstnosti (genska, vrstna, ekosistemska) in vzroki upadanja biodiverzitete
- Pravni okvir ohranjanja in trajnostne rabe biotske raznovrstnosti (mednarodni in nacionalni predpisi s področja varstva narave)
- Načini ohranjanja biotske raznovrstnosti (In situ varstveni ukrepi: zavarovana območja, naravne vrednote, Natura 2000 območja, Ekološko pomembna območja; Ex situ varstveni ukrepi:

Content (Syllabus outline):

- Conservation biology (discipline and its principles)
- Levels of biodiversity and causes of decline
- Legal frame of conservation and sustainable use of biodiversity (international and national legislation about nature conservation)
- Ways of nature protection (In situ: protected areas, natural values, Natura 200 areas, ecologically important areas); Ex situ: botanical gardens, ZOO, collections, gene banks, asylum)
- Classification of endangered taxa (IUCN criteria and red lists)

rastlinski in živalski vrtovi, zbirke, genske banke, azil) • Klasifikacija ogroženosti taksonov (IUCN kriteriji in rdeči sezname) • Varovanje vrst, varovanje habitatov, ekosistemov (habitatni tipi) in krajin • Monitoring biotske raznovrstnosti (monitoring vrst, habitatnih tipov, ekosistemov) • Obnovitvena ekologija: na nivoju vrst (introdukcija, reintrodukcija, translokacija, suplementacija) in ekosistemov (revitalizacija) • Praktični primeri	• Monitoring of biodiversity (monitoring of species, habitat types, ecosystems) • Restoration ecology: on species level (introduction, reintroduction, translocation, supplement) and ecosystem level (revitalisation) • Case studies
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Temeljni literatura in viri / Readings:

• Pullin A.S. 2002. <i>Conservation Biology</i>. Cambridge University Press. • van Andel J., Aronson J. (eds) 2012. <i>Restoration Ecology: The New Frontier</i>, Second edition, Wiley-Blackwell.
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Cilji in kompetence:

Namen predmeta je seznaniti študente z osnovami naravovarstvene stroke. Predmet bo definiral in razložil osnove naravovarstva, varovanja vrst <i>ex situ</i> in <i>in situ</i>, osnove obnovitvene ekologije vrst (ponovne naselitve) in različnih ekosistemov in njihovega monitoringa. Vsebine bodo predstavljene na praktičnih primerih (uspešnih in neuspešnih).

Objectives and competences:

The purpose of the course is to familiarize students with the basics of nature conservation. The course will define and explain basics of nature conservation, <i>ex situ</i> and <i>in situ</i> conservation of species (reintroduction), basics of restoration ecology of various ecosystems and their monitoring. Course contents will interpret by case studies (successfully and unsuccessfully).

Predvideni študijski rezultati:

• Poznavanje in razumevanje osnov naravovarstvene stroke in njenih načel. • Poznavanje osnovnih orodij naravovarstva in njihove uporabe v konkretnih primerih.
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Intended learning outcomes:

• Knowledge and understanding of the basic concepts in nature conservation as a discipline and its principles. • Knowledge of basic tools in nature conservation and their application in concrete cases.

Metode poučevanja in učenja:

• Predavanja • Terensko delo • e-učenje

Learning and teaching methods:

• Lectures • Field work • e-learning
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Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
- Seminarska naloga - Izpit	20 80	- Class paper - Exam

Reference nosilca / Lecturer's references:

1. **Šilc, U.**, Ačić, S., Škvorc, Ž., Krstonošić, D., Franjić, J., & Dajić Stevanović, Z. (2014). Grassland vegetation of the Molinio-Arrhenatheretea class in the NW Balkan Peninsula. Applied vegetation science, 17(3), 591-603.
2. Marinšek, A., **Šilc, U.**, & Čarni, A. (2013). Geographical and ecological differentiation of Fagus forest vegetation in SE Europe. Applied Vegetation Science, 16(1), 131-147.
3. **Šilc, U.**, Vrbničanin, S., Božić, D., Čarni, A., & Stevanović, Z. D. (2009). Weed vegetation in the north-western Balkans: diversity and species composition. Weed Research, 49(6), 602-612.
4. **Šilc, U.**, & Čarni, A. (2005). Changes in weed vegetation on extensively managed fields of central Slovenia between 1939 and 2002. Biologia, 60, 4, 409-416.
5. **Šilc, U.**, Vreš B., Čelik T., Gregorič M. (2020). Biodiversity of Slovenia. The Geography of Slovenia. Springer, pp. 109-124.
6. **Šilc, U.**, Stešević D., Luković M., Caković D. (2020). Changes of a sand dune system and vegetation between 1950 and 2015 on Velika plaža (Montenegro, E Mediterranean). Regional Studies in Marine Science 35, 101139.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	UVOD V EKOSISTEMSKO STORITVE
Course title:	INTRODUCTION TO ECOSYSTEM SERVICES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Skupni	1	1,2
Environmental and Regional Studies, doctoral study 3 rd level	Common	1	1,2

Vrsta predmeta / Course type

Izbirni / Elective

Univerzitetna koda predmeta / University course code:

DI013

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30		20		10	120	6

Nosilec predmeta / Lecturer:

doc. dr. Mateja Šmid Hribar, doc. dr. Daniela Alexandra
Teixeira da Costa Ribeiro

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Finished second Bologna level in the
appropriate field or University degree VII.

Vsebina:

Predmet obravnava potenciale nedavno
razvitega koncepta ekosistemskih storitev.
Med predavanji bodo razloženi ključni
koncept ekosistemskih storitev ter njegove
zmožnosti in omejitve pri uporabi v ustreznih
politikah.

Vsebina bo razdeljena na tri vsebinske
sklope:

1. Teoretični del (različne klasifikacije in
tipi ekosistemskih storitev, omejitve
njihove rabe, najnovejši trendi v
svetovnih raziskavah, ...)

Content (Syllabus outline):

The course discusses the potentials of the
recently developed concept of ecosystem
services. During the course, the key concept of
ecosystem services, its capacities and
limitations when applied to relevant policies
will be explained.

The content is divided into three main parts, as
following:

1. Theoretical part (Different classifications
and types of ecosystem services; limits of
it's application; recent trends in global
research ...)

2. Praktični del, ki osvetljuje rabo koncepta in dileme (potencialna raba koncepta v politikah; ocena in vrednotenje; kompromisi in sinergije ekosistemskih storitev pri upravljanju pokrajine; prednosti in slabosti vrednotenja ekosistemskih storitev; etična vprašanja, ...)
3. Terensko delo (vaje in kritični razmislek o tem, kako v praksi uporabiti priučen koncept; razmislek o tem, katere koristi nam nudi okolje okrog nas).

Tematika se vsebinsko povezuje s sorodnimi koncepti kot so: podnebne spremembe, biodiverziteta, raba naravnih virov, rešitve temelječe na naravi, upravljanje s skupnimi viri in dobrim počutjem ljudi. Vsi omenjeni koncepti prispevajo k učinkovitemu in trajnostnemu upravljanju z naravnimi viri in k prehodu v bolj prožne družbe.

2. Practical part highlighting the use of the concept and dilemmas (Potential application of this concept in politics; assessment and evaluation; trade-offs and synergies of ecosystem services in landscape management; pros & cons of valuing ecosystem services; ethical questions ...)
3. Field work (exercise and critical thinking to apply the concepts learned; reflection upon what we're benefiting from the environment around us).

The theme is linked to other concepts such as climate change, biodiversity, natural resource use, nature based solutions, governing of common-pool resources and human well-being, all aiming to contribute to efficient and sustainable management and governance of natural resources and transition to more resilient societies.

Temeljni literatura in viri / Readings:

- Millenium Ecosystem Assesment (2005). Ecosystems and human well-being: Synthesis. Washington. <https://www.millenniumassessment.org/documents/document.356.aspx.pdf>
- de Groot, R. S., Alkemade, R., Braat, L., Hein, L., Willemen, L. (2010). Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecological Complexity* 7-3, 260-272.
- Burkhard, B., Kroll, F., Nedkov, S., & Müller, F. (2012). Mapping ecosystem service supply, demand and budgets. *Ecological Indicators* 21, 17-29.
- Howe, C., Suich, H., Virac, B., Macea, G. M. (2014). Creating win-wins from trade-offs? Ecosystem services for human well-being: A meta-analysis of ecosystem service trade-offs and synergies in the real world. *Global Environmental Change* 28(1): 263-275.
- Loft L., Mann, C., Hansjürgens, B., (2015). Challenges in ecosystem-services governance: Multi-levels, multi-actors, multi-rationalities. *Ecosystem Services* 16, 150-157.
- Heydinger, J. M., (2016). Reinforcing the Ecosystem Services Perspective: The Temporal Component. *Ecosystems* 19: 661-673. DOI: 10.1007/s10021-016-9959-0
- Bennet, E. M. (2017). Research Frontiers in Ecosystem Service Science. *Ecosystems* 20, 31–37.
- Burkhard, B., & Maes, J. (eds) (2017). Mapping Ecosystem Services. Pensoft Publishers, Sofia, 374 pp.

Cilji in kompetence:

Objectives and competences:

Predmet prispeva predvsem k razvoju naslednjih splošnih in specifičnih kompetenc:

- poznavanje ekosistemskih storitev, njihovih vlog in ocenjevanja;
- seznanitev z različnimi metodami in pristopi za ocenjevanje različnih tipov ekosistemskih storitev;
- razvijanje znanja in veščin v znanosti, ki podpira okoljska vprašanja;
- ovrednotenje vloge družbe v svetu narave in v medsebojnih odnosih med človekom in naravo;
- razvijanje sposobnosti razmišljanja o okolju in našem mestu v njem;
- izboljšanje raziskovalnih sposobnosti pri seminarski nalogi in
- seznanitev z izbranimi primeri uporabe koncepta ekosistemskih storitev na različnih prostorskih ravneh.

The mainly contributes to the development of the following general and specific competences:

- knowledge of ecosystem services, its roles and assessment;
- get familiar with various methods and approaches to assess different types of ecosystem services;
- develop knowledge and skills in the science underpinning environmental issues;
- evaluate societies' role in the natural world and human-nature interactions;
- develop ability to thinking about the environment and our place in it;
- improve research skills in a seminar work, and
- get familiar with selected examples of the concept of ecosystem services at different spatial levels.

Predvideni študijski rezultati:

Med predavanji bodo študentje pridobili znanje in razumevanje o povezavi med naravo in družbo. Poglobljena študij študentom omogoča samostojno analizo potencialov, izzivov in dilem koncepta ekosistemskih storitev. Študentje bodo:

- sposobni razložiti koncept 'ekosistemske storitve';
- razumeli različne tipi storitev, ki jih nudijo ekosistemi;
- seznanjeni z glavnimi metodami in pristopi za kartiranje in ocenjevanje ekosistemskih storitev;
- razumeli dileme, povezane z vrednotenjem in rabo ekosistemov, in
- sposobni uporabiti koncept pri svojem nadaljnjem študiju.

Intended learning outcomes:

Through lectures the students will gain knowledge and understanding about the linkage between nature and society. The in-depth study enables students to independently analyze the potentials, challenges and dilemmas of the concept of ecosystem services. The students will:

- be able to explain the concept of 'ecosystem services';
- understand different types of services that ecosystems provide;
- be familiarized with the main methods and approaches for mapping and assessing ecosystem services;
- understand the dilemmas associated with valuing and use of ecosystems, and
- be able to apply the concept to their future study.

Metode poučevanja in učenja:

Learning and teaching methods:

● Predavanja ● Terenske vaje ● e-učenje ● Razgovor/ diskusija/debata	● Lectures ● Field work ● e-learning ● Conversation/discussion/debate
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Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
● študentska angažiranost ● izpit ● seminarska naloga (izdelava in predstavitev)	10 50 40	● student engagement ● exam ● seminar work (delivery and presentation)

Reference nosilca / Lecturer's references:

1. Ribeiro, D., & Šmid Hribar, M. (2019). Assessment of land-use changes and their impacts on ecosystem services in two Slovenian rural landscapes. *Acta Geographica Slovenica* 59 (2), 143-159.
2. Rodela R., Tucker C.M., Šmid Hribar M., Sigura M., Bogataj N., Urbanc M., Gunya A. (2019). Intersections of ecosystem services and common-pool resources literature: An interdisciplinary encounter. *Environmental Science and Policy* 94, 72–81.
3. Burkhard, B., Maes, J., Potschin-Young, M., Santos-Martín, F., Geneletti, D., Stoev, P., Kopperoinen, L., Adamescu, C.M. Adem Esmail, B., Arany, I., Arnell, A., Balzan, M., Barton, D.N., Van Beukering, P., Bicking, S., Borges, P.A.V., Borisova, B., Braat, L., Brander, L.M., Bratanova-Doncheva, S., Broekx, S., Brown, C., Cazacu, C., Crossman, N., Czúcz, B., Daněk, J., de Groot, R., Depellegrin, D., Dimopoulos, P., Elvinger, N., Erhard, M., Fagerholm, N., Frélichová, J., Grêt-Regamey, A., Grudova, M., Haines-Young, R., Inghe, O., Kallay, T.K., Kirin, T., Klug, H., Kokkoris, I.P., Konovska, I., Kruse, M., Kuzmova, I., Lange, M., Liekens, I., Lotan, A., Lowicki, D., Luque, S., Marta-Pedroso, C., Mizgajski, A., Mononen, L., Mulder, S.an, Müller, F.o, Nedkov, S.au, Nikolova, M.av, Östergård, H.aj, Penev, L.aw, Pereira, P.ac, Pitkänen, K., Plieninger, T., Rabe, S.-E., Reichel, S., Roche, P.K., Rusch, G., Ruskule, A., Sapundzhieva, A., Sepp, K., Sieber, I.M., Šmid Hribar, M., Stašová, S., Steinhoff-Knopp, B., Stępniewska, M., Teller, A., Vackar, D., Van Weelden, M., Veideman, K., Vejre, H., Vihervaara, P., Viinikka, A., Villoslada, M., Weibel, B., Zulian, G. 2018: Mapping and assessing ecosystem services in the EU-Lessons learned from the ESMERALDA approach of integration. *One Ecosystem* 3: e29153. DOI: 10.3897/oneeco.3.e291
4. Šmid Hribar, M., Japelj, A., Vurunić, S. (2020). Pregled raziskav s področja ekosistemskih storitev v Sloveniji. *Geografski vestnik*, 92-2. (submitted into evaluation process)

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PODNEBNE SPREMEMBE
Course title:	CLIMATE CHANGE

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	skupni	1	1,2
Environmental and Regional Studies, doctoral study 3 rd level	common	1	1,2

Vrsta predmeta / Course type

Izbirni / Elective

Univerzitetna koda predmeta / University course code:

DI014

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30		20		10	120	6

Nosilec predmeta / Lecturer:

Doc. dr. Matija Zorn
(ostali izvajalci: doc. dr. Mateja Ferk, dr. Matej Lipar)

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Finished second Bologna level in the
appropriate field or University degree VII.

Vsebina:

1. Komponenti podnebja

- 1.1. Sevanje (elektromagnetni spekter, sončna energija)
- 1.2. Učinek tople grede
- 1.3. Zemeljsko energetska ravnovesje in spreminjanje sončnega sevanja
- 1.4. Kroženje zraka v atmosferi
- 1.5. Kroženje oceanov / tokovi
- 1.6. Interakcije atmosfera-ocean (Severno-atlantski oscilacijski indeks, El Niño, La Niña, Dipol Indijskega oceana)

2. Zapisi o preteklih podnebnih spremembah

Content (Syllabus outline):

1. Climate components

- 1.1. Radiation (electromagnetic spectrum, solar energy)
- 1.2. Greenhouse effect
- 1.3. Earth's Energy Balance & Variation in Sun's Radiation
- 1.4. Atmospheric Circulation
- 1.5. Ocean Circulation / currents
- 1.6. Atmosphere-Ocean interactions (North Atlantic Oscillation, El Niño, La Niña, Indian Ocean Dipole)

2. Records of past climate change

- 2.1. Instrumental measurements

2.1. Instrumentalne meritve
2.2. Zgodovinski zapisi
2.3. Proxy meritve (izotopi kisika, dodatne informacije iz ledeniških vrtin, siga/stalagmiti, drevesne letnice, trosi in cvetni prah, korale, nihanje morske gladine)
3. Zgodovina atmosfere
3.1. Zemljina zgodnja atmosfera
3.2. Veliki dogodek oksidacije
4. Zgodovina preteklih podnebnih sprememb
4.1. Proterozoik
4.2. Paleozoik
4.3. Mezozoik
4.4. Kenozoik
4.5. Kvartar
4.5. Zadnja ledena doba
4.7. Holocen
4.7.1. Saharske podnebne spremembe
4.7.2. Evropska spremenljivost podnebja
4.8. Ogrevanje 20. - 21. stoletja
5. Vzroki za podnebne spremembe
5.1. Tektonika
5.2. Milankovičevi cikli
5.3. Vulkanizem
5.4. Bolidi
5.5. Sončne pege
5.6. Sestava ozračja
5.6.1. Metan
5.6.2. CO₂
6. Skeptiki/zanikalci/racionalisti
6.1. Lažne novice
6.2. Znanstveniki
6.3. Kolumnisti
6.4. Organizacije, Clexit skupina
6.5. Nikalne izjave in dejstva
7. Podnebne prilagoditve
7.1. Geoinženiring - velike rešitve
7.1.1. Tehnike upravljanja sončnega sevanja
7.1.2. Tehnike zmanjševanja CO₂ v atmosferi
7.2. Globalni podnebni protokoli
7.2.1. Pogajanja o podnebnih spremembah

2.2. Historical records
2.3. Proxy measurements (oxygen isotopes, additional information from ice cores, speleothems/stalagmites, tree rings, spores and pollen, corals, sea level changes)
3. History of atmosphere
3.1. Earth's early atmosphere
3.2. Great Oxidation Event
4. History of past climate change
4.1. Proterozoic
4.2. Palaeozoic
4.3. Mesozoic
4.4. Cainozoic
4.5. Quaternary
4.5. Last glacial/interglacial cycle
4.7. Holocene
4.7.1. Saharan climate change
4.7.2. European variability
4.8. 20th – 21th century warming
5. Causes of climate change
5.1. Tectonics
5.2. Milankovic cycles
5.3. Volcanism
5.4. Bolides
5.5. Sunspots
5.6. Composition of the atmosphere
5.6.1. Methane
5.6.2. CO₂
6. Climate sceptics/deniers/rationalists
6.1. Fake news
6.2. Scientists
6.3. Columnists
6.4. Sceptic organisations, Clexit Coalition
6.5. Denial statements versus facts
7. Climate adaptations
7.1. Geoengineering – Big solutions
7.1.1. Solar radiation management techniques
7.1.2. Techniques to reduce CO₂ in the atmosphere
7.2. Global climate protocols
7.2.1. Climate change negotiations
7.2.2. Montreal Protocol

7.2.2. Montrealski sporazum
7.2.3. Kjotski protokol
7.3. Lokalne (slovenske) organizacije
7.4. Prilagajanje podnebnim spremembam – strategije Sektorja za okolje in podnebne spremembe, Ministrstvo za okolje in prostor
7.5. Podnebje v primerjavi z okoljem
8. Zmagovalci in poraženci
8.1. Pozitivne/negativne posledice večjega deleža CO₂
8.2. Pozitivne/negativne posledice višjih temperatur
8.3. Pozitivne/negativne posledice sprememb količine padavin

7.2.3. Kyoto Protocol
7.3. Local (Slovenian) climate organisations
7.4. Climate change adaptations – strategies of the Ministry of the Environment and Spatial Planning
7.5. Climate versus environment
8. Winners and losers
8.1. Positive/negative effects of greater CO₂ levels
8.2. Positive/negative effects of higher temperatures
8.3. Positive/negative effects of change in rainfall amount

Temeljni literatura in viri / Readings:

- Castillo, F., Wehner, M., Stone, D.: 2021. Extreme Events and Climate Change: A Multidisciplinary Approach. Wiley, 256 p.
- Letcher, T. (Ed.): 2021. Climate Change: Observed Impacts on Planet Earth, Third Edition. Elsevier, 750 p.
- Letcher, T. (Ed.): 2021. The Impacts of Climate Change. Elsevier, 420 p.
- Singh, S., Singh, P., Rangabhashiyam, S., Srivastava, K. K.: 2021. Global Climate Change. Elsevier, 370 p.
- Komac, B., Pavšek, M., and Topole, M.: 2020. Climate and Weather of Slovenia. In: The Geography of Slovenia, Perko, D., Ciglič, R., and Zorn, M. (Eds.), Springer. Pp. 71-90.
- Fletcher, C.: 2018. Climate Change: What The Science Tells Us, 2nd Edition. Wiley, 352 p.
- Thomas, J. A., Williams, M., Zalasiewicz, J.: 2020. The Anthropocene: A multidisciplinary Approach. Wiley, 288 p.
- Anderson, D., Maasch, K., Sandweiss, D. (Eds.): 2007. Climate Change and Cultural Dynamics: A Global Perspective on Mid-Holocene Transitions. Elsevier, 602 p.
- Sperling, D., Cannon, J.: 2006. Driving Climate Change. Elsevier, 312 p.
- Issar, A. S.: 2003. Climate Changes during the Holocene and their Impact on Hydrological Systems. Cambridge University Press, 127 p.

Cilji in kompetence:

Cilj predmeta je zagotoviti osnovo za razumevanje fizičnih zemeljskih procesov in procesov v vesolju, ki vodijo podnebne spremembe v različnih časovnih okvirih. To je nadgrajeno s podajo glavnih klimatskih sprememb tekom zemeljske zgodovine, vključno z metodami in proksiji podnebnih sprememb.

Objectives and competences:

The course aims at providing the basis for understanding the physical Earth and space processes which govern climate variations on different timescales. This is supplemented by the introduction of the overall climatic changes throughout the Earth's history, including the methods and proxies of climate change.

S to podlago bodo pridobljene kompetence spoznanja da čeprav je vzpostavljeno vse večje znanstveno soglasje o obstoju trenutnih podnebnih sprememb, zapletenost in negotovost znanosti omogoča vzpon podnebnim skeptikom in lažnim novicam, da izpodbijajo znanstvene ugotovitve. Končni cilj tečaja je predstaviti podnebne prilagoditve in predlagane posledice podnebnih sprememb.

These bases will provide the awareness that although a growing scientific consensus of climate change has become established, the complexities and uncertainties of the science provide opportunities for climate sceptics to challenge the findings. The final objective of the course is to present climatic adaptations and proposed consequences of climate change.

Predvideni študijski rezultati:

- Razumevanje fizikalnih osnov v naravi, ki ustvarjajo podnebje, vključno s sevanjem, učinkom tople grede, ozračjem in oceanom.
- Razumevanje metod raziskovanja podnebnih sprememb in proksijev, ki nakazujejo te spremembe.
- Razumevanje splošnih podnebnih sprememb skozi zemeljsko zgodovino in naravne spremenljivosti podnebja zaradi različnih vzrokov ter posledično problematično dokazovanje signalov antropogenega globalnega segrevanja nad ozadjem hrupa naravnih signalov.
- Sposobnost opazovanja dolgoročnih in kratkoročnih podnebnih sprememb v lokalnem, regionalnem in svetovnem merilu.
- Odražanje splošne perspektive vzrokov in posledic podnebnih sprememb in posledično sposobnosti razprave o skepticizmu podnebnih sprememb.
- Znanje o dejavnostih (in protokolih) za preprečevanje podnebnih sprememb oziroma prilagajanje njihovim spremembam, ter kakšne so napovedane kratkoročne in dolgoročne posledice za človeštvo.

Intended learning outcomes:

- Understanding of the physical basis of the natural climatic forcings, including radiation, greenhouse effect, atmospheres and ocean.
- Understanding methods of climate change research and proxies that indicate the changes.
- Understanding overall climatic changes throughout the Earth's history and natural variability in the Earth's climate due to various causes, and consequently demonstrating an awareness of the difficulties involved in the detection of any unusual global warming signal above the background noise of attributing (in whole or in part) any such signal to human activity.
- Ability to observe long- and short-term climatic changes on a local, regional and global scale.
- Reflecting the overall perspective of causes and consequences of climate change, and consequently the ability to discuss scepticism of climate change.
- Summarising activities (and protocols) taken to prevent climate change or to adapt to its changes, and what are the predicted short-term and long-term consequences to the human population.

Metode poučevanja in učenja:

Learning and teaching methods:

• Predavanje, • e-učenje, • vaje, • terensko delo/ekskurzija	• Lectures, • online learning, • practicals, • field work/excursion
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Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
• Ustni izpit • vaje	80 20	• Oral exam • Practicals

Reference nosilca / Lecturer's references:

1. Carey, A. E., **ZORN, M.**, Tičar, J., Lipar, M., Komac, B., Welch, S. A., Smith, D. F., Lyons, W. B. 2019: Glaciochemistry of cave ice: Paradana and Snežna Caves, Slovenia. *Geosciences* 9-2, str. 1–12. DOI: 10.3390/geosciences9020094
2. Ferik, M., Gabrovec, M., Komac, B., **ZORN, M.**, Stepišnik, U. 2017: Pleistocene glaciation in Mediterranean Slovenia. *Special Publication of the Geological Society London* 433, str. 179–191. DOI: 10.1144/SP433.2
3. Gabrovec, M., Hrvatin, M., Komac, B., Ortar, J., Pavšek, M., Topole, M., Triglav Čekada, M., **ZORN, M.** 2014: Triglavski ledenik. Ljubljana: Založba ZRC. DOI: 10.3986/9789610503644
4. Gabrovec, M., Ortar, J., Pavšek, M., **ZORN, M.**, Triglav Čekada, M. 2013: The Triglav glacier between the years 1999 and 2012. *Acta geographica Slovenica* 53-2, str. 257–293. DOI: 10.3986/AGS53202
5. Gavrilov, M. B., Marković, S. B., Janc, N., Nikolić, M., Valjarević, A., Komac, B., **ZORN, M.**, Punišić, M., Bačević, N. 2018: Assessing average annual air temperature trends using the Mann-Kendall test in Kosovo. *Acta geographica Slovenica* 58-1, str. 7–25. DOI: 10.3986/AGS.1309
6. Hrvatin, M., **ZORN, M.** 2017: Trendi pretokov rek v slovenskih Alpah med letoma 1961 in 2010. *Geografski vestnik* 89-2, str. 9–35. DOI: 10.3986/GV89201
7. Hrvatin, M., **ZORN, M.** 2017: Trendi temperatur in padavin ter trendi pretokov rek v Idrijskem hribovju. *Geografski vestnik* 89-1, str. 9–44. DOI: 10.3986/GV89101
8. Marković, S. B., Ruman, A., Gavrilov, M. B., Stevens, T., **ZORN, M.**, Komac, B., Perko, D. 2014: Modeling of the Aral and Caspian seas drying out influence to climate and environmental changes. *Acta geographica Slovenica* 54-1, str. 143–161. DOI: 10.3986/AGS54304
9. Peña-Angulo, D., **ZORN, M.**, et al. 2020: Relationship of weather types on the seasonal and spatial variability of rainfall, runoff, and sediment yield in the Western Mediterranean Basin. *Atmosphere* 11-6, str. 1–20. DOI: 10.3390/atmos11060609
10. Peña-Angulo, D., **ZORN, M.**, et al. Spatial variability of the relationships of runoff and sediment yield with weather types throughout the Mediterranean basin. *Journal of Hydrology* 571, str. 390–405. DOI: 10.1016/j.jhydrol.2019.01.059
11. Tošić, I., **ZORN, M.**, Ortar, J., Unkašević, M., Gavrilov, M. B., Marković, S. B. 2016: Annual and seasonal variability of precipitation and temperatures in Slovenia from 1961 to 2011. *Atmospheric Research* 168, str. 220–233. DOI: 10.1016/j.atmosres.2015.09.014

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	GEOMORFOLOGIJA KRASA
Course title:	KARST GEOMORPHOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	skupni	1	1,2
Environmental and Regional Studies, doctoral study 3 rd level	common	1	1,2

Vrsta predmeta / Course type

Izbirni / elective

Univerzitetna koda predmeta / University course code:

DI015

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30		20		10	120	6

Nosilec predmeta / Lecturer:

doc. dr. Mateja Ferk
(ostali izvajalci: dr. Matej Lipar)

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Finished second Bologna level in the
appropriate field or University degree VII.

Vsebina:

1. Uvod v krasoslovje
1.1 Definicije
1.2 Razlikovanje krasa od nekrasa
1.3 Razvoj krasoslovja kot znanosti
1.4 Krasoslovje v Sloveniji
1.5 Kraška terminologija
2. Kraške kamnine
2.1. Karbonatne kamnine in minerali
2.2 Odlaganje, sestava in diagenaza apnenca
in dolomita
2.3 Karbonatne klastične kamnine
2.4 Razpokanost in pretrtost kamnin
3. Raztapljanje karbonatov

Content (Syllabus outline):

1. Introduction to Kartology
1.1 Definitions
1.2 Diferenciation of Karst from Non-Karst
1.3 Karstology as a Scientific Discipline
1.4 Karstology in Slovenia
1.5 Karst Terminology
2. Karst Rocks
2.1. Carbonate Rocks and Minerals
2.2 Limestone and Dolomite Deposition,
Composition and Diagenesis
2.3 Carbonate Clastic Rocks
2.4 Fractures and Unconformities in Rocks
3. Carbonate Dissolution

- 3.1 Proces korozije
- 3.2 Učinki biokorozije
- 3.3 Mehansko preperevanje
- 3.4 Meritve hitrosti raztapljanja karbonatov

4. Osnove hidrologije krasa

- 4.1 Razvoj kraških hidroloških sistemov
- 4.2 Hidrografske cone v krasu
- 4.3 Značilnosti kraških vodonosnikov
- 4.4 Okoliščine pospešenega raztapljanja
- 4.5 Metode sledenja vode v krasu

5. Nastanek podzemnih jam in njihov pomen za družbo

- 5.1 Uvod v speleogenezo
- 5.2 Tipi jam glede na hidrološke razmere
- 5.3 Tipi jam glede na energetske razmere
- 5.4 Avtohtoni sedimenti v jamah
- 5.5 Alohtoni sedimenti v jamah
- 5.6 Rekonstrukcije paleoekoloških razmer na podlagi jamskih sedimentov
- 5.7 Metode varstva jam
- 5.8 Izzivi upravljanja turističnih jam

6. Površinske kraške oblike

- 6.1 Osnove tipizacij kraških oblik
- 6.2 Drobne kraške oblike
- 6.3 Kraške depresije
- 6.4 Tipi krasa glede na litološke razlike
- 6.5 Tipi krasa glede na podnebne razmere
- 6.6 Tipi krasa v Sloveniji

7. Vpliv človeka na kras

- 7.1 Ranljivost kraškega okolja
- 7.2 Koriščenje naravnih virov iz krasa
- 7.3 Varovanje in koriščenje pitne vode iz krasa
- 7.4 Trajnostno upravljanje kraškega okolja
- 7.5 Znanstven, kulturn in rekreacijski pomen krasa za družbo

- 3.1 The Process of Corrosion
- 3.2 Effects of Biocorrosion
- 3.3 Mechanical Weathering
- 3.4 Measurements of Carbonate Dissolution

4. Introduction to Karst Hydrology

- 4.1. Development of Karst Hydrological Systems
- 4.2 Hydrographic Zones in Karst
- 4.3 Characteristics of Karst Aquifers
- 4.4 Circumstances of Accelerated Dissolution
- 4.5 Water-Tracing Techniques

5. Formation of Caves and their significance for Society

- 5.1. Introduction to Speleogenesis
- 5.2 Cave Types by hydrological characteristics
- 5.3 Cave Types by energy flow characteristics
- 5.4 Endogenetic Cave Sediments
- 5.5 Exogenetic Cave Sediments
- 5.6 Palaeoenvironmental Reconstructions based on Cave Sediments
- 5.7 Cave Protection Techniques
- 5.8 Challenges of Show-Cave Management

6. Surface Karst Features

- 6.1. Basics of Surface Karst Features
- 6.2 Small-scale Karst Features
- 6.3 Karst Depressions
- 6.4 Karst Types by Lithological Differences
- 6.5 Karst Types by Climatic Conditions
- 6.6 Karst Types in Slovenia

7. Human Impact on Karst

- 7.1 Vulnerability of Karst Landscapes
- 7.2 Exploitation of Natural Karst Resources
- 7.3 Preservation and Exploitation of Drinking Water from Karst
- 7.4 Sustainable Management of Karst Landscapes
- 7.5 Scientific, Cultural, and Recreational Significance of Karst Landscapes for Society

Temeljni literatura in viri / Readings:

- Ford, D., Williams, P. 2007. Karst Hydrogeology and Geomorphology. Chichester, 562 str.
- Gams, I. 1973. Slovenska kraška terminologija. Ljubljana, 45 str.

- Gams, I. 2004. Kras v Sloveniji v prostoru in času. Ljubljana, 515 str.
- Gunn, J. 2004. Encyclopedia of Caves and Karst Science. New York, London, 1940 str.
- Mihevc, A., Prelovšek, M., Zupan Hajna, N. 2010. Introduction to the Dinaric Karst. Postojna, 71 str.
- Stepišnik, U. 2020. Fizična geografija krasa. Ljubljana, 112 str.
- White, W. B. 1988. Geomorphology and Hydrology of Karst Terrains. Oxford, 480 str.
- Znanstveni članki objavljenih v priznanih domačih in mednarodnih znanstvenih revijah.

Cilji in kompetence:

Cilj predmeta je zagotoviti osnovno razumevanje nastanka in razvoja kraških pokrajin ter dinamike ključnih procesov v krasu, ki se bistveno razlikujejo od ne-kraških okolij. Ključno je razumevanje, da se kraški sistem s površja nadaljuje v podzemlje; kratkoročno se dogodki s površja prenašajo v podzemlje, dolgoročno pa stanje v podzemlju učinkuje na površje. Izpostavljena bo ranljivost krasa, saj je zaradi svojih specifičnih značilnosti izjemno občutljiv na delovanje človeka. Na podlagi tega znanja bodo pridobljene kompetence o primernem ravnanju in upravljanju s kraškimi pokrajinami, ki zagotavljajo njihovo trajnostno rabo.

Objectives and competences:

The aim of the course is to provide basic understanding of the origin and development of karst landscapes and the dynamics of key processes in the karst, which differ significantly from non-karst environments. It is crucial to understand that the karst landscape continues underground; in the short term, surface actions are transferred underground, and in the long term the underground condition affect the surface. The vulnerability of karst will be exposed, as it is extremely sensitive to human activity due to its specific characteristics. On the basis of this knowledge, competencies on appropriate management and administration of karst landscapes will be acquired, which ensures their sustainable use.

Predvideni študijski rezultati:

- Poznavanje razvoja krasoslovja v svetu in pomen slovenskega kraškega ozemlja za razvoj znanstvenih disciplin krasoslovje in speleologija.
- Poznavanje osnovne mednarodne kraške terminologije ter pomena slovenskega in drugih slovanskih jezikov za mednarodno kraško terminologijo.
- Razumevanje nastanka izbranih karbonatnih kamnin ter vpliva njihovih poklinskih značilnosti na zakrasevanje.
- Razumevanje osnovnega kemijskega procesa raztapljanja karbonatov in metod merjenja korozije ter poznavanje drugih mehanizmov denudacije površja.

Intended learning outcomes:

- Knowledge of the development of karstology in the world and the importance of the Slovenian karst territory for the development of the scientific disciplines karstology and speleology.
- Knowledge of basic international karstological terminology and the influence of Slovene and other Slavic languages on its development.
- Understanding the formation of selected carbonate rocks and the influence of their unconformities on karstification.
- Understanding the basic chemical process of carbonate dissolution and methods of corrosion measurement and the

- Razumevanje osnov kraške hidrologije vključno s poznavanjem značilnosti in pomena hidrografskih con v krasu na pretakanje vode v podzemnem kraškem vodonosniku.
- Poznavanje dejavnikov, ki pospešujejo kraške procese, kar lahko privede do nenadnih dogodkov, ki lahko ogrozijo tudi človeška življenja in imetje.
- Razumevanje procesov, ki oblikujejo jame ter poznavanje dejavnikov na podlagi katerih lahko jame tipiziramo.
- Poznavanje pomena jam za znanost in gospodarstvo ter metod varovanja jam.
- Sposobnost razlikovanja med osnovnimi površinskimi kraškimi oblikami v Sloveniji in po svetu glede na njihov izgled ter zmožnost interpretacije njihovega nastanka in razvoja, vključno s prepoznavanjem potencialov za njihovo koriščenje v znanstvene ali gospodarske namene.
- Razumevanje kritičnih procesov in dejavnikov, ki vplivajo na ranljivost krasa, ter poznavanje konceptov trajnostnega upravljanja s kraškimi pokrajinami, ki zagotavljajo dolgoročno uspešno koriščenje naravnih virov iz krasa.

knowledge of other surface denudation mechanisms.

- Understanding the basics of karst hydrology, including knowledge of the characteristics and importance of hydrographic zones in the karst on the flow of water in the karst aquifer.
- Knowledge of the factors that accelerate karst processes, which can lead to sudden events that can potentially endanger human lives and property.
- Understanding the processes that form caves and knowing the factors on the basis of which caves can be typified.
- Awareness of the importance of caves for science and economy and the knowledge of cave protection techniques.
- Ability to distinguish between basic surface karst forms in Slovenia and around the world according to their morphology and the ability to interpret their origin and development, including the identification of potentials for their use for scientific or economic purposes.
- Understanding of critical processes and factors influencing the vulnerability of the karst, and knowledge of the concepts of sustainable management of karst landscapes, which ensure long-term successful use of natural resources from the karst.

Metode poučevanja in učenja:

- Predavanja
- e-učenje
- Vaje
- Terensko delo/ekskurzija

Learning and teaching methods:

- Lectures
- E-learning
- Practicals
- Field work/Excursion

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Ustni izpit

Delež (v %) /
Weight (in %)

80
20

Assessment:

Type (examination, oral, coursework, project):

- Oral exam

• vaje		• Practicals
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Reference nosilca / Lecturer's references:

1. Zorn, M., **Ferk, M.**, Lipar, M., Komac, B., Tičar, J., Hrvatinić, M. 2020: Landforms of Slovenia. V: Perko, Drago (ur.), et al. The geography of Slovenia : small but diverse. London, str. 35-57.
2. **Ferk, M.**, Ciglič, R., Komac, B., Lóczy, D. 2020: Management of small retention ponds and their impact on flood hazard prevention in the Slovenske Gorice Hills. Acta geographica Slovenica 60, 1.
3. Burnett, S., Webb, J. A., White, S., Lipar, M., **Ferk, M.**, et al. 2020: Etched linear dunefields of the Nullarbor Plain: a record of Pliocene-Pleistocene wind patterns across southern Australia. Palaeogeography, palaeoclimatology, palaeoecology 557, 109911.
4. **Ferk, M.**, Lipar, M., Šmuc, A., Drysdale, R. N., Zhao, J. 2019: Chronology of heterogeneous deposits in the side entrance of Postojna Cave, Slovenia. Acta geographica Slovenica 59, 1.
5. Lipar, M., Stepišnik, U., **Ferk, M.** 2019: Multiphase breakdown sequence of collapse doline morphogenesis : an example from Quaternary aeolianites in Western Australia. Geomorphology : an international journal of pure and applied geomorphology 327.
6. Lipar, M., **Ferk, M.**, Lojen, S., Barham, M. 2019: Sulfur (34S/32S) isotope composition of gypsum and implications for deep cave formation on the Nullarbor Plain, Australia. International journal of speleology 48, 1.
7. **Ferk, M.**, Komac, B., Lipar, M., McKay, L. D. 2019: Karst processes and features in Slovenia and Tennessee : a comparison with the focus on karst depressions. V: Blatnik, M. (ur.), et al. Karst hydrogeology - research trends and applications : abstracts & guide book 2019.
8. **Ferk, M.**, Zorn, M., Kumer, P., Smrekar, A., Breg Valjavec, M. 2019: Kras - Raznolika pokrajina, v kateri je človek pustil svoj pečat. Gea 29.
9. Ferk, M., Gabrovec, M., Komac, B., Zorn, M., Stepišnik, U. 2017: Pleistocene glaciation in Mediterranean Slovenia. London, str. 179–191.
10. **Ferk, M.**, Topole, Maja. 2017: Nonagricultural terraced landscapes. V: Perko, D. (ur.), et al. Terraced landscapes. Ljubljana, str. 122-141.
11. **Ferk, M.** 2016: Paleopoplave v porečju kraške Ljubljane. Geografija Slovenije 33, 187 str.
12. **Ferk, M.**, Zorn, M. 2015: Kras - večpomenski izraz z mednarodno veljavo. V: Preinfalk, M. (ur.). Iz zgodovine Krasa. Kronika 63, 3.
13. Lipar, M., **Ferk, M.** 2015: Karst pocket valleys and their implications on Pliocene-Quaternary hydrology and climate : examples from the Nullarbor Plain, southern Australia. Earth-Science Reviews 150.
14. Stepišnik, U., **Ferk, M.**, Gostinčar, P., Černuta, L. 2012: Holocene high floods on the Planina Polje, classical dinaric karst, Slovenia. Acta carsologica 41, 1.
15. **Ferk, M.**, Lipar, M. 2012: Eogenetic caves in Pleistocene carbonate conglomerate in Slovenia. Acta geographica Slovenica 52, 1.
16. **Ferk, M.**, Stepišnik, U. 2011: Geomorfološke značilnosti Rakovega Škocjana. Georitem 17, 70 str.
17. **Ferk, M.** 2011: Morfogeneza kotline Rakov Škocjan. Geografski vestnik 83, 1.

18. Stepišnik, U., **Ferk, M.**, Kodelja, B., Medenjak, G., Mihevc, A., Natek, K., Žebre, M. 2009: Glaciokarst of western Orjen, Montenegro. Cave and karst science 36, 1.
19. Stepišnik, U., **Ferk, M.**, Kodelja, B., Burger, B., Abramović, M., Peterca, S. 2009: Brezstropa jama v Podbojevem lazu, Rakov Škocjan. Dela 31.
20. Stepišnik, U., **Ferk, M.**, Gostinčar, P., Černuta, L., Peternelj, K., Štemberger, T., Ilič, U. 2007: Alluvial fans on contact karst : an example from Matarsko podolje, Slovenia. Acta carsologica 36, 2.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	IZBRANE ŠTUDIJE KRASOSLOVJA
Course title:	SELECTED STUDIES IN KARSTOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	skupni	1	1,2
Environmental and Regional Studies, doctoral study 3 rd level	common	1	1,2

Vrsta predmeta / Course type

Izbirni / elective

Univerzitetna koda predmeta / University course code:

DI016

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	5	10		15	120	6

Nosilec predmeta / Lecturer:

Doc. dr. Nataša Viršek Ravbar
(ostali izvajalci: izr. prof. Franci Gabrovšek, izr. prof. Martin Knez, doc. dr. Janez Mulec, izr. prof. Metka Petrič, izr. prof. Tanja Pipan, dr. Mitja Prelovšek, red. prof. dr. Tadej Slabe, izr. prof. Stanka Šebela, izr. prof. Nadja Zupan Hajna)

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Finished second Bologna level in the appropriate field or University degree VII.

Vsebina:

Uvodoma bodo predstavljene posebnosti krasa, ki ga ločijo od nekraških okolij. Na podlagi različne izobrazbe predavateljev bo kras predstavljen z več vidikov (geografski, geološki, (mikro)biološki, speleološki, hidrogeološki, fizikalni, kemijski), predvsem pa celostno kot primer kompleksno povezanega dinamičnega okolja. Predstavljena bo aplikativnost tipičnih multi-

Content (Syllabus outline):

The course will start with a presentation of the specifics of karst that make the karst environment special. Based on different education of the lecturers, karst will be presented from several aspects (geographical, geological, (micro)biological, speleological, hydrogeological, physical, chemical); holistically as an example of a complex, dynamic, and integrated 4D environment. We

in interdisciplinarne študije v teku, ki se izvajajo na krasu, s poudarkom na praktičnosti oz. aplikativnosti raziskav. Podrobneje bodo izpostavljene študije vezane na kraške vode (ranljivost, pritiski, viri obremenjevanja, viri pitne vode, sledenje kraških voda), speleobiologijo (ekologija podzemlja, jamsko živalstvo, jamska mikrobiologija), umeščanje infrastrukturnih projektov v prostor (prometnice, kamnolomi, poselitveni prostor, krasoslovni nadzor) ter upravljanje (za)varovanih območij krasa (pristopi, monitoring, ukrepi varstva). Zaradi relativno dobre ohranjenosti kraških območij se bomo posvetili razvojnim izzivom bodočega varovanja kraškega površja in voda. Posebej bodo poudarjene študije v podzemnem okolju, in sicer tako na splošno (kraški vodonosnik, kraške jame) kot v turističnih jamah (upravljanje, monitoring, skrbništvo, sanacija/restavriranje).

are going to present typical on-going multi- and interdisciplinary karst studies with emphasis on applicability. Applicability of studies related to karst waters (vulnerability, pressures, sources of pollution, drinking water resources, dye-tracing experiments), biospeleology (underground biology, cave fauna, cave microbiology), planning of infrastructure in karst areas (roads, quarries, living areas, karstological supervision) and management of protected karst areas (approach, monitoring, protection measures) will be further highlighted. Due to the relatively well preserved environment in karst areas, we will focus also on future development challenges of karst surface and water protection. Special emphasis will be given on studies in the karst underground, both in general (karst aquifer, karst caves) and in show caves as well (management, monitoring, custody, remediation/restoration).

Temeljni literatura in viri / Readings:

- Knez, M. (ur.), Petrič M. (ur.), Slabe, (ur.), 2011: Krasoslovje v razvojnih izzivih na krasu. 1, Voda = Karstology and development challenges on karst. 1, Water. Ljubljana, Založba ZRC: 167.
- Culver, D. C., Debevec, B., Knez, M., Kovačič, G., Kranjc, A., Mulec, J., Pipan, T., Prelovšek, M., Ravbar, N., Semeja, A., Slabe, T., Šebela, S., Zupan Hajna, N., Knez, M. (ur.), Petrič, M. (ur.), Slabe, T. (ur.), 2012: Krasoslovje v razvojnih izzivih na krasu. 2, Gradnja, turizem, ekologija, varovanje = Karstology and development challenges on karst. 2, Construction, tourism, ecology, protection, (Carsologica, 14). Ljubljana, Založba ZRC: 199.
- Mihevc, A. (ur.), 2005: Kras : voda in življenje v kamniti pokrajini = water and life in a rocky landscape, (Projekt Aquadapt). Ljubljana, Založba ZRC, ZRC SAZU: 9-99, 300-325.
- Kozel, P., Mulec, J., Pipan, T., Prelovšek, M., 2018: Afternoon field trip (A) : Postojna Cave System : Tuesday, 19th June 2018, 15:00-20:00 = Popoldansko terensko delo (A) : Postojnski jamski sistem : Torek, 19. junij 2018, 15.00-20.00. V: Prelovšek, Mitja (ur.). Show caves and science : abstracts & guide book = Turistične jame in znanost : povzetki & vodnik. 1st ed. Ljubljana: Založba ZRC, 2018: 14-26.

Cilji in kompetence:

Objectives and competences:

- Holistično (celostno) poznavanje specifičnih in multidisciplinarnih študij kraških okolij,
- sposobnost interdisciplinarnega (horizontalnega) povezovanja znanstvenih in strokovnih spoznanj na primeru kraškega okolja,
- usvajanje praktičnih kompetenc pridobivanja, upravljanja in znanstvenega dela na aplikativnih projektih,
- sposobnost prenosa temeljnih znanstvenih spoznanj v praktično znanje.

- Holistic knowledge of specific and multidisciplinary studies in karst areas;
- Ability to interdisciplinary (horizontal) interconnect scientific and professional knowledge in the case of karst environment;
- Acquisition of practical competencies of applying, management, and scientific work on applied projects;
- Ability to implement basic scientific knowledge into practical know-how.

Predvideni študijski rezultati:

- Razumevanje vsebin multidisciplinarnega področja krasoslovja,
- interdisciplinarno preseganje pomanjkljivosti enodisciplinarnih pristopov na primeru krasoslovja,
- razumevanje povezanosti med naravnim kraškim okoljem in družbo,
- poznavanje specifičnega načrtovanja razvoja na krasu (narava --> človek) in njegovega varovanja (človek --> narava),
- apliciranje krasoslovnih pristopov tudi na druga področja naravoslovja, humanistike in družboslovja.

Intended learning outcomes:

- Capability to understand multidisciplinary field of karstology;
- Interdisciplinary surpassing of shortcomings of one-disciplinary approaches in the field of karstology;
- Understanding of interconnection between karst natural environment and society;
- Capability to understand specifics of development planning in karst areas (nature --> man) and environmental protection (man --> nature);
- Application of karstological approach on other areas of natural sciences, humanistics, and social sciences.

Metode poučevanja in učenja:

- Predavanja,
- seminar,
- seminarske vaje,
- terenske vaje,
- e-učenje.

Learning and teaching methods:

- Lectures;
- Seminar;
- Seminar work;
- Field work;
- E-learning.

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Ustni izpit	100	Oral exam
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Reference nosilca / Lecturer's references:

1. PETRIČ, M., RAVBAR, N., GOSTINČAR, P., KRSNIK, P., GACIN, M., 2020: GIS database of groundwater flow characteristics in carbonate aquifers: tracer test inventory from Slovenian karst. *Applied geography*, 118: 8 str. doi: 10.1016/j.apgeog.2020.102191.
2. OLARINOYE, T., GLEESON, T., MARX, V., SEEGER, S., ADINEHVAND, R., ALLOCCA, V., ANDREO, B., APAÉSTEGUI, J., APOLIT, C., ARFIB, B., BLATNIK, M., RAVBAR, N., et al., 2020: Global karst springs hydrograph dataset for research and management of the world's fastest-flowing groundwater. *Scientific data*, 7, article no. 59. doi: 10.1038/s41597-019-0346-5.
3. MAYAUD, C., GABROVŠEK, F., BLATNIK, M., KOGOVŠEK, B., PETRIČ, M., RAVBAR, N., 2019: Understanding flooding in poljes: a modelling perspective. *Journal of Hydrology*, 575: 874-889. doi: 10.1016/j.jhydrol.2019.04.092.
4. PETRIČ, M., KOGOVŠEK, J., RAVBAR, N., 2018: Effects of the vadose zone on groundwater flow and solute transport characteristics in mountainous karst aquifers: the case of the Javorniki-Snežnik massif (SW Slovenia). *Acta carsologica*, 47/1: 35-51. doi: 10.3986/ac.v47i1.5144.
5. RAVBAR, N., KOVAČIČ, G., PETRIČ, M., KOGOVŠEK, J., BRUN, C., KOŽELJ, A., 2018: Climatological trends and anticipated karst spring quantity and quality: case study of the Slovene Istria. V: PARISE, M. (ur.), et al.: *Advances in karst research: theory, fieldwork and applications*, (Special publication - Geological Society of London, no. 466). Geological Society, London: 295-305. doi: 10.1144/SP466.19.
6. PARISE, M., GABROVŠEK, F., KAUFMANN, G., RAVBAR, N., 2018: Recent advances in karst research: from theory to fieldwork and applications. V: PARISE, M. (ur.), et al.: *Advances in karst research: theory, fieldwork and applications*, (Special publication - Geological Society of London, no. 466). Geological Society, London: 1-24.
7. HUI, Y., PRELOVŠEK, M., HUANG, F., ZHANG, C., CAO, J., RAVBAR, N., 2019: Quantification and evaluation of soil organic carbon and its fractions: case study from the Classical Karst, SW Slovenia. *Acta carsologica*, 48/3: 295-311. doi: 10.3986/ac.v48i3.7305.
8. RAVBAR, N., ŠEBELA, S., 2015: The effectiveness of protection policies and legislative framework with special regard to karst landscapes: insights from Slovenia. *Environmental science & policy*, 51: 106-116. doi: 10.1016/j.envsci.2015.02.013.
9. GABROVŠEK, F., KNEZ, M., KOGOVŠEK, J., MIHEVC, A., OTONIČAR, B., MULEC, J., PERNE, M., PETRIČ, M., PIPAN, T., PRELOVŠEK, M., SLABE, T., ŠEBELA, S., RAVBAR, N., ZUPAN HAJNA, N., 2016: Development challenges in karst regions: sustainable land use planning in the karst of Slovenia. V: TROFIMOVA, E. (ur.), SALOMON, J.-N. (ur.): *Preserving karst environments and karst cave: karst dynamics, environments, usage and restauration: towards an international karst preservation system*. Zeitschrift für Geomorphologie, Supplementband, N. F., 60/2: 293-318.
10. TURK, J., MALARD, A., JEANNIN, P.-Y., PETRIČ, M., GABROVŠEK, F., RAVBAR, N., VOUILLAMOZ, J., SLABE, T., SORDET, V., 2015: Hydrogeological characterization of groundwater storage and drainage in an alpine karst aquifer (the Kanin massif, Julian Alps). *Hydrological processes*, 29/8: 1986-1998. doi: 10.1002/hyp.10313.
11. BLATNIK, M., CULVER, D. C., GABROVŠEK, F., KNEZ, M., KOGOVŠEK, B., KOGOVŠEK, J., LIU, H., MAYAUD, Cyril, MIHEVC, A., MULEC, J., ALJANČIČ, M., OTONIČAR, B., PETRIČ, M., PIPAN, T.,

- PRELOVŠEK, M., RAVBAR, N., SHAW, T. R., SLABE, T., ŠEBELA, S., ZUPAN HAJNA, N., 2020: Karstology in the classical karst, (Advances in karst science). Cham, Springer: 222 str. doi: 10.1007/978-3-030-26827-5.
12. ZUPAN HAJNA, N., RAVBAR, N., RUBINIČ, J., PETRIČ, M., 2015: Preface. V: ZUPAN HAJNA, N. (ur.), et al.: Life and water on Karst: monitoring of transboundary water resources of Northern Istria. Ljubljana, Založba ZRC.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	ZNANSTVENA METODA V BIOLOŠKIH ZNANOSTIH
Course title:	THE SCIENTIFIC METHOD IN BIOLOGICAL SCIENCES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Biodiverziteta in ekologija	1	
Environmental and Regional Studies, doctoral study 3rd level	Biodiversity and ecology	1	

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIB01

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	15			15	120	6

Nosilec predmeta / Lecturer:

doc. dr. Matjaž Gregorič

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Opravljen prva ali druga stopnja študija biologije ali ekvivalentne smeri.

Prerequisite:

Finished bachelors or masters degree in Biology or equivalent program of study.

Vsebina:

- Zasnova in izvedba bioloških testov
- Napake in etični pomisleki v načrtovanju eksperimentov
- Specifike eksperimentalnega načrtovanja v biologiji
- Statistične analize
- Pisanje in recenziranje znanstvenih člankov
- Znanstvene monografije
- Znanstvena angleščina
- Prijave projektov

Content (Syllabus outline):

- Planning and execution of biological tests
- Errors and ethical considerations in experimental design
- Specifics of experimental design in biology
- Statistical analyses
- Writing and reviewing of scientific papers
- Scientific monographies
- Scientific English
- Grant proposals

Temeljni literatura in viri / Readings:

- Ruxton, G., & Colegrave, N. (2010). *Experimental design for the life sciences*. Oxford University Press. Chapters I - VI.

Cilji in kompetence:

Predmet bo predstavil znanstveno metodo in študente opremil z osnovnim znanjem izvajanja bioloških testov ter tako učinkovitega in hitrega pisanja kot samozavestnega recenziranja. Predmet bo najprej razložil principe načrtovanja in izvedbe bioloških testov, vključno s pogostimi napakami in etičnimi pomisleki, statistične obdelave podatkov, pisanja in recenziranja člankov ter pisanja prijav na projekte. Za tem bodo študentje zasnovali lastne teste, pisali članke in prijave na projekte ter recenzirali delo drugih študentov.

Objectives and competences:

The course will explain the scientific methodology, and give students the basic training to conduct biological tests, become effective and efficient writers as well as confident reviewers. The course will first explain the principles of planning and executing biological tests including common errors and ethical considerations, conducting statistical analyses, writing and reviewing papers, and writing research grants. The students will then plan their own tests, write papers and grant proposals, and review other students' work.

Predvideni študijski rezultati:

- Poznavanje in razumevanje znanstvene metode v biologiji.
- Sposobnost zasnovati biološke teste.
- Sposobnost pisati in recenzirati znanstvene članke.

Intended learning outcomes:

- Knowledge and understanding of the scientific method in biology.
- Ability to design biological tests.
- Ability to write and review a scientific paper.

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- e-izobraževanje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Predstavitev seminarske naloge
- Seminarska naloga (pisni izdelek)

20

80

Type (examination, oral, coursework, project):

- Presentation of a seminar
- Class papers

Reference nosilca / Lecturer's references:

1. Luo Y., Goh S. P., Li D., Gonzaga M. O., Santos A. J., Tanikawa A., Yoshida H., Haddad C. R., May-Collado L. J., **Gregorič M.**, Turk E., Kuntner M., Agnarsson I. (2020). Global diversification of *Anelosimus* spiders driven by long distance overwater dispersal and Neogene climate oscillations. *Systematic Biology* syaa017.
2. Garb J. E., Haney R. A., Schwager E. E., **Gregorič M.**, Kuntner M., Agnarsson I. & Blackledge T. A. (2019). The transcriptome of Darwin's bark spider silk glands predicts proteins contributing to dragline silk toughness. *Communications Biology* 2: 275.

3. **Gregorič M.**, Šuen K., Cheng R. C., Kralj-Fišer S. & Kuntner M. (2016). Spider sexual behaviors include oral sexual encounters. *Scientific Reports* 6:25128.
4. **Gregorič, M.**, Agnarsson, I., Blackledge, T. A., & Kuntner, M. (2015). Phylogenetic position and composition of Zygiellinae and *Caerostris*, with new insight into orb-web evolution and gigantism. *Zoological Journal of the Linnean Society*.
5. **Gregorič, M.**, Agnarsson, I., Blackledge, T. A., & Kuntner, M. (2011). How did the spider cross the river? Behavioral adaptations for river-bridging webs in *Caerostris darwini* (Araneae: Araneidae). *PloS one*, 6(10), e26847.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	IZBRANA POGLAVJA IZ EKOLOGIJE RASTLIN
Course title:	SELECTED TOPICS FROM PLANT ECOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Biodiverziteta in ekologija		
Environmental and Regional Studies, doctoral study 3rd level	Biodiversity and ecology		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIB02

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30		15		15	120	6

Nosilec predmeta / Lecturer:

Red. prof. dr. Andraž Čarni

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Opravljen prva stopnja študija biologije ali ekvivalentne smeri

Prerequisite:

Finished bachelor's in Biology or equivalent program of study

Vsebina:

- Abiotski in biotski dejavniki v okolju
- Odnosi med rastlinami in okoljem
- Ekološka niša in ekosistem
- Vzorčenje organizmov in rastlinskih združb in obdelava podatkov
- Prostorska obdelava podatkov
- Velike podatkovne baze
- Numerične metode
- Makroekologija
- Rastline kot del krajine

Content (Syllabus outline):

- Abiotic and biotic factors in environment
- Relations between plants and the environment
- Ecological niche and ecosystem
- Sampling of plants and plant communities and data processing
- Spatial data processing
- Formation of large databases
- Numerical methods
- Macro-ecology
- Plants as part of the landscape

Temeljni literatura in viri / Readings:

- Schultze E.D., Beck E., Müller-Hohenstein K. (2005). *Plant ecology*. Springer, Heidelberg.
- Tremp H. (2005). *Aufnahme und Analyse vegetationsökologische Daten*, Ulmer, Stuttgart.
- Izbrana primarna literatura

Cilji in kompetence:

Ekologija se ukvarja z odnosi med organizmi in okoljem. Namen predmeta je, da se študenti seznanijo z temeljnimi pojmi v ekologiji rastlin. Predmet se ukvarja s posameznimi rastlinami in njihovimi odnosi z drugimi rastlinami in okoljem, rastlinskimi združbami in njihovo prostorsko razporeditvijo. Obdelovali pa bomo tudi ekosisteme, ki obsegajo vse žive organizme in dele neživega okolja na določenem območju. Ukvarjali se bomo z rastlinami na vseh nivojih, od celice, samih rastlin, rastlinskih združb pa do biotopov, ki so najširša skupnost organizmov. Rastline v ekosistemih pa niso statične, ampak so v neprestanem spreminjanju, tako se bomo seznanili s usmerjenimi spremembami (sukcesijami) in nihanji (fluktuacijami). Cilj predmeta je, da študenti razumejo odnose med rastlinami in rastlinskimi združbami in okoljem, ekosistemi in njihovim funkcioniranjem ter se seznanijo z vzorčenjem in obdelavo podatkov.

Objectives and competences:

Ecology studies interactions between organisms and their environment. The purpose of this course is to familiarize students with the basic concepts of plant ecology. The course deals with individual plants and their interactions with other plants and the environment, plant communities and their spatial distribution. We will also deal with ecosystems that include all living organisms and nonliving components in a given area. We will study plant ecology at all levels of organization, from cells, organisms, to plant communities and biomes, the broadest community of organisms. Because plants in ecosystems are not static but constantly change we will get familiar with directed changes (successions) and fluctuations. The aim of the course is for students to understand the relationship between plants and plant communities, and the environment, ecosystems and their functioning as well as get acquainted with the sampling and data processing.

Predvideni študijski rezultati:

- Poznavanje temeljnih pojmov iz ekologije (populacije, niše, habitati, ekosistemi, krajine, biomi).
- Razumevanje interakcij med rastlinami in okoljem, formiranje ekosistemov.
- Razumevanje ekosistemov in njihovega funkcioniranja (npr. prehranske verige) in dinamike (npr. sukcesije).
- Razumevanje razporeditve rastlin na planetu (od združbe do bioma).
- Poznavanje osnovnih metod vzorčenja in obdelave podatkov.

Intended learning outcomes:

- Understanding basic ecological concepts (population niches, habitats, ecosystems, landscapes, biomes).
- Understanding the interactions between plants and the environment, the formation of ecosystems.
- Understanding ecosystems and their functioning (e.g. food chains) and dynamics (e.g. successions).
- Understanding the distribution of plants on the planet (from the community to the biome).

	Knowledge of basic methods of sampling and data processing.
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Metode poučevanja in učenja:

- Predavanja - Seminarji - e-učenje

Learning and teaching methods:

- Lectures - Seminars - e-learning
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Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
- Izpit - Seminarska naloga	80	- Exam - Written paper
	20	

Reference nosilca / Lecturer's references:

- Mucina, L., Bültmann, H., Dierßen, K., Theurillat, J. P., Raus, T., Čarni, A., ... & Chytrý, M. (2016). Vegetation of Europe: hierarchical floristic classification system of vascular plant, bryophyte, lichen, and algal communities. *Applied Vegetation Science*, 19, 3-264.
- Valjavec, M. B., Zorn, M., & Čarni, A. (2018). Bioindication of human-induced soil degradation in enclosed karst depressions (dolines) using Ellenberg indicator values (Classical Karst, Slovenia). *Science of the Total Environment*, 640, 117-126.
- Bátori, Z., Vojtkó, A., Keppel, G., Tölgyesi, C., Čarni, A., Zorn, M., ... & Valjavec, M. B. (2020). Anthropogenic disturbances alter the conservation value of karst dolines. *Biodiversity and Conservation*, 29(2), 503-525.
- Chytrý, M., Tichý, L., Hennekens, S. M., Knollová, I., Janssen, J. A., Rodwell, J. S., Čarni A.... & Hájek, M. (2020). EUNIS Habitat Classification: Expert system, characteristic species combinations and distribution maps of European habitats. *Applied Vegetation Science*, <https://doi.org/10.1111/avsc.12519>
- Theurillat, JP, Willner, W., Fernández-González, F., Bültmann, H., Čarni, A., Gigante, D., Mucina, L., Weber, H. (2020). International Code of Phytosociological Nomenclature. 4th edition. *Applied Vegetation Science* <https://doi.org/10.1111/avsc.12491>.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	IZBRANA POGLAVJA IZ EKOLOGIJE ŽIVALI
Course title:	SELECTED TOPICS IN ANIMAL ECOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Biodiverziteta in ekologija		
Environmental and Regional Studies, doctoral study 3 rd level	Biodiversity and ecology		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIB03

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
20	25			15	120	6

Nosilec predmeta / Lecturer:

Izr. prof. dr. Simona Kralj-Fišer

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Opravljen prva ali druga stopnja študija biologije ali ekvivalentne smeri

Prerequisite:

Finished bachelor's or master's degree in Biology or equivalent program of study

Vsebina:

- Zgodovina in uvod
- Ravni ekološke organizacije od posameznika do ekosistema
- Raznolikost živalstva ter prilagoditve na okolje
- Načela ekofiziologije; termoregulacija; alometrija; telesna velikost in temperatura
- Načela populacijske ekologije; vzroki in posledice razširjanja vrst
- Načela ekologije združb; ključne vrste; delitev virov; interakcije rastlin in opraševalcev, ekološke posledice parazitizma

Content (Syllabus outline):

- History and introduction
- Levels of ecological organisation from individuals to ecosystems
- The diversity of animal life, and the fundamentals of adaptations to the environment
- Physiological ecology principles; homeostasis processes for thermoregulation, allometry, body size and temperature
- Population ecology principles; causes and consequences of dispersal
- Community ecology principles; keystone species; resource partitioning; plant-

- Načela evolucijske ekologije; evolucija bioloških interakcij: teorija iger, evolucijsko stabilne strategije; ekološka priložnost in adaptivna radiacija
- Osnove vedenjske ekologije; spolna selekcija in spolne strategije; osebnost živali
- Posledice globalnega segrevanja, urbanizacije, onesnaževanja (endokrini motilci) na raznolikost vrst in delovanje ekosistemov; bioindikatorji kot kazalci vplivov na okolje

- pollinator interactions, ecological consequences of parasitism
- Evolutionary ecology principles; evolution of biological interactions: game theory, evolutionary stable strategies; ecological opportunity and adaptive radiation
- Behavioural ecology introduction; sexual selection and mating strategies; animal personalities
- Effects of global warming, urbanization, pollution (endocrine disruptors) on species diversity and ecosystem functioning; bioindicators as measures of environmental impacts

Temeljni literatura in viri / Readings:

- Krebs, C. J. (2008). *The ecological world view*. Univ of California Press. Izbrana poglavja.
- Smith, T. M., Smith, R. L., & Waters, I. (2012). *Elements of ecology*. San Francisco: Benjamin Cummings. Izbrana poglavja.
- Izbrani aktualni pregledni in izvirni raziskovalni članki iz revij

Cilji in kompetence:

Namen predmeta je seznaniti študente s koncepti ekologije živali na različnih ravneh organizacije, od posameznikov do ekosistemov. Pri predmetu se bodo študentje seznanili z načeli in metodami ključnih področij ekologije živali: ekofiziologije, populacijske ekologije, ekologije združb, ekosistemske ekologije, vedenjske ekologije in evolucijske ekologije. Študentom bomo predstavili poglobljene teme, na primer fiziološke in vedenjske prilagoditve klimatskim pogojem, medvrstne interakcije (parazitizem, interakcije med rastlinami in živalmi), znotrajvrstne interakcije (socialno vedenje, spolna selekcija, osebnosti), populacijsko dinamiko (razširjanje) in evolucijsko ekologijo (teorija iger, evolucijsko stabilne strategije, adaptivna radiacija). Pri predmetu bomo študente seznanili s tem, kako podnebne

Objectives and competences:

The purpose of the course is to familiarize the students with the animal ecology concepts at different levels of organization, from individuals to ecosystems. The course will introduce principles and methods in the key areas of animal ecology: ecophysiology, population ecology, community ecology, ecosystem ecology, behavioural ecology and evolutionary ecology. The course will then dwell into more specific topics where these wider areas integrate, e.g. physiological and behavioural adaptations to climate, interspecies interactions (parasitism, plant-animal interactions), intraspecies interactions (social behaviours, sexual selection, personalities), population dynamics (dispersal) and evolutionary ecology (game theory, evolutionary stable strategies, adaptive radiation). The course will familiarize the students with how global climate change

spremembe in druge okoljske spremembe, ki so posledica človekovih dejanj, vplivajo na biotsko raznovrstnost, viabilnost populacij in delovanje ekosistemov. Cilj predmeta je razumevanje bioloških fenomenov z integracijo znanja različnih področij, kot so fiziologije, ekologije in evolucije.

and other human-induced environmental changes affect biodiversity, population viability and ecosystem functioning. The ultimate aim of this course is that students understand biological phenomena by integrating knowledge from various fields, such as physiology, ecology and evolution.

Predvideni študijski rezultati:

- Poglobljeno razumevanje ključnih področij ekologije živali: evolucijska-, ekosistemska, populacijska in vedenjska ekologija ter ekologija združb.
- Poznavanje fizioloških in vedenjskih prilagoditev živali, da preživijo in se razmnožujejo v spreminjajočem se okolju.
- Razumevanje mehanizmov organizma, ki oblikujejo njegovo interakcijo z okoljem in posledično, kako okolje oblikuje organizme skozi več generacij.
- Poznavanje dejavnikov, ki vplivajo na lastnosti populacije in razumevanje, kako in zakaj se populacije spreminjajo s časom.
- Poznavanje interakcij med vrstami; razumevanje vloge ključnih vrst v združbi; razložiti pomen delitve virov za raznolikost vrst.
- Razumevanje evolucije znotrajvrstnih interakcij, npr. altruizem, kooperativnost, tekmovanje, evolucijske stabilne strategije.
- Poznavanje globalnih podnebnih sprememb in drugih antropogenih sprememb okolja in njihove posledice za biotsko raznovrstnost in ekosistemske delovanje.
- Poznavanje sodobnih raziskovalnih tem na področju ekologije živali.

Intended learning outcomes:

- Advanced level of understanding in the following key areas of animal ecology: evolution-, ecosystem-, population-, community and behavioural ecology.
- Ability to understand the major physiological and behavioural adaptations of animals to survive and reproduce in a changing environment.
- Understanding the mechanisms that shape how organisms interact with their environment and, in turn, how the environment shapes organisms over many generations.
- Identifying factors that affect population and understanding how and why a population changes over time.
- Identifying inter-species interactions, including competition, predation, herbivory, parasitism and mutualisms; understanding the role of keystone species in communities; explaining the importance of resource partitioning for species diversity.
- Understanding evolution of intraspecies interactions, e.g. altruism, cooperation, competition, evolutionary stable strategies.
- Understanding global climate change and other human-induced changes of environment and their consequences for biodiversity and ecosystem functioning.
- Knowledge of modern research topics in the field of animal ecology.

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- e-učenje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Izpit
- Seminarska naloga

60
40

Type (examination, oral, coursework, project):

- Exam
- Seminar

Reference nosilca / Lecturer's references:

1. **Kralj-Fišer, S.**, Čandek, K., Lokovšek, T., Čelik, T., Cheng, R. C., Elgar, M. A., & Kuntner, M. (2016). Mate choice and sexual size dimorphism, not personality, explain female aggression and sexual cannibalism in raft spiders. *Animal Behaviour*, 111, 49-55.
2. **Kralj-Fišer, S.**, Hebets, E. A., & Kuntner, M. (2017). Different patterns of behavioral variation across and within species of spiders with differing degrees of urbanization. *Behavioral Ecology and Sociobiology*, 71(8), 125.
3. **Kralj-Fišer, S.**, & Gregorič, M. (2019). Spider Welfare. In *The Welfare of Invertebrate Animals* (pp. 105-122). Springer, Cham.
4. **Kralj-Fišer, S.**, Laskowski, K. L., & Garcia-Gonzalez, F. (2019). Sex differences in the genetic architecture of aggressiveness in a sexually dimorphic spider. *Ecology and evolution*, 9(18), 10758-10766.
5. **Kralj-Fišer, S.**, Premate, E., Copilaș-Ciocianu, D., Volk, T., Fišer, Ž., Balázs, G., ... & Fišer, C. (2020). The interplay between habitat use, morphology and locomotion in subterranean crustaceans of the genus *Niphargus*. *Zoology*, 139, 125742.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	VEDENJE ŽIVALI
Course title:	ANIMAL BEHAVIOUR

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Biodiverziteta in ekologija		
Environmental and Regional Studies, doctoral study 3 rd level	Biodiversity and ecology		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIB04

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	15			15	120	6

Nosilec predmeta / Lecturer:

Izr. prof. dr. Simona Kralj-Fišer

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Opravljen prva ali druga stopnja študija biologije ali ekvivalentne smeri

Prerequisite:

Finished bachelors or masters degree in Biology or equivalent program of study

Vsebina:

- Zgodovina in uvod; proksimalni in distalni vplivi na vedenje
- Interakcija med proksimalnimi dejavniki (geni, živčevje, hormoni), vplivi okolja in vedenjem («nature in nurture»)
- Genetske osnove vedenja
- Živčevje, možgani in vedenje
- Hormoni in vedenje
- Metode v vedenjski biologiji
- Biologija agresivnega vedenja
- Biologija družabnega vedenja in altruizma
- Biologija razmnoževalnega vedenja
- Biologija starševskega vedenja

Content (Syllabus outline):

- History and introduction; proximate and ultimate causes of behaviour
- Interplay between proximate factors (genes, neural system and hormones), environment and behaviour; “nature and nurture”
- Behavioural genetics
- Behavioural neuroscience
- Behavioural endocrinology
- Methods in behavioural biology
- Biology of aggressive behaviour
- Biology of social behaviour and altruism
- Biology of reproductive behaviour
- Biology of parenting behaviour

- Individualne razlike v vedenju
- Evolucija vedenja
- Biologija človekovega vedenja

- Individual behavioural differences
- Evolution of behaviour
- Biology of human behaviour

Temeljni literatura in viri / Readings:

- Alcock, J. (2013). *Animal behavior: an evolutionary approach*. Sinauer Associates
- Martin, P., & Bateson, P. (2007). *Measuring Behaviour: An Introductory Guide*. Cambridge University Press
- Izbrani aktualni pregledni in izvirni raziskovalni članki iz revij

Cilji in kompetence:

Namen predmeta je seznaniti študente s koncepti študija vedenja, ki ga razumemo kot manifestacijo različnih proksimalnih in distalnih procesov. Predmet bo opredelil osnovne pojme, metode in raziskave na področju vedenjske biologije. Študente bo poučil o medsebojni interakciji med geni, živčevjem, hormoni in okoljem ter neločljivosti med vplivi genov in okolja na manifestacijo vedenja. Študentom bodo predstavljene vsebine, ki razlagajo, kako proksimalni in distalni dejavniki vplivajo na agresivno vedenje, socialno vedenje in altruizem, paritveno vedenje, spolne sisteme in strategije ter starševsko vedenje. Cilj predmeta je, da študente seznani z individualno variabilnostjo v vedenju, selekcijo in evolucijskimi spremembami v vedenju. Študentje bodo s sintezo pridobljenega znanja in primerjalnimi metodami dobili še vpogled/interpretacijo v vedenje človeka.

Objectives and competences:

The purpose of the course is to familiarize the students with the behavioural biology concepts explaining behaviour as a manifestation of different proximal and distal processes. The course will define basic concepts, methods and research topics in the field of behavioural biology. The course will present the interplay between genes, nervous system, hormones and environment, the factors having indivisible effects on the manifestation of behaviour. The course will introduce the topics that explain how proximal and distal factors affect aggressive behaviour, social behaviour and altruism, mating behaviour, sexual systems and strategies, and parental behaviour. The aim of this course is to familiarize the students with individual variability in behaviour, selection and evolutionary change in behaviour. Synthesis of the acquired knowledge and comparative methods will enable further insight / interpretation of human behaviour.

Predvideni študijski rezultati:

- Poznavanje metod in konceptov v vedenjski biologiji.
- Sposobnost interpretacije vedenja z različnih vidikov (geni, okolje, razvoj, evolucija).
- Poznavanje modernih raziskovalnih področij v vedenjski biologiji.

Intended learning outcomes:

- Knowledge of methods and concepts in behavioural biology.
- Ability to interpret behaviour from different perspectives (genes, environment, development, evolution).
- Knowledge of modern research topics in the field of behavioural biology.

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- e-učenje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
• Izpit	50	• Exam
• Seminarjska naloga	50	• Written paper

Reference nosilca / Lecturer's references:

1. Kralj-Fišer, S., Čandek, K., Lokovšek, T., Čelik, T., Cheng, R. C., Elgar, M. A., & Kuntner, M. (2016). Mate choice and sexual size dimorphism, not personality, explain female aggression and sexual cannibalism in raft spiders. *Animal Behaviour*, 111, 49-55.
2. Kralj-Fišer, S., Hebets, E. A., & Kuntner, M. (2017). Different patterns of behavioral variation across and within species of spiders with differing degrees of urbanization. *Behavioral Ecology and Sociobiology*, 71(8), 125.
3. Kralj-Fišer, S., & Gregorič, M. (2019). Spider Welfare. In *The Welfare of Invertebrate Animals* (pp. 105-122). Springer, Cham.
4. Kralj-Fišer, S., Laskowski, K. L., & Garcia-Gonzalez, F. (2019). Sex differences in the genetic architecture of aggressiveness in a sexually dimorphic spider. *Ecology and evolution*, 9(18), 10758-10766.
5. Kralj-Fišer, S., Premate, E., Copilaș-Ciocianu, D., Volk, T., Fišer, Ž., Balázs, G., ... & Fišer, C. (2020). The interplay between habitat use, morphology and locomotion in subterranean crustaceans of the genus *Niphargus*. *Zoology*, 139, 125742.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	INTEGRATIVNA ZOOLOGIJA
Course title:	INTEGRATIVE ZOOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Biodiverziteta in ekologija		
Environmental and Regional Studies, doctoral study 3 rd level	Biodiversity and ecology		

Vrsta predmeta / Course type

Izbirni / Elective

Univerzitetna koda predmeta / University course code:

DIB05

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
20	25			15	120	6

Nosilec predmeta / Lecturer:

Doc. dr. Matjaž Gregorič

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Opravljen prva ali druga stopnja študija
biologije ali ekvivalentne smeri.

Prerequisite:

Finished bachelor's or master's degree in
Biology or equivalent program of study.

Vsebina:

- Raznolikost živali
- Biosfera in zemljepisna razširjenost živali
- Aktivnost živali
- Biomehanika
- Biomimetika
- DNA barcoding
- Živalski produkti
- Aplikacija

Content (Syllabus outline):

- Animal diversity
- Biosphere and animal distribution
- Activity of animals
- Biomechanics
- Biomimicry
- DNA barcoding
- Animal products
- Application

Temeljni literatura in viri / Readings:

- Hickman, C. P., Keen, S. L., Larson, A., Eisenhour, d. J. (2013). *Integrated Principles of Zoology*. Mcgraw-Hill Education Ltd.

Cilji in kompetence:

Predmet se osredotoča na integracijo
zgradbe in funkcije, ki vplivata na ekologijo

Objectives and competences:

The course focuses on the integration of
structure and function that influences the

in evolucijo živali. Predmet bo predstavil osrednjo vlogo evolucije pri nastanku biološke raznovrstnosti in opisal življenje živali ter izjemno raznovrstnost zanimivih adaptacij, ki so živalim omogočile poselitev tako velikega števila ekoloških niš. Predmet bo predstavil integracijo zgradbe in funkcije na vseh nivojih organizacije, od molekul do biosfere, ter študente seznanil z možnimi aplikacijami integrativne zoologije za varstvo narave, pridobivanje novih in izboljšavo sintetičnih materialov, biomimetiko itd. Sinteza pridobljenega znanja bo omogočila osnovo za poglobljeno razumevanje evolucijske ekologije in njene aplikacije (npr. biomimetike).

ecology and evolution of animals. The course will present the central role of evolution in generating biological diversity, and describe animal life and a plethora of fascinating adaptations that enable animals to conquer so many ecological niches. The course will explore the link between structure and function at all levels of organization, from molecules to the biosphere, and present potential applications of integrative zoology for nature conservation, acquiring new materials and improving synthetic ones. The synthesis of the acquired knowledge will enable further insight into evolutionary ecology and its application (e.g. biomimicry).

Predvideni študijski rezultati:

- Poznavanje in razumevanje evolucijskih procesov pri oblikovanju ekoloških prilagoditev kot so zgradba, fiziologija in življenjske strategije živali.
- Poznavanje modernih raziskovalnih področij v evolucijski ekologiji, biomehaniki, biomimetiki itd.

Intended learning outcomes:

- Knowledge and understanding of evolutionary processes that shaped the ecological adaptations such as structure, physiology and life histories of animals.
- Knowledge of modern research topics in the field of evolutionary ecology, biomechanics, biomimicry etc.

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- e-učenje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Seminarska naloga
- Predstavitev in diskusija

Delež (v %) /
Weight (in %)

80
20

Assessment:

Type (examination, oral, coursework, project):

- Class paper
- Presentation and discussion

Reference nosilca / Lecturer's references:

1. Luo Y., Goh S. P., Li D., Gonzaga M. O., Santos A. J., Tanikawa A., Yoshida H., Haddad C. R., May-Collado L. J., Gregorič M., Turk E., Kuntner M., Agnarsson I. (2020). Global diversification of Anelosimus spiders driven by long distance overwater dispersal and Neogene climate oscillations. Systematic Biology syaa017.

2. Garb J. E., Haney R. A., Schwager E. E., Gregorič M., Kuntner M., Agnarsson I. & Blackledge T. A. (2019). The transcriptome of Darwin's bark spider silk glands predicts proteins contributing to dragline silk toughness. *Communications Biology* 2: 275.
3. Gregorič M., Šuen K., Cheng R. C., Kralj-Fišer S. & Kuntner M. (2016). Spider sexual behaviors include oral sexual encounters. *Scientific Reports* 6:25128.
4. Gregorič, M., Agnarsson, I., Blackledge, T. A., & Kuntner, M. (2015). Phylogenetic position and composition of Zygiellinae and Caerostris, with new insight into orb-web evolution and gigantism. *Zoological Journal of the Linnean Society*.
5. Gregorič, M., Agnarsson, I., Blackledge, T. A., & Kuntner, M. (2011). How did the spider cross the river? Behavioral adaptations for river-bridging webs in *Caerostris darwini* (Araneae: Araneidae). *PloS one*, 6(10), e26847.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	ARAHNOLOGIJA: UVOD V TERENKE IN LABORATORIJSKE RAZISKAVE
Course title:	ARACHNOLOGY: INTRODUCTION TO FIELD AND LABORATORY RESEARCH

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Biodiverziteta in ekologija		
Environmental and Regional Studies, doctoral study 3 rd level	Biodiversity and ecology		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIB06

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
5	10	40		5	120	6

Nosilec predmeta / Lecturer:

doc. dr. Matjaž Gregorič

Jeziki / Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Opravičena prva ali druga stopnja študija biologije ali ekvivalentne smeri

Prerequisite:

Finished bachelor's or master's degree in Biology or equivalent program of study

Vsebina:

- Uvod v arahnologijo, osnove biologije pajkovcev
- Terensko vzorčenje specifično za favne pajkov, suhih južin, ščipalcev, paščipalcev
- Identifikacija vseh družin ter tipičnih srednjeevropskih rodov in vrst pajkov, suhih južin, ščipalcev, paščipalcev
- Terenske in laboratorijske eksperimentalne raziskave
- Seminar

Content (Syllabus outline):

- Introduction to arachnology, fundamentals of arachnid biology
- Field sampling specific for faunas of spiders, harvestmen, scorpions, and pseudoscorpions
- Identification of all families, and typical central European genera and species of spiders, harvestmen, scorpions, and pseudoscorpions
- Field and laboratory experimental research
- Seminar

Temeljni literatura in viri / Readings:

- Foelix, R. (2011). *Biology of spiders*. Oxford University Press.
- Herberstein, M. E. (2011). *Spider behaviour: flexibility and versatility*. Cambridge University Press.
- Jocqué, R., Dippenaar-Schoeman, A.S. (2006). *Spider families of the world*. Musée royal de l'Afrique centrale.
- Primarna taksonomska literatura / Primary taxonomic literature.

Cilji in kompetence:

Namen predmeta je seznaniti študente s koncepti in metodami v arahnologiji, torej biologiji pajkovcev. Skupina pajkovcev, kamor uvrščamo pajke, suhe južine, ščipalce, paščipalce, klope in pršice ter druge manj znane redove, je svetovno razširjena, ekološko pomembna in s preko 100 tisoč znanimi in mnogimi neznanimi vrstami izjemno raznolika. Podiplomski študenti, ki želijo raziskovati pajkovce, pogosto naletijo na nepremostljive ovire povezane z njihovim vzorčenjem in identifikacijo. Tekom intenzivnega 15 dnevnega poletnega tečaja se bodo študenti seznanili z dnevnim in nočnim vzorčenjem pajkovcev, njihovo identifikacijo s tradicionalnimi morfološki metodami ter črtnimi kodami DNA, z osnovami njihove biologije ter koncepti laboratorijskega in terenskega eksperimentalnega dela.

Objectives and competences:

The course aims to introduce students with the concepts and methodology in arachnology, the biology of arachnids. The Arachnida, comprising spiders, harvestmen, scorpions, pseudoscorpions, ticks and mites, as well as other minor orders, is a global, ecologically important, and with over 100 thousand known and many unknown species an extremely species rich animal group. Post graduate students wishing to conduct arachnid research often experience insurmountable obstacles related to arachnid sampling and identification. During this intensive 15 day summer course the students will become familiar with diurnal and nocturnal sampling of arachnids, their identification via traditional morphological methods as well as through DNA barcoding, the basics of their biology, and with the concepts of arachnid experimental research both in the field and in the laboratory.

Predvideni študijski rezultati:

- Poznavanje metod in konceptov v terenski in eksperimentalni arahnologiji.
- Uporaba originalno pridobljenih favnističnih, ekoloških in molekularnih podatkov v obliki seminarja.
- Usmeritev v raziskovalno delo na področju arahnologije.

Intended learning outcomes:

- Understanding of methods and concepts in field and laboratory based arachnid experimental research.
- The use of original faunistic, ecological, and molecular data within a seminar.
- Introduction into arachnological research.

Metode poučevanja in učenja:

- Predavanja
- Terensko vzorčenje
- e-učenje

Learning and teaching methods:

- Lectures
- Field sampling
- e-learning

- Laboratorijske vaje
- Seminar

- Laboratory practicum
- Seminar

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
• Predstavitev seminarske naloge • Seminarska naloga (pisni izdelek)	20 80	• Presentation of a seminar • Class papers

Reference nosilca / Lecturer's references:

1. Luo Y., Goh S. P., Li D., Gonzaga M. O., Santos A. J., Tanikawa A., Yoshida H., Haddad C. R., May-Collado L. J., **Gregorič M.**, Turk E., Kuntner M., Agnarsson I. (2020). Global diversification of *Anelosimus* spiders driven by long distance overwater dispersal and Neogene climate oscillations. *Systematic Biology* syaa017.
2. Garb J. E., Haney R. A., Schwager E. E., **Gregorič M.**, Kuntner M., Agnarsson I. & Blackledge T. A. (2019). The transcriptome of Darwin's bark spider silk glands predicts proteins contributing to dragline silk toughness. *Communications Biology* 2: 275.
3. **Gregorič M.**, Šuen K., Cheng R. C., Kralj-Fišer S. & Kuntner M. (2016). Spider sexual behaviors include oral sexual encounters. *Scientific Reports* 6:25128.
4. **Gregorič M.**, Agnarsson, I., Blackledge, T. A., & Kuntner, M. (2015). Phylogenetic position and composition of Zygiellinae and *Caerostris*, with new insight into orb-web evolution and gigantism. *Zoological Journal of the Linnean Society*.
5. **Gregorič M.**, Agnarsson, I., Blackledge, T. A., & Kuntner, M. (2011). How did the spider cross the river? Behavioral adaptations for river-bridging webs in *Caerostris darwini* (Araneae: Araneidae). *PloS one*, 6(10), e26847.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	EKOTOKSIKOLOGIJA
Course title:	ECOTOXICOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Biodiverziteta in ekologija		
Environmental and Regional Studies, doctoral study 3 rd level	Biodiversity and ecology		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIB07

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	15			15	120	6

Nosilec predmeta / Lecturer:

Doc. dr. Paula Pongrac

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Opravljen prva in druga stopnja študija biologije ali ekvivalentne smeri

Prerequisite:

Finished bachelors and masters degree in Biology or equivalent program of study

Vsebina:

- Zgodovina in uvod; definicija pojmov v toksikologiji in ekologiji
- Viri, vrste in lastnosti strupov v okolju
- Razporeditev in transformacija strupov v okolju
- Doza in koncentracija
- Molekularni, biokemijski, fiziološki in vedenjski odzivi organizmov na strupe
- Vplivi na populacije, združbe in ekosistem
- Biološki markerji in biomonitoring strupov v okolju
- Ocene tveganja
- Ekotoksikologija in nadzor

Content (Syllabus outline):

- History and introduction; terminology in toxicology and ecology
- Sources, types and properties of toxins in the environment
- Dose and concentration: Response relationships
- Distribution and transformation of toxins in the environment
- Molecular, biochemical, physiological and behavioural responses of organisms
- Effects on population, community and ecosystem
- Biomarkers and biomonitoring of toxins
- Ecological risk assessment
- Ecotoxicology and management of toxins

Temeljni literatura in viri / Readings:

- Sparling D.W. 2016: Ecotoxicology Essentials: Environmental Contaminants and Their Biological Effects on Animals and Plants. Academic Press.
- Walker C.H., Sibly R.M., Hopkin S.P., Peakall D.B. 2012: Principles of Ecotoxicology, Fourth Edition. CRC Press.
- Connell, D.W., Lam, P., Richardson, B., Wu, R. (1999) Introduction to Ecotoxicology. Wiley-Blackwell.

Cilji in kompetence:

Onesnaženje okolja je ena izmed najbolj resnih groženj našemu planetu. Vse večje število in vse večja raznolikost strupov iz različnih virov (npr. iz industrije, kmetijstva in medicine) prispeva k bremenu, ki se ga moramo naučiti omejiti, nadzorovati in odpraviti. Z vrednotenjem strupenih učinkov na naravne sisteme se ukvarja nova veja znanosti, ekotoksikologija. Skozi predavanja študentom, ki naj bi za razumevanje snovi obvladali osnove kemije in biologije, bomo obravnavali vrste, lastnosti in delovanje strupov v okolju, pomen koncentracije in doze ter učinkov strupov na organizme, populacije, združbe in ekosisteme. Nadalje bomo obravnavali koncepte ocene tveganja, uporabo bioloških markerjev in biomonitoring ter nadzora nad strupi.

Objectives and competences:

Environmental pollution is one of the most serious threats to the future health of our planet. A wide and ever increasing range of chemicals from industry, agriculture and medicine continue to contribute to the earth's chemical load. Ecotoxicology evaluates the effects of toxins in natural ecosystems. Students, who have need to understand the basics of chemistry and biology, will learn of nature, properties and behaviour of environmental toxins, dose/response relationships and effects on organisms, populations, communities and ecosystems. In addition, environmental management areas such as biomarkers, biomonitoring, ecological risk assessment and the ecotoxicology and management of chemicals will be included.

Predvideni študijski rezultati:

- Poznavanje konceptov v toksikologiji, ekologiji in ekotoksikologiji.
- Razumevanje postopkov za predvidevanje učinkov strupov na okolje.
- Poznavanje načinov za preprečevanje, omejevanje in odpravo posledic zastrupljenosti okolja.

Intended learning outcomes:

- Understanding basic concepts of toxicology, ecology and ecotoxicology.
- Understanding processes of predicting the effects of pollution on organisms.
- Knowledge of ways to prevent, limit or remediate any detrimental effects in the environment.

Metode poučevanja in učenja:

- Predavanja z aktivnim sodelovanjem študentov
- Seminarji in njihove predstavitve
- e-učenje

Learning and teaching methods:

- Lectures with active participation by students
- Written essays and their presentation
- e-learning

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
- Izpit - Seminarska naloga - Predstavitev seminarske naloge	40 40 20	- Written exam - Essay - Presentation of the essay

Reference nosilca / Lecturer's references:

- Pongrac, P.**, Fischer, S., Thompson, J. A., Wright, G., & White, P. J. (2020). Early responses of Brassica oleracea roots to zinc supply under sufficient and sub-optimal phosphorus supply. *Frontiers in plant science*, 10, 1645.
- Pongrac, P.**, Castillo-Michel, H., Reyes-Herrera, J., Hancock, R. D., Fischer, S., Kelemen, M., ... & Vavpetič, P. (2020). Effect of phosphorus supply on root traits of two Brassica oleracea L. genotypes. *BMC Plant Biology*, 20(1), 1-17.
- Pongrac, P.**, Arčon, I., Castillo-Michel, H., & Vogel-Mikuš, K. (2020). Mineral Element Composition in Grain of Awned and Awnletted Wheat (*Triticum aestivum* L.) Cultivars: Tissue-Specific Iron Speciation and Phytate and Non-Phytate Ligand Ratio. *Plants*, 9(1), 79.
- Höreth, S., **Pongrac, P.**, van Elteren, J. T., Debeljak, M., Vogel-Mikuš, K., Weber, M., ... & Pelicon, P. (2020). Arabidopsis halleri shows hyperbioindicator behaviour for Pb and leaf Pb accumulation spatially separated from Zn. *New Phytologist*, 226(2), 492-506.
- White, P.J., **Pongrac, P.** (2016) Heavy metal toxicity in plants. In: *Plant Stress Physiology*. Ed. Shabala, S.; CABI Publishing; in press.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PLITVI PODZEMELJSKI HABITATI: EKOLOGIJA, EVOLUCIJA IN NARAVOVARSTVO
Course title:	SHALLOW SUBTERRANEAN HABITATS: ECOLOGY, EVOLUTION, AND CONSERVATION

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Biodiverziteta in ekologija		
Environmental and Regional Studies, doctoral study 3rd level	Biodiversity and ecology		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIB08

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	15			15	120	6

Nosilec predmeta / Lecturer:

Izr. prof. dr. Tanja Pipan

**Jeziki /
Languages:**

**Predavanja /
Lectures:**

slovenščina, angleščina / Slovene, English

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

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

Opravljen prva ali druga stopnja študija biologije ali druge naravoslovne smeri.

Prerequisite:

Finished bachelors or masters degree in Biology or equivalent program of study.

Vsebina:

Predmet obravnava naslednja poglavja z ožjega področja ekologije in biologije plitvih podzemeljskih habitatov (PPH): uvod v predstavitev posameznih tipov vodnih in kopenskih PPH: mežišča in hipotelminorheični habitat, epikras, melišča in MSS habitat, hiporejik ter jame v lavi. Vsak habitat je predstavljen s posameznimi konkretnimi primeri povzetimi s celega sveta, podani so osnovni kemični in fizikalni parametri:

Content (Syllabus outline):

The following chapters from a narrow scope of ecology and biology of shallow subterranean habitats (SSHs) are included: introduction of different types of aquatic and terrestrial SSHs: seepage springs and the hypotelminorheic habitat, epikarst, talus slopes and MSS habitat, hyporheic and lava tubes. Each habitat is presented using examples from all over the world, basic chemical and physical parameters are given: hydrology, evolution,

hidrologija, evolucija, geografski obseg, analogije z drugimi habitatmi, ter biološke značilnosti: organski ogljik, zgodovinski vidiki bioloških raziskav, metodologija vzorčenja favne, diverziteta in ekologija, morfološke značilnosti in adaptacije, biogeografija.

geographic scope, analogues with other habitats, and biological characteristics: organic carbon, history of biological studies, methods for collecting fauna, diversity and ecology, morphology and adaptations, biogeography.

Temeljni literatura in viri / Readings:

- Culver, D. C., & Pipan, T. (2014). *Shallow Subterranean Habitats. Ecology, Evolution, and Conservation*. Oxford University Press, Oxford.
- Culver, D. C., & Pipan, T. (2009). *The Biology of Caves and Other Subterranean Habitats*. Oxford University Press, Oxford.
- Pipan, T. (2005). *Epikarst – a promising habitat. Copepod fauna, its diversity and ecology: a case study from Slovenia (Europe)*. Založba ZRC, Ljubljana.
- White, W. B., & Culver, D. C. (2012). *Encyclopedia of Caves*. Izbrana poglavja/Selected chapters. Second Edition. Elsevier, Amsterdam.
- Izbrani članki iz znanstvenih revij. / Selected articles from scientific journals.

Cilji in kompetence:

Cilj predmeta je podati študentom poznavanje vodnih in kopenskih tipov plitvih podzemeljskih habitatov, razumevanje in poznavanje osnovnih fizikalno kemijskih in bioloških razlik med globokimi in plitvimi podzemeljskimi habitatmi, razumevanje biologije, ekologije in evolucije plitvih podzemeljskih habitatov (PPH) ter osnovne naravovarstvene vidike PPH. Študenti razvijajo sposobnost prepoznavanja osnovnih ekoloških razlik med globokimi in plitvimi podzemeljskimi habitatmi, osvojijo osnovna načela pridobivanja ekoloških podatkov v PPH in njihove interpretacije. Usposobijo se za ekološko raziskovalno delo v PPH.

Objectives and competences:

The main goal of this course is to provide students with knowledge of aquatic and terrestrial types of shallow subterranean habitats, understanding of basic physico-chemical and biological differences between deep and shallow subterranean habitats, understanding of biology, ecology, and evolution of shallow subterranean habitats (SSHs) and their conservation aspects. Students develop the ability to recognize basic ecological differences between deep and shallow subterranean habitats, acquire the basic principles of obtaining ecological data in SSHs and their interpretation. They are trained to execute ecological investigations in SSHs.

Predvideni študijski rezultati:

Študenti pridobijo teoretično in praktično znanje o kopenskih (epikras, melišča, MSS, jame v lavi) ter vodnih plitvih podzemeljskih habitatih (mezišča, epikras, vodonosniki v karbonatih, hiporejik), njihovih fizikalno kemijskih in bioloških parametrih, temelječih na konkretno prikazanih meritvah in

Intended learning outcomes:

Students obtain theoretical and practical knowledge about terrestrial (epikarst, talus slopes, MSS, lava tubes) and aquatic shallow subterranean habitats (hypotelminorheic, epikarst, calcrete aquifers, hyporheic), their physico-chemical and biological characteristics, based on the measurements of

primerih, odvisnosti podzemeljskih habitatov od površja, ekologiji, biologiji in evoluciji PPH ter značilni favni. Študenti poznajo nove pristope v smeri raziskovanja biologije in ekologije plitvih podzemeljskih habitatov, nove metodologije vzorčenja, standardizacije rezultatov in baz podatkov.

specific cases, dependence of subterranean habitats from surface, ecology, biology and evolution of SSHs, and specific fauna. Students get familiar with new approaches in direction of biological and ecological research in shallow subterranean habitats, new methodology of sampling, standardization of results and databases.

Metode poučevanja in učenja:

- Predavanja
- Terenska predavanja
- Individualno delo na izbrani raziskavi in predstavitev v seminarski obliki
- e-učenje

Learning and teaching methods:

- Lectures
- Field lectures
- Individual work on a selected investigation and its presentation as a seminar work
- e-learning

Načini ocenjevanja:

- Kratka seminarska naloga, njena predstavitev
- Izpit

Delež (v %) /
Weight (in %)

Assessment:

- Short written seminar and its presentation
- Examination

Reference nosilca / Lecturer's references:

1. Pipan, T., Christman, M., Culver, D. C. (2020). Abiotic community constraints in extreme environments : epikarst copepods as a model system. *Diversity*, 12(7), 16 str.
2. Kozel, P., Pipan, T. (2020). Specialized aquatic subterranean communities are probably most species-rich in the thickest epikarst. *Limnologica*, 81, 1-9.
3. Pilotto, F., Kühn, I., Adrian, R., Alber, R., Alignier, A., Andrews, C., Bäck, J., Barbaro, L., Beaumont, D., Beenaerts, N., Pipan, T., et al. (2020). Meta-analysis of multidecadal biodiversity trends in Europe. *Nature communications*, 11, 11 str.
4. Culver, D. C., & Pipan, T. (2019). *The biology of caves and other subterranean habitats*. Oxford University Press, USA.
5. Pipan, T., Petrič, M., Šebela, S., & Culver, D. C. (2019). Analyzing climate change and surface-subsurface interactions using the Postojna Planina Cave System (Slovenia) as a model system. *Regional environmental change*, 19(2), 379-389.
6. Mammola, S., Piano, E., Cardoso, P., Vernon, P., Domínguez-Villar, D., Culver, D. C., Pipan, T., Isaia, M. (2019). Climate change going deep : the effects of global climatic alterations on cave ecosystems. *The anthropocene review*, 2019, 19 str.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	BIOKRONOLOGIJA IN STRATIGRAFSKA KORELACIJA
Course title:	BIOCHRONOLOGY AND STRATIGRAPHIC CORRELATION

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Paleobiologija in sedimentarna geologija		
Environmental and Regional Studies, doctoral study 3 rd level	Palaeobiology and Sedimentary geology		

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

DIP01

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	30	30			180	9

Nosilec predmeta / Lecturer:

Doc. dr. Špela Goričan

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Vpis v 1. letnik.

Prerequisite:

Inscription to the 1st academic year.

Vsebina:

- Zgodovinski razvoj stratigrafije.
- Nezveznost fosilnega zapisa.
- Biokronologija in biostratigrafija (definicija).
- Tipi biocon (Opplove cone, cone razpona taksona, cone prekrivanja več taksonov, intervalne cone, cone abundanc itd.).
- Lastnosti biokronoloških lestvic (zvezne in nezvezne (diskretne) lestvice).
- Deterministične in probablistične metode za izdelavo biokronoloških lestvic.
- Metoda unitarnih asociacij in uporaba računalniškega programa UAGraph na konkretnem primeru.
- Uskladitev biokronoloških lestvic s kronostratigrafskimi enotami v

Content (Syllabus outline):

- Historical development of stratigraphy
- Discontinuous nature of the fossil record
- Biochronology and biostratigraphy (definition)
- Types of biozones (Oppel zone, taxon-range zone, concurrent-range zone, interval zone, abundance zone etc.)
- Properties of biochronologic scales (continuous vs. discrete scales)
- Deterministic vs. probabilistic methods to construct a biochronologic scale
- Unitary Association Method and application of UAGraph computer programme on a case study
- Calibration of biochronologic scales against chronostratigraphic units; integration of

kombinaciji z drugimi stratigrafskimi metodami (sekvenčno stratigrafijo, kemostratigrafijo, magnetostratigrafijo). • Koncept globalnih stratotipov (Global Boundary Stratotype Section and Point – GSSP); pogoji in postopki za formalno definicijo kronostratigrafskih enot.	other stratigraphic methods (sequence stratigraphy, chemostratigraphy, magnetostratigraphy) • Concept of Global Boundary Stratotype Section and Point (GSSP); requirements and procedure for formal definition of a stage boundary
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Temeljni literatura in viri / Readings:

Izbrana poglavja iz knjig in članki/Selected chapters from books and papers:

- Guex J. (1991). *Biochronological Correlations*, 1-252, Springer.
- Guex J., Galster F., Hammer O. (2016). *Discrete Biochronological Time Scales*, 1- 160, Springer.
- McGowran B. (2005). *Biostratigraphy: Microfossils and Geological Time*. Cambridge University Press. (izbrana poglavja/selected chapters)
- Agterberg F., Gradstein F.M., Cheng Q., Liu G. (2013). The RASC and CASC programs for ranking, scaling and correlation of biostratigraphic events. *Computers and Geosciences* 54, 279–292.
- Gradstein FM, Ogg JG, Schmitz MD, Ogg GM (2012). *The Geological Time Scale 2012*, 1-585, Elsevier.

Cilji in kompetence:

Namen predmeta je razviti kritično razumevanje lokalnih in globalnih biokronoloških lestvic. Študenti se bodo naučili, kako oceniti kvaliteto podatkov za izdelavo teh lestvic. Osvojili bodo znanje o empiričnih in matematičnih metodah za izdelavo in testiranje lestvic in za interpretacijo njihove biokronološke natančnosti. Poglobili bodo znanje o drugih metodah stratigrafske korelacije. Z vodenim individualnim delom na konkretnem primeru bodo pridobili praktične izkušnje. Predmet je zato še posebej priporočljiv za študente, ki bodo kot primer za izdelavo conacije lahko uporabili podatke, pridobljene v okviru raziskav za doktorsko disertacijo.

Objectives and competences:

The purpose of the course is to develop critical understanding of local and global biochronologic scales. Students will learn how to evaluate the quality of the dataset upon which a scale is established. They will acquire sufficient knowledge on empirical and mathematical methods to construct and test a range chart, and to interpret its biochronologic precision. They will be stimulated to combine biochronology with other methods of stratigraphic correlation. The course includes practical experience (supervised individual study) and is particularly recommended for students, who can use fossil collections of their PhD research for case studies.

Predvideni študijski rezultati:

Intended learning outcomes:

Znanje in razumevanje:

Študent zna izdelati in interpretirati biokronološko lestvico. Zaveda se prednosti, pomanjkljivosti in omejitev različnih metod izdelave in zna kritično oceniti uporabnost objavljenih zonacij. Obvlada različne stratigrafske pristope in jih zna uporabiti za kalibracijo biokronoloških lestvic s kronostratigrafskimi enotami. Razume pomen GSSP-jev.

Knowledge and understanding:

The student is able to construct and interpret a biochronologic scale. He is aware of advantages/limitations of different construction methods and can critically evaluate the published zonations. He is familiar with different stratigraphic approaches to calibrate biochronologic scales against chronostratigraphic units and understands the significance of GSSPs.

Metode poučevanja in učenja:

- Predavanja
- e-učenje
- Seminarji
- Praktične vaje

Learning and teaching methods:

- Lectures
- e-learning
- Seminars
- Practical training

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Pisni ali ustni izpit
- Seminarjska naloga

Delež (v %) /
Weight (in %)

Assessment:

Type (examination, oral, coursework, project):

- Written or oral exam
- Written paper

Reference nosilca / Lecturer's references:

1. Cifer, T., **Goričan, Š.**, Gawlick, H.-J., Auer, M. 2020: Pliensbachian, Early Jurassic radiolarians from Mount Rettenstein in the Northern Calcareous Alps, Austria. Acta Palaeontologica Polonica, 65/1, 167-207. DOI: [10.4202/app.00618.2019](https://doi.org/10.4202/app.00618.2019).
2. **Goričan, Š.**, O'dogherty, L., Baumgartner, P. O., Carter, E. S., Matsuoka, A. 2018: Mesozoic radiolarian biochronology : current status and future directions. Revue de micropaléontologie, 61/3-4, 165-189 . DOI: [10.1016/j.revmic.2018.08.001](https://doi.org/10.1016/j.revmic.2018.08.001).
3. O'Dogherty, L., **Goričan, Š.**, Gawlick, H.-J. 2017: Middle and Late Jurassic radiolarians from the Neotethys suture in the Eastern Alps. Journal of Paleontology, 91/1, 25-72.
4. **Goričan, Š.**, Carter, E.S., Guex, J., O'Dogherty, L., De Wever, P., Dumitrica, P., Hori, R.S., Matsuoka, A., Whalen, P. 2013. Evolutionary patterns and paleobiogeography of Pliensbachian and Toarcian (Early Jurassic) Radiolaria. Palaeogeography, Palaeoclimatology, Palaeoecology 386, 620-636.
5. Črne, A. E., Weissert, H., **Goričan, Š.**, Bernasconi, S. M. 2011: A biocalcification crisis at the Triassic-Jurassic boundary recorded in the Budva Basin (Dinarides, Montenegro).- GSA Bulletin 123, 40-50.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PALEOBIOLOGIJA IN EVOLUCIJA VREtenČARJEV
Course title:	VERTEBRATE EVOLUTION AND PALEOBIOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Paleobiologija in sedimentarna geologija		
Environmental and Regional Studies, doctoral study 3 rd level	Palaeobiology and Sedimentary Geology		

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

DIP02

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	30	30			180	9

Nosilec predmeta / Lecturer:

Izr. prof. dr. Aleksander Horvat
(ostali izvajalci: dr. Irena Debeljak)

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Vpis v 1. letnik.

Prerequisite:

Inscription to the 1st academic year.

Vsebina:

Predavanja:

- Uvod v paleontologijo vretenčarjev
- Značilnosti in izvor vretenčarjev
- Brezčeljustnice (Agnatha)
- Ribe oklepnice (Placodermi)
- Akantodiji
- Hrstančnice (Chondrichthyes)
- Kostnice (Osteichthyes)
- Mesnatoplavutarice (Sarcopterygii); razvoj nog iz plavuti
- Dvoživke (Amphibia) – zavzetje kopnega
- Izvor amniotov in termoregulacija
- Anapsidi, diapsidi in sinapsidi; kladogrami

Content (Syllabus outline):

Lectures:

- Introduction to vertebrate palaeontology
- Characteristics and origin of vertebrates
- Jawless fishes (Agnatha)
- Armoured fishes (Placodermi)
- Acanthodians
- Cartilaginous fishes (Chondrichthyes)
- Bony fishes (Osteichthyes)
- Lobe-finned fish (Sarcopterygii); fins evolve into legs
- Amphibians – invasion of land
- Origin of amniotes and thermoregulation
- Anapsids, diapsids and synapsids; cladograms

- Permski sinapsidi; "sesalcem podobni plazilci"
- Permsko-triasna izumiranja
- Mezozojski morski reptili; vodne prilagoditve
- Želve
- Arhrozavri; krokodili in pterozavri
- Izvor dinozavrov
- Ornithischia
- Zavropodi
- Teropodi
- Izvor ptičev (Aves) in njihovo širjenje
- Mezozojski sesalci
- Kredno-terciarna izumiranja
- Razcvet sesalcev v kenozoiku
- Eocenski sesalci in izvor današnjih skupin
- Oligo-miocenski sesalci in spreminjanje habitatov
- Pomen biogeografije
- Pleistocenski sesalci
- Pleistocensko-holocenska izumiranja

Vaje:

- Fosilni ostanki vretenčarjev
- Značilnosti kosti, dermalnih struktur in zob
- Zgradba in histologija skeletnih tkiv pri različnih skupinah vretenčarjev
- Laboratorijske tehnike
- Skeletna rast; ontogenetski razvoj
- Primerjalna osteologija I (lobanja)
- Primerjalna osteologija II (postkranialni skelet)
- Zobje; njihova oblika in funkcija pri različnih skupinah vretenčarjev
- Življenjska okolja, depozicijski in tafonomski procesi
- Uporaba filogenetske analize

Seminar:

- Izbrana poglavja iz paleontologije vretenčarjev

- Synapsids of the Permian; "mammal-like reptiles"
- Permo-Triassic extinctions
- Mesozoic marine reptiles; aquatic adaptations
- Turtles
- Archosaurs; crocodiles and pterosaurs
- Origin of dinosaurs
- Ornithischia
- Sauropods
- Theropods
- Origin of birds (Aves) and their radiation
- Mesozoic mammals
- Cretaceous-Tertiary extinctions
- Cenozoic mammal diversification
- Eocene mammals and origin of modern orders
- Oligo-Miocene mammals and changing habitats
- The importance of biogeography
- Pleistocene mammals
- Pleistocene-Holocene extinctions

Tutorials:

- Vertebrate fossils
- Characteristics of bones, dermal structures and teeth
- Structure and histology of skeletal tissues in different vertebrate groups
- Laboratory techniques
- Skeletal growth; ontogenetic development
- Comparative osteology I (cranium)
- Comparative osteology II (postcranial skeleton)
- Teeth; their form and function in different vertebrate groups
- Life environments, depositional settings, and taphonomy
- Using phylogenetic analysis

Seminar:

- Special topics in vertebrate paleontology

Temeljni literatura in viri / Readings:

Izbrana poglavja in članki iz/Selected chapters and papers from:

- Anderson, J. S. & Suess, H.-D. (eds.), 2007: *Major Transitions in Vertebrate Evolution (Life of the Past)*. – Indiana University Press, 1-432.
- Benton, J. M., 2014: *Vertebrate Palaeontology*. – Wiley-Blackwell, 4th ed., 1-480.
- Brett-Surman, M. K., Holtz, T. R. & Farlow, J. O., (eds.) 2012: *The Complete Dinosaur (Life of the Past)*. – Indiana University Press, 2nd ed., 1-984.
- Carroll, R. L., 1988: *Vertebrate Paleontology and Evolution*. – W. H. Freeman and Company, 1-698.
- Cowen, R., 2013: *History of Life*. – Wiley-Blackwell; 5th ed., 1-312.
- Hall, B. K., 2015: *Bones and Cartilage: Developmental and Evolutionary Skeletal Biology*. – Academic Press, 2nd ed., 1-920.
- Schmid, E., 1972: *Atlas of Animal Bones*. – Elsevier, 1-159.
- Thomason, J. J. (ed.), 2008: *Functional Morphology in Vertebrate Paleontology*. – Cambridge University Press, 1-296.
- Journal of Vertebrate Paleontology (Society of Vertebrate Paleontology)

Cilji in kompetence:

Pri tem predmetu bodo študentje dobili poglobljen pregled evolucije vretenčarjev skozi geološki čas s poudarkom na njihovih filogenetskih povezavah, paleobiologiji, funkcionalni morfologiji, specifičnih adaptacijah na različne paleoekološke pogoje in posledicah sprememb v okolju. Temu teoretičnemu delu bo pridruženo še praktično usposabljanje, ki bo osredotočeno na različne laboratorijske tehnike, histologijo skeletnih tkiv, primerjalno osteologijo, določanje skeletnih delov in študij fosilnih primerkov glavnih vretenčarskih skupin. Namen tega predmeta je tudi razvijati študentove sposobnosti za iskanje odgovorov na znanstvena vprašanja s področja paleontologije vretenčarjev.

Objectives and competences:

In this course, students will receive a comprehensive overview of the evolution of the vertebrates through geologic time with emphasis on their phylogenetic relationships, palaeobiology, functional morphology, specific adaptations to different palaeoecological conditions and responses to environmental change. In addition to this theoretical part, practical training will cover various laboratory techniques, histology of skeletal tissues, comparative osteology, skeletal identification and studying fossil specimens of major vertebrate groups. The aim of this course is also developing students' ability to answer scientific questions in the field of vertebrate palaeontology.

Predvideni študijski rezultati:

Znanje in razumevanje:

Študentje bodo:

- pridobili široko znanje o fosilnem zapisu vretenčarjev
- sposobni prepoznati in opisati značilnosti glavnih skupin vretenčarjev

Intended learning outcomes:

Knowledge and understanding:

Students will:

- gain a broad knowledge of the vertebrate fossil record

• sposobni interpretirati ključne dogodke in prehode v evoluciji vretenčarjev • osvojili trenutno poznavanje filogenetskih povezav med glavnimi skupinami vretenčarjev (izumrlih in še živečih) • razumeli paleogeografsko razširjenost glavnih skupin vretenčarjev v različnih geoloških obdobjih • seznanjeni z razvojem našega razumevanja, kako so npr. dinosavri funkcionirali kot živa bitja • imeli teoretično in praktično podlago za uporabo filogenetske analize • sposobni določiti različna skeletna tkiva in elemente • sposobni prepoznati sledi različnih tafonomskih procesov • vedeli, kako priti do relevantnih informacij in uporabiti ustrezne raziskovalne metode na področju paleontologije vretenčarjev	• be able to identify and describe characteristics of the major groups of vertebrates • be able to interpret key events and transitions in vertebrate evolution • know current consensus on the phylogenetic relationships of major vertebrate groups (extinct and extant) • understand paleogeographic distribution of the major vertebrate groups throughout geologic time • Students will be familiar with the development of our understanding of how e.g. dinosaurs functioned as living organisms • have theoretical and practical basis for using phylogenetic analysis • be able to identify different skeletal tissues and elements • be able to recognise evidence of different taphonomic processes • know how to find relevant information and use appropriate research methods in the field of vertebrate paleontology
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Metode poučevanja in učenja:

Predavanja, e-učenje, diskusije, seminarji, praktične vaje

Learning and teaching methods:

Lectures, e-learning, discussions, seminars, practical sessions

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):		Type (examination, oral, coursework, project):
• Izpit – teoretični del	40	• Exam – theoretical part
• Izpit – praktični del	40	• Exam – practical part
• Seminar	20	• Seminar

Reference nosilca / Lecturer's references:

Izr. prof. dr. Aleksander Horvat

1. Bohinc, T., **Horvat, A.**, Andrić, G., Pražić Golić, M., Kljajić, P., Trdan, S. 2018: Comparison of three different wood ashes and diatomaceous earth in controlling the maize weevil under laboratory conditions. *Journal of Stored Products Research*, 79, 1-8. DOI: 10.1016/j.jspr.2018.06.007.
2. Moreau, L., Odar, B., Higham, T., **Horvat, A.**, Pirkmajer, D., Turk, P. 2015: Reassessing the Aurignacian of Slovenia: Techno-economic behaviour and direct dating of osseous projectile points. *Journal of Human Evolution*, 78, 158-180.
3. Bartol, M., Mikuž, V., **Horvat, A.** 2014: Palaeontological evidence of communication between the Central Paratethys and the Mediterranean in the late Badenian/early Serravalian. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 394, 144-157.

Dr. Irena Debeljak

4. Rame, H.-M., Martindale, R. C., Ettinger, N. P., Bodin, S., **Debeljak, I.**, Vasseur, R., Lathuilière, B., Kabiri, L. 2019: Stratigraphic distribution and paleoecological significance of Early Jurassic (Pliensbachian-Toarcian) lithiotid-coral reefal deposits from the Central High Atlas of Morocco. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 514, 813-837.
5. **Debeljak, I.**, 2014: The age and sex structure of the cave bear population from Križna jama (Slovenia). – *Mitt. Komm. Quartärforsch. Österr. Akad. Wiss.* 20, 97-108, 97-108, Wien.
6. **Debeljak, I.** 2007: Fossil population structure and mortality of the cave bear from the Mokrica cave (North Slovenia). *Acta Carsologica*, 36/3, 475-484.
7. **Debeljak, I.**, Košir, A., Buffetaut, E., Otoničar, B., 2002: The Late Cretaceous dinosaurs and crocodiles of Kozina (SW Slovenia). *Memorie della Società Geologica Italiana*, 57/1, 193-202.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	IZBRANA POGLAVJA IZ PALEONTOLOGIJE
Course title:	SELECTED TOPICS IN PALAEONTOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Paleobiologija in sedimentarna geologija		
Environmental and Regional Studies, doctoral study 3 rd level	Palaeobiology and Sedimentary Geology		

Vrsta predmeta / Course type	Izbirni/Elective
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Univerzitetna koda predmeta / University course code:	DIP03
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Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
20	10	30			120	6

Nosilec predmeta / Lecturer:	Doc. dr. Špela Goričan
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Jeziki / Languages:	Predavanja / Lectures:	slovenščina, angleščina / Slovene, English
	Vaje / Tutorial:	slovenščina, angleščina / Slovene, English

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisite:
Vpis v 1. letnik.	Inscription to the 1st academic year.

Vsebina:	Content (Syllabus outline):
- Prokarionti, protisti, nevretenčarji (izbrane skupine). - Morfologija in sistematika - Biologija (prehranjevanje, razmnoževanje, ekologija, provincializem) - Procesi biomineralizacije in rast skeleta - Ohranjenost v fosilnem zapisu - Biostratigrafija - Paleoekologija in paleobiogeografija - Evolucija (filogenetske linije in diverzitetna dinamika)	- Procaryotes, protists and invertebrates (selected groups) - Morphology and systematics - Biology (nutrition, reproduction, ecology, provincialism) - Biomineralization processes and skeletal growth - Preservation potential in the fossil record - Biostratigraphy - Palaeoecology and palaeobiogeography - Evolution (phylogenetic lineages and diversity dynamics)

Temeljni literatura in viri / Readings:

Izbrana poglavja in članki iz/Selected chapters and papers from:

- Briggs, D. & Crowther, P.R. (Eds.) 1990. *Palaeobiology: A Synthesis*. 1-608, Blackwell Science.
- Briggs, D. & Crowther, P.R. (Eds.) 2001. *Palaeobiology II*. 1-600, Blackwell Science.
- Foote, M. & Miller, A. 2007. *Principles of Paleontology* (3rd edition), 1-354, Freeman.
- Clarkson, E.N.K. 1998. *Invertebrate Palaeontology and Evolution* (4th edition), 1-470, Blackwell Science.
- Lipps, J.H. 1993. *Fossil Prokaryotes and Protists*, 1-1-342, Blackwell Scientific Publications.
- Plus specific papers and catalogues for the selected groups of fossils.

Cilji in kompetence:

Namen predmeta je poglobiti znanje o izbranih skupinah fosilov. Vsaka skupina bo obravnavana z različnih vidikov, ki bodo pokrivali biologijo živečih taksonov ter stratigrafsko in geografsko razširjenost v fosilnem zapisu. Posebna pozornost bo namenjena tesni povezavi med biologijo teh organizmov in fizičnim okoljem, v katerem so živeli. Poudarek predmeta bo na individualnem raziskovalnem delu študentov. Obravnavane fosilne skupine bodo izbrane za vsakega študenta posebej in prilagojene njegovim raziskovalnim željam in potrebam.

Objectives and competences:

The purpose of the course is to deepen the knowledge on selected groups of fossils. Each group will be treated from different aspects covering biology of living taxa as well as spatial and temporal distribution in the fossil record. A close relationship between (palaeo)biology of these organisms and their physical environment will be emphasized. This course will be largely based on a supervised research project carried out by each student. The selection of the considered fossil group(s) will be adapted individually according to student's research interests.

Predvideni študijski rezultati:

Znanje in razumevanje:
Študent zna določiti fosile v preiskovanem materialu in pozna njihov pomen za določanje starosti in interpretacijo okolja. Zna analizirati njihovo diverziteto v prostoru in času ter vzorce porazdelitve interpretirati v odvisnosti od sprememb okolja. Pozna glavne kriterije za klasifikacijo vrst, rodov in višjih taksonomskih kategorij. Empirično zna rekonstruirati filogenetske linije.

Intended learning outcomes:

Knowledge and understanding:
The student is able to identify the studied fossils and knows their significance as stratigraphic and/or environmental indicators. He can analyse and interpret their spatio-temporal diversity patterns in correlation with environmental changes. He knows the main criteria of classification at species, genus and suprageneric level. He can empirically reconstruct phyletic lineages.

Metode poučevanja in učenja:

- Predavanja
- e-učenje
- Seminarji
- Praktične vaje

Learning and teaching methods:

- Lectures
- e-learning
- Seminars
- Practical training

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
• Pisni ali ustni izpit	50	• Written or oral exam
• Seminarska naloga	50	• Written paper

Reference nosilca / Lecturer's references:

1. Pirnia, T., Saccani, E., Torabi, G., Chiari, M., Goričan, Š., Barbero, E. 2020: Cretaceous tectonic evolution of the Neo-Tethys in Central Iran : evidence from petrology and age of the Nain-Ashin ophiolitic basalts. *Geoscience frontiers*. 11/1, 57-81. DOI: [10.1016/j.gsf.2019.02.008](https://doi.org/10.1016/j.gsf.2019.02.008).
2. Slovenec, D., Šegvić, B., Halamić, J., Goričan, Š., Zanoni, G. 2020: An ensialic volcanic arc along the northwestern edge of Palaeotethys : insights from the Mid-Triassic volcano-sedimentary succession of Ivanščica Mt. (northwestern Croatia). *Geological Journal*, 55/6, 4324-4351. DOI: 10.1002/gj.3664.
3. O'Dogherty, L., Aguado Merlo, R., Baumgartner, P. O., Bill, M., Goričan, Š., Sandoval, J., Sequeiros, L. 2018: Carbon-isotope stratigraphy and pelagic biofacies of the Middle-Upper Jurassic transition in the Tethys-Central Atlantic connection. *Palaeogeography, Palaeoclimatology, Palaeoecology*. 507, 129-144.
4. Goričan, Š., Žibret, L., Košir, A., Kukoč, D., Horvat, A. 2018: Stratigraphic correlation and structural position of Lower Cretaceous flysch-type deposits in the eastern Southern Alps (NW Slovenia). *International journal of earth sciences*, 107/8, 2933-2953.
5. Goričan, Š., Carter, E.S., Guex, J., O'Dogherty, L., De Wever, P., Dumitrica, P., Hori, R.S., Matsuoka, A., Whalen, P. 2013. Evolutionary patterns and paleobiogeography of Pliensbachian and Toarcian (Early Jurassic) Radiolaria. *Palaeogeography, Palaeoclimatology, Palaeoecology* 386, 620-636.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PALEOEKOLOGIJA IN TAFONOMIJA
Course title:	PALAEOECOLOGY AND TAPHONOMY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Paleobiologija in sedimentarna geologija		
Environmental and Regional Studies, doctoral study 3 rd level	Palaeobiology and Sedimentary geology		

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

DIP04

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	10	20			120	6

Nosilec predmeta / Lecturer:

Izr. prof. dr. Aleksander Horvat

Jeziki / Languages:

Predavanja / Lectures:

slovenščina, angleščina / Slovene, English

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

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

Vpis v 1. letnik.

Prerequisite:

Inscription to the 1st academic year.

Vsebina:

- Evolucija biosfere: vodni in terestrični ekosistemi, način življenja in trofični režimi skozi geološki čas, globalne spremembe atmosfere, hidrosfere in litosfere
- Metode v paleoekologiji in tafonomiji
- Fosili kot pokazatelji okolja
- Okoljska kontrola biotske distribucije
- Evolucijska paleoekologija posameznih skupin organizmov in ekosistemov
- Tafonomija: procesi fosilizacije in diageniza skeletnih mineralov, tafonomija in fanerozojska biodiverziteta; ohranitveni potencial v

Content (Syllabus outline):

- Evolution of biosphere: aquatic and terrestrial ecosystems, mode of life and trophical regime in deep time; global changes in atmosphere, hydrosphere and lithosphere
- Methods in palaeoecology and taphonomy
- Fossils as environmental indicators
- Environmental control on biotic distributions
- Evolutionary palaeoecology of individual organism groups and ecosystems
- Taphonomy: fossilization processes and diagenesis of skeleton minerals; preservation in different ecological

različnih okoljih; koncept tafofaciesov;
lagerstätten

- Ichnologija
- Adaptivna in funkcionalna morfologija
- Populacije in združbe
- Paleobiogeografija, paleoklimatologija in evolucija
- Ekološka zgradba glavnih dogodkov v zgodovini življenja

settings, taphonomy and Phanerozoic biodiversity, concept of taphofacies, lagerstätten

- Ichnology
- Populations, communities and assemblages
- Adaptive and functional morphology
- Palaeobiogeography, palaeoclimatology and evolution
- Ecological architecture of major events in the Phanerozoic life history

Temeljni literatura in viri / Readings:

Izbrana poglavja in članki iz/Selected chapters and papers from:

- Allison, P. A. & Bottjer, D. J. 2011: *Taphonomy: Process and Bias Through time*. 2nd edition, 1-612, Springer.
- Allmon, W. D. & Bottjer, D. J. 2001: *Evolutionary Paleoecology*. Columbia Uni. Press, 1-357.
- Brenchley, P.J. & Harper, D.A.T., 1998: *Palaeoecology, Ecosystems, Environments and Evolution*. Chapman & Hall, 1-402.
- Briggs, D. E. G. & Crowther, P. R. (Eds.) 1990: *Palaeobiology: A synthesis*. Blackwell Publishing, 1-555.
- Briggs, D. E. G. & Crowther, P. R. (Eds.) 2003: *Palaeobiology II*. Blackwell Publishing, 1-583.
- Hammer, Ø. & Harper, D. 2006: *Paleontological data analysis*. Blackwell Sci. Publ., 1-351.
- Jackson, J. B. C., & Erwin, D. H. 2006: What can we learn about ecology and evolution from the fossil record? *Trends in Ecology & Evolution* 21/6: 322–328.
- Lieberman, B.S., 2000: *Paleobiogeography: Using fossils to study global change, plate tectonics and evolution*. Kluwer Acad. Press., 1-208.
- Palaeogeography, Paleoclimatology, Palaeoecology (Elsevier Publ.)

Cilji in kompetence:

Slušatelj bo sposoben prepoznati in razložiti osnovne paleoekološke pojme. Usposobljen bo za razumevanje in raziskovanje pomembnih biotskih in nebiotskih faktorjev, ki vplivajo na današnja in nekdanja okolja. Določal bo fosile, interpretiral njihov način življenja in analiziral njihovo funkcionalno morfologijo. Slušatelj bo usposobljen za analizo fosilne združbe in bo znal rekonstruirati njen geološki in paleoekološki kontekst. Študent bo usposobljen prepoznati paleoekološke in okoljske spremembe v kamninskem zapisu ter razložiti vzroke zanje. Sposoben bo pojasniti pomen paleoekologije

Objectives and competences:

In this course, students will be able to identify and explain major concepts in palaeoecology and investigate essential principles regarding the biotic and abiotic factors affecting modern and past environments. Students will be required to identify the fossil, interpret the mode of life and analyze its functional morphology. Students should be able to analyze a fossil assemblage and reconstruct its geological and palaeoenvironmental contexts. Students should be able to recognize and evaluate palaeoecological and environmental changes in rock record and explain the causes for that. Students should

in paleontologije v drugih znanstvenih disciplinah, vključno z geologijo, biologijo in globalnimi spremembami. Študent bo sposoben poiskati relevantno paleoekološko literaturo ter pomembne publikacije, povezane s posameznimi taksonomskimi skupinami.

be able to explain the importance of palaeoecology and palaeontology to other realms of knowledge including geology, biology, and global change. Students should identify major publications in the area of palaeoecological concepts as well as works dealing with specific taxonomic groups.

Predvideni študijski rezultati

Znanje in razumevanje:

- Samostojno analizira in interpretira fosilne združbe v paleokološkem smislu.
- Usposobljen je za razpravljanje o pomembnih paleoekoloških vprašanjih in konceptih.
- Samostojno vključevati paleoekološke podatke in vprašanja v svoje raziskave.
- Samostojno pridobi ustrezne materiale, uporabi ustrezne analitske in numerične metode ter strokovno literaturo in pripravi pisno ali ustno predstavitev na temo paleoekologije.

Intended learning outcomes:

Knowledge and understanding:

- Analyze and interpret fossil assemblages for form and function and palaeoenvironmental setting.
- Discuss the concepts and important questions in palaeoecology.
- Incorporate palaeoecological questions and data into own research.
- Choose, independently investigate, and prepare a written and oral report on a topic in palaeoecology.

Metode poučevanja in učenja:

- Predavanja
- e-učenje
- Seminarji
- Praktične vaje

Learning and teaching methods:

- Lectures
- e-learning
- Seminars
- Practical training

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Pisni ali ustni izpit
- Seminarjska naloga/članek

Delež (v %) /
Weight (in %)

50
50

Assessment:

Type (examination, oral, coursework, project):

- Written or oral exam
- Written essay/paper

Reference nosilca / Lecturer's references:

1. Bohinc, T., **Horvat, A.**, Andrić, G., Pražić Golić, M., Kljajić, P., Trdan, S. 2020: Natural versus synthetic zeolites for controlling the maize weevil (*Sitophilus zeamais*) - like Messi versus Ronaldo?. *Journal of Stored Products Research*, 88, art. no. 101639, str. 1-9.
2. Goričan, Š., Žibret, L., Košir, A., Kukoč, D., **Horvat, A.** 2018: Stratigraphic correlation and structural position of Lower Cretaceous flysch-type deposits in the eastern Southern Alps (NW Slovenia). *International journal of earth sciences*, 107/8, 2933-2953.
3. Moro, A., **Horvat, A.**, Tomić, V., Sremac, J. Bermanec, V. 2018: Facies development and paleoecology of rudists and corals: : an example of Campanian transgressive sediments from northern Croatia, northeastern Slovenia, and northwestern Bosnia. *Facies*, 62/19, 18-25. DOI: [10.1007/s10347-016-0471-y](https://doi.org/10.1007/s10347-016-0471-y).
4. Moro, A., Velić, I., Mikuž, V., **Horvat, A.** 2018: Microfacies characteristics of carbonate cobble from Campanian of Slovenj Gradec (Slovenia) : implications for determining the Fleuryana adriatica De Castro, Drobne and Gušić paleoniche and extending the biostratigraphic range in the Tethyan realm. *Mining-Geology-Petroleum Engineering Bull.*, 42, 1-13. DOI: [10.17794/rgn.2018.4.1](https://doi.org/10.17794/rgn.2018.4.1).
5. **Horvat, A.** 2016: *Distephanopsis concavus* Horvat : a revised silicoflagellate species from the Middle Miocene of the Central Paratethys. *Geologija*, 59/2, 233-241. DOI: [10.5474/geologija.2016.014](https://doi.org/10.5474/geologija.2016.014).

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PALEOBOTANIKA IN PALINOLOGIJA
Course title:	PALAEOBOTANY AND PALYNOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Paleobiologija in sedimentarna geologija		
Environmental and Regional Studies, PhD studies	Palaeobiology and Sedimentary Geology		

Vrsta predmeta / Course type: Izbirni/Elective

Univerzitetna koda predmeta / University course code: DIP05

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	10	20			120	6

Nosilec predmeta / Lecturer: Doc. dr. Maja Andrič

Jeziki / Predavanja / Lectures: slovenščina, angleščina / Slovene, English
Languages: Vaje / Tutorial: slovenščina, angleščina / Slovene, English

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

Vpis v 1. Letnik.

Prerequisite:

Inscription to the 1st academic year.

Vsebina:

PALINOLOGIJA & PALEO/ARHEO BOTANIKA

- **Raziskovalne metode:** tafonomija, izbira najdišča in vzorčenje, laboratorijska priprava vzorcev, identifikacija peloda in rastlinskih makrofosilov, kronologija (datiranje in časovni modeli, dendrokronologija), multidisciplinarne raziskave
- **Paleoekologija:** dolgoročne spremembe okolja in okoljski procesi, vpliv klime, ekoloških dejavnikov in človeka na sestavo vegetacije
- **Kvartarna vegetacija:** razvoj in sestava nekdanjega gozda, požarni režimi in vpliv človeka na vegetacijo in odprtost pokrajine v različnih arheoloških in

Content (Syllabus outline):

PALYNOLOGY & PALAEO/ARCHAEO BOTANY

- **Research methods:** taphonomy, selection of study sites and sampling, laboratory treatment of samples, identification of pollen and plant macrofossils, chronology (dating and age-depth modelling, dendrochronology), multidisciplinary research
- **Palaeoecology:** long-term changes of the environment and ecological processes, the impact of climate, ecological factors and people on the vegetation
- **Quaternary vegetation:** the composition and development of forests, fire regimes and human impact on the vegetation and landscape openness in various

geoloških obdobjih, migracije kvartarnih drevesnih vrst

- **Paleoekonomija:** prehranske navade in gospodarstvo v arheoloških obdobjih
- **Paleoklimatologija:** kvartarna klima, primerjava ledenih, globokomorskih in kopenskih paleookoljskih arhivov, vpliv podnebnih nihanj na vegetacijo
- **Paleolimnologija:** sedimentacijski procesi, nekdanje hidrološke razmere,
- **Varstvo narave:** uporaba znanja o dolgoročnih spremembah okolja pri načrtovanju naravovarstvenih ukrepov in renaturacije

archaeological and geological time periods, migrations of Quaternary tree taxa

- **Palaeoeconomy:** food and economy in archaeological time periods
- **Palaeoclimatology:** Quaternary climate, comparison of ice, marine and terrestrial palaeoenvironmental archives, the influence of climatic fluctuations on the vegetation
- **Palaeolimnology:** sedimentological processes, palaeohydrological conditions
- **Nature protection:** knowledge about long-term environmental changes can help us to better plan nature protection/restoration measures

Temeljni literatura in viri / Readings:

Osnovna literatura/Basic literature:

- Moore P. D., Webb J. A. & Collinson M. E. 1991. *Pollen Analysis*. Blackwell Science, Oxford.
- Pearsall D. M. 2000. *Paleoethnobotany* (A Handbook of Procedures). Academic Press, London.
- Smol J. P., Birks H. J., Last W. M. (eds.) 2012. *Tracking Environmental Changes Using Lake Sediments*. Kluwer Academic Publishers, Dordrecht.
- Andrič M., Tolar T. & Toškan B. 2016. *Okoljska arheologija in paleoekologija: palinologija, arheobotanika in arheozoologija*. Založba ZRC in Inštitut za arheologijo ZRC SAZU, Ljubljana.

Identifikacijski ključ / ID keys:

- Moore et al. 1991. (glej zgoraj /see above)
- Reille M. 1992. *Pollen et spores d'Europe et d'Afrique du Nord*, Laboratoire du Botanique Historique et palynologie, Marseille
- Beug H.-J. 2004. *Leitfaden der Pollenbestimmung*, Verlag Dr. Friedrich Pfeil, München.
- Cappers R. T. J., Neef R. & Bekker R. M. (ed.) 2009. *Digital Atlas of Economic Plants (3 vol.)*. Groningen Archaeological Studies 9, Groningen, Barkhuis & Groningen University Library.
- Neef R., Cappers R. T. J. & Bekker R. M. (ed.) 2012. *Digital Atlas of Economic Plants in Archaeology*. Groningen, Barkhuis and Groningen University Library.
- Schweingruber F. H. (ed.) 1978/1990. *Mikroskopische Holzanatomie*. Birmensdorf, Swiss Federal Institute for Forest, Snow and Landscape Research.
- **Članki v revijah/papers in:** *The Holocene, Quaternary Science Reviews, Quaternary Research, Journal of Quaternary Science, Palaeogeography, Palaeoclimatology, Palaeoecology, Vegetation History and Archaeobotany, Journal of Archaeological Science*

Znanstvena metoda:

- Booth W. C., Colomb G. G. & Williams J. M. 1995. *The Craft of Research*. The University of Chicago Press, Chicago.

Cilji in kompetence:

Študenti bodo pridobili osnovna znanja o kvartarnem okolju (s poudarkom na vegetaciji) v Evropi/Sloveniji, človekovem vplivu na okolje in ekonomiji v različnih arheoloških obdobjih ter se seznanili z osnovnimi raziskovalnimi metodami na tem področju. Poudarek bo na individualnem raziskovalnem delu študentov. Obravnavane teme bodo izbrane za vsakega študenta posebej in prilagojene njegovim/njenim raziskovalnim željam in potrebam. Študenti, katerih glavna raziskovalna tema doktorske disertacije bodo palinološke oz. arheobotanične raziskave, se bodo usposobili za samostojno raziskovalno delo na omenjenih področjih.

Objectives and competences:

Students will acquire basic knowledge about the Quaternary environment (especially vegetation) in Europe/Slovenia, human impact on the environment and economy in various archaeological time periods, and the main research methods in this field of research. This course will be largely based on supervised research. The selection of topics will be adapted individually according to student's research interests. Students with palynology or archaeobotany as the main topic of their research will qualify to independently carry out palynological or archaeobotanical research.

Predvideni študijski rezultati:

Znanje in razumevanje:

- **Za študente, katerih glavna raziskovalna tema ne bo palinološka / paleo(arheo)botanična raziskava:**

Glavni cilj predmeta je usposobiti študente za razumevanje okoljskih procesov in vzrokov za spremembe nekdanjega in današnjega okolja. Pridobljena znanja jim bodo omogočila kritično branje, analizo in interpretacijo znanstvene literature, zavedanje možnosti in omejitev različnih paleoekoloških raziskovalnih metod in interpretativnih teorij, komuniciranje s strokovnjaki drugih ved ter sodelovanje pri interdisciplinarnih temeljnih in aplikativnih raziskovalnih projektih.

- **Za študente, katerih glavna raziskovalna tema bo palinološka/paleo(arheo)botanična raziskava:**

Poleg vsega zgoraj naštetega zna študent samostojno izvesti palinološko/paleo(arheo)botanično

Intended learning outcomes:

Knowledge and understanding:

- **For students, where the main topic of their research is not palynology / palaeo(archaeo)botany:**

Students will be able to understand the main environmental processes and causes for changes of past and current environment. This knowledge will enable them to critically read, analyse and interpret the literature and be aware of possibilities and limitations of selected research methods and theories, as well as to communicate with the experts from other fields of research, and to take part in interdisciplinary basic and applied research projects.

- **For students with palynology / palaeo(archaeo)botany as the main topic of their research:**

In addition to knowledge/understanding stated above, the student is able to independently carry out palynological /palaeo(archaeo)botanical research, including selection of study site, fieldwork, laboratory

raziskavo, vključno z izbiro najdišča in vzorčenjem na terenu, laboratorijsko pripravo vzorcev, identifikacijo peloda /rastlinskih makrofosilov, analizo in interpretacijo rezultatov in objavo rezultatov raziskave.

treatment of samples, identification of pollen grains/plant macrofossils, analysis and interpretation of the data and publication of the results.

Metode poučevanja in učenja:

- Predavanja
- e-učenje
- Seminarji
- Terensko in laboratorijsko delo

Learning and teaching methods:

- Lectures
- e-learning
- Seminars
- Fieldwork and laboratory work

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

Načini ocenjevanja bodo prilagojeni raziskovalnim željam in potrebam vsakega posameznega študenta.

- pisni ali ustni izpit
- seminarska naloga /članek

Delež (v %) /
Weight (in %)

50
50

Assessment:

Type (examination, oral, coursework, project):

Assessment will be adapted individually according to student's research interests.

- Written or oral exam
- written essay /paper

Reference nosilca / Lecturer's references:

1. Andrič, M., Sabatier, P., Rapuc, W., Ogrinc, N., Dolenc, M., Arnaud, F., Grafenstein, U., Šmuc, A. 2020: 6600 years of human and climate impacts on lake-catchment and vegetation in the Julian Alps (Lake Bohinj, Slovenia). Quaternary Science Reviews, 2020, 227, 1-18. DOI: [10.1016/j.quascirev.2019.106043](https://doi.org/10.1016/j.quascirev.2019.106043).
2. Rapuc, W., Sabatier, P., Andrič, M., Crouzet, C., Arnaud, F., Chapron, E., Šmuc, A., Develle, A.-L., Wilhelm, B., Demory, F., Reyss, J.-L., Régnier, E., Daut, G., Grafenstein, U. 2018: 6600 years of earthquake record in the Julian Alps (Lake Bohinj, Slovenia). Sedimentology, 65, 1777-1799. DOI: [10.1111/sed.12446](https://doi.org/10.1111/sed.12446).
3. Filipović, D., Challinor, D., Andrič, M. 2017: Vinča tell in southeast Europe : multi-proxy palaeobotanical evidence from Late Neolithic levels and the implications for the environment and economy. Quaternary international, 429, 13-23. DOI: [10.1016/j.quaint.2014.09.059](https://doi.org/10.1016/j.quaint.2014.09.059).
4. Andrič M., Tolar T. & Toškan B. 2016. Okoljska arheologija in paleoekologija: palinologija, arheobotanika in arheozoologija. Založba ZRC in Inštitut za arheologijo ZRC SAZU, Ljubljana, 1-259.
5. Andrič, M. 2016: Human impact on the vegetation of the western Ljubljansko barje in late prehistory (ca. 1000-50 cal. BC) : case study: Vrhnika (Dolge njive). Arheološki vestnik, 67, 259-275.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	GEOLOGIJA KARBONATOV
Course title:	CARBONATE GEOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Paleobiologija in sedimentarna geologija		
Environmental and Regional Studies, doctoral study 3 rd level	Palaeobiology and Sedimentary geology		

Vrsta predmeta / Course type	Izbirni/Elective
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Univerzitetna koda predmeta / University course code:	DIP06
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Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	30	30			180	9

Nosilec predmeta / Lecturer:	Doc. dr. Andrea Martín Pérez (ostali izvajalci: izr. prof. dr. Martin Knez, izr. prof. dr. Nadja Zupan Hajna, dr. Bojan Otoničar)
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Jeziki / Languages:	Predavanja / Lectures: slovenščina, angleščina / Slovene, English
	Vaje / Tutorial: slovenščina, angleščina / Slovene, English

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

Prerequisite:

Vpis v 1. Letnik	Inscription to the 1 st academic year.
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Vsebina:

Content (Syllabus outline):

• Uvod v karbonatne depozicijske sisteme • Današnje karbonatne platforme in primerjava s karbonatnimi sistemi v geološki preteklosti • Karbonatni sedimenti in komponente; klasifikacija apnencev in dolomitov • Karbonatna okolja in faciesni mozaiki • Karbonatni šelfi in rampe • Karbonati, evaporiti in siliciklastiti • Faciesi notranjih delov platform • Grebeni in peščena telesa na robovih platform in na rampah • Pobočni in pelagični karbonati	• Introduction to carbonate systems • Modern carbonate platforms and comparison with ancient carbonate depositional systems • Carbonate sediment components; limestone and dolomite classification • Carbonate environments and facies mosaics • Carbonate shelves and ramps • Carbonates, evaporites and siliciclastics • Platform interior carbonate facies • Reefs and sandbodies on platform margins and ramps • Slope and pelagic carbonates
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● Kontinentalni karbonati ● Sekvenčna stratigrafija ● Uvod v diagenozo ● Poroznost in zlog karbonatnih kamnin ● Diageneza apnenca, diagenetska okolja in evolucija poroznosti ● Dolomitizacija in dolomit ● Zakrasevanje karbonatnih kamnin ● Paleokras ● Sedimentologija karbonatnih rezervoarjev in vodonosnikov; ● Tektonika karbonatnih kamnin	● Continental carbonates ● Sequence stratigraphy ● Introduction to diagenesis ● Porosity and rock fabrics in carbonates ● Limestone diagenesis, diagenetic environments and porosity evolution ● Dolomitisation and dolostones ● Karstification of carbonate rocks ● Paleokarst ● Sedimentology of carbonate reservoirs and aquifers ● Tectonics of carbonate rocks
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Temeljni literatura in viri / Readings:

Izbrana poglavja in članki/Selected chapters and papers:

- Temeljni pregledni članki iz revij/fundamental reviews from journals *Earth-Science Reviews*, *Sedimentology*, *Sedimentary Geology*, *Journal of Sedimentary Research*.
- James, N.P. and Dalrymple, R.W., 2010: *Facies Models 4*, Geological Society of Canada, GeoText 6, 3, 323-586.
- Schlager, W., 2005: *Carbonate Sedimentology and Sequence Stratigraphy*, SEPM Concepts in Sedimentology and Paleontology, #8, 1-200.
- Tucker, M.E. & Wright, V.P., 1990: *Carbonate Sedimentology*.- Blackwell Scientific Publications, 1-482, Oxford.
- McIlreath, I.A. & Morrow, D.W., 1990: *Diagenesis*.- Geoscience Canada Reprint Series 4, Geological Association of Canada, 1-125; 277-316, Ottawa, Canada.
- Ford, D.C., Williams, P., 2007. *Karst Hydrogeology and Geomorphology*. John Wiley & Sons, Chichester, 1-102; 209-270; 321-400.
- Palmer, A.N., 2007. *Cave geology*. Cave Books, 1-454, Dayton, Ohio.

Cilji in kompetence:

Namen predmeta je osvojiti globlje, napredno znanje o geologiji sedimentnih karbonatov s končnim poudarkom na razumevanju razvoja poroznosti in uporabnih vidikov karbonatnih sedimentov. Predmet vodi študente od osnovnih konceptov in načel klasifikacije in terminologije prek geometrije in faciesne zgradbe karbonatnih platform do diageneze (vključno z zakrasevanjem), poroznosti in tektonike. Dodaten poudarek se daje preteklemu (paleokras) in sedanjemu zakrasevanju karbonatov v Sloveniji in svetu. Predmet je

Objectives and competences:

The purpose of the course is to provide a deeper, advanced knowledge in geology of sedimentary carbonates with a final emphasis in porosity and applied aspects. It takes students from basic concepts and principles of classification and terminology through carbonate platform facies and geometries to diagenesis (including karstification), porosity evolution and tectonics. Additional emphasis is put on past (paleokarst) and recent karstification of carbonates worldwide and in Slovenia Topic of the course will combine

preplet predavanj, študija terenskih primerov in laboratorijskih vaj z ustreznim materialom.

lectures, field examples and laboratory examination of the corresponding materials.

Predvideni študijski rezultati:

Znanje in razumevanje:
Slušatelji se bodo naučili: razlikovati osnovne tipe geometrij karbonatnih platform in njihovo variabilnost; uporabljati koncept faciesnih modelov v različnih merilih – od zbruska do seizmične ločljivosti; razumeti primarne vidike depozicije karbonatov v prostoru in času; razumeti načine zakrasevanja ter vpliv litologije in klime; razločevati med primarno in sekundarno poroznostjo in razumeti procese razvoja poroznosti; razumeti procese in produkte dolomitizacije; povzeti glavne vidike geologije karbonatnih naftnih rezervoarjev in jih razlikovati od tistih, nastalih v klastičnih kamninah. Slušatelji bodo usposobljeni prepoznati vpliv značilnosti karbonatnih kamnin pri procesih zakrasevanja in oblikovanja površja.

Intended learning outcomes:

Knowledge and understanding:
The students will learn to: distinguish the main types of carbonate platform geometries and their variability; operate with carbonate facies concepts and models on different scales – from thin section to seismic-scale; understand the primary controls on carbonate deposition in space and time; understand types of karstification based on lithology and climate; distinguish development of primary and secondary porosity in carbonate rocks; understand principles of dolomitisation processes and products; summarise the main aspects of carbonate reservoirs and compare them with those developed in siliciclastic rocks. They will be able to identify the influence of carbonate rocks characteristics in karst processes and landforms.

Metode poučevanja in učenja:

- predavanja
- e-učenje
- terenske vaje
- laboratorijske vaje: vzorci kamnin (jedra vrtin in dlančni vzorci), zbruski

Learning and teaching methods:

- Lectures
- e-learning
- Field work
- Laboratory: rocks in cores, hand samples and thin sections

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
• Pisni izpit	40	• Written exam
• Laboratorijske vaje	30	• Laboratory assignments
• Napisan članek/projekt	30	• Written paper/project

Reference nosilca / Lecturer's references:

Nosilka predmeta Doc. dr. Andrea Martín Pérez

1. Alonso-Zarza, A. M., Rodríguez-Berriguete, Á., Martín-Pérez, A., Martín-García, R., Menéndez, I., Mangas-Viñuela, J. 2020: Unravelling calcrete environmental controls in

volcanic islands, Gran Canaria Island, Spain. Palaeogeography, palaeoclimatology, palaeoecology, 554, DOI: [10.1016/j.palaeo.2020.109797](https://doi.org/10.1016/j.palaeo.2020.109797).

2. Huerta, P., Martín-Pérez, A., Martín-García, R., Rodríguez-Berriguete, Á., La Iglesia Fernández, Á., Alonso-Zarza, A. M. 2019: Gypsum speleothems in lava tubes from Lanzarote (Canary Islands) : ion sources and pathways. Sedimentary Geology, 383, 136-147.
3. Huerta, P., Rodríguez-Berriguete, Á., Martín-García, R., Martín-Pérez, A., La Iglesia Fernández, Á., Alonso-Zarza, A.M., 201: The role of climate and aeolian dust input in calcrete formation in volcanic islands (Lanzarote and Fuerteventura, Spain). Palaeogeography, Palaeoclimatology, Palaeoecology, 417, 66-79.
4. Martín-Pérez, A., Košir, A. & Otoničar, B., 2015: Dolomite in speleothems of Snežna Jama, Slovenia: Acta Carsologica, 44, 81-100.
5. Alonso-Zarza, A.M., Meléndez, A., Martín-García, R., Herrero, M.J. & Martín-Pérez, A., 2012: Discriminating between tectonism and climate signatures in palustrine deposits: Lessons from the Miocene of the Teruel Graben, NE Spain: Earth-Science Reviews, 113, 141-160.

Reference ostali izvajalcev:

Izr. prof. dr. Martin Knez

1. Šegina, E., Benac, Č., Rubinić, J., Knez, M. 2018. Morphometric analyses of dolines : the problem of delineation and calculation of basic parameters. Acta carsologica, 47/1, 23-33. DOI: 10.3986/ac.v47i1.4941
2. Čeru, T., Šegina, E., Knez, M., Benac, Č., Gosar, A. 2018. Detecting and characterising unroofed caves by ground penetrating radar. Geomorphology, 303, 524-539. DOI: 10.1016/j.geomorph.2017.11.004.
3. Knez, M., Slabe, T., Urushibara-Yoshino, K. 2017. Lithology, rock relief and karstification of Minamidaito Island (Japan). Acta carsologica, 46/1, 47-62. DOI: 10.3986/ac.v46i1.2022.

Izr. prof. dr. Nadja Zupan Hajna

1. Zupan Hajna, N., Bosák, P., Pruner, P., Mihevc, A., Hercman, H., Horáček, I. 2020. Karst sediments in Slovenia: Plio-Quaternary multi-proxy records. Quaternary international, 546, 4-19. DOI: 10.1016/j.quaint.2019.11.010.
2. Lipar, M., Martín-Pérez, A., Tičar, J., Pavšek, M., Gabrovec, M., Hrvatin, M., Komac, B., Zorn, M., Zupan Hajna, N., Zhao, J., Ferk, M. 2020. Subglacial carbonate deposits as a potential proxy for glacier's existence. The cryosphere discussions. 30 apr. 2020, str. 1-22. DOI: 10.5194/tc-2020-82
3. Zupan Hajna, N., Otoničar, B., Pruner, P., Culiberg, M., Hlaváč, J., Mandić, O., Skála, R., Bosák, P. 2019. Late Pleistocene lacustrine sediments and their relation to red soils in the Northeastern margin of the Dinaric Karst. Acta carsologica, 48/2, 153-171. DOI: 10.3986/ac.v48i2.7080.

Dr. Bojan Otoničar

1. Zupan Hajna, N., Otoničar, B., Pruner, P., Culiberg, M., Hlaváč, J., Mandić, O., Skála, R., Bosák, P. 2019. Late Pleistocene lacustrine sediments and their relation to red soils in the

Northeastern margin of the Dinaric Karst. *Acta carsologica*, 48/2, 153-171. DOI: 10.3986/ac.v48i2.7080.

2. Gabrovšek, F., Knez, M., Kogovšek, J., Mihevc, A., Otoničar, B., Mulec, J., Perne, M., Petrič, M., Pipan, T., Prelovšek, M., Slabe, T., Šebela, S., Ravbar, N., Zupan Hajna, N. 2016. Development challenges in karst regions : sustainable land use planning in the karst of Slovenia. V: Trofimova, E. (ur.), Salomon, J.-N. (ur.). Preserving karst environments and karst caves : karst dynamics, environments, usage and restauration : towards an international karst preservation system.. *Zeitschrift für Geomorphologie, Supplementband*, N. F., 60/2, 293-318. DOI: 10.1127/zfg_suppl/2016/00309.
3. Martín-Pérez, A., Košir, A., Otoničar, B. 2015. Dolomite in speleothems in Snežna jama Cave, Slovenia. *Acta carsologica*, 44/1, 81-100. DOI: 10.3986/ac.v44i1.1039.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	GEOKEMIJA SEDIMENTNIH KARBONATOV
Course title:	GEOCHEMISTRY OF SEDIMENTARY CARBONATES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Modul Modul Paleobiologija in sedimentarna geologija		
Environmental and Regional Studies, doctoral study 3 rd level	Module Module Palaeobiology and Sedimentary geology		

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

DIP07

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	10	20			120	6

Nosilec predmeta / Lecturer:

Doc. dr. Špela Goričan, izr. prof. dr. Aleksander Horvat
(ostali izvajalci: doc. dr. Alenka Eva Črne)

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Vpis v 1. letnik.

Prerequisite:

Inscription to the 1st academic year.

Vsebina:

- Dolgoročni ogljikov cikel.
- Mineralogija, kemija in reakcijska kinetika glavnih karbonatnih faz (kalcit, dolomit, aragonit).
- Sistem CO₂-ogljikova kislina in kemija raztopin.
- Interakcije med karbonatnimi minerali in raztopinami.
- Koprecipitacija in trdne raztopine karbonatnih mineralov.
- Biološko formirani in inducirani karbonatni minerali

Content (Syllabus outline):

- Long-term carbon cycle.
- Mineralogy, chemistry and reaction kinetics of major carbonate phases (calcite, dolomite, aragonite).
- The CO₂-carbonic acid system and solution chemistry.
- Interactions between carbonate minerals and solutions.
- Coprecipitation reactions and solid solutions of carbonate minerals.
- Biologically formed and biologically induced carbonate precipitation.
- The oceanic carbonate system and preservation of deep-sea carbonates.

• Karbonatni sistem v oceanih in akumulacija globokomorskih karbonatnih sedimentov. • Sestava in izvor plitvovodnih karbonatnih sedimentov. • Zgodnja diageneza. • Vpliv podzemnih procesov in metamorfizma. • $\delta^{13}\text{C}$, $\delta^{18}\text{O}$, $^{87}\text{Sr}/^{86}\text{Sr}$, sledne prvine in elementi redkih zemelj (REE): indikatorji paleo-okolja ali/in diageneze. • Kratkoročni ogljikov cikel in vpliv človeka.	• Composition and source of shallow-water carbonate sediments • Early diagenesis. • Burial and metamorphism. • $\delta^{13}\text{C}$, $\delta^{18}\text{O}$, $^{87}\text{Sr}/^{86}\text{Sr}$, trace elements and REE incorporation: paleoenvironmental vs. diagenetic proxies. • Short-term carbon cycle and human impact.
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Temeljni literatura in viri / Readings:

Izbrana poglavja in članki/Selected chapters and papers:

- Morse JW, Mackenzie FT (1990) *Geochemistry of sedimentary carbonates*. Elsevier, Amsterdam.
- Holland H, Turekian K, eds. (2014) *Treatise on Geochemistry*, izbrana poglavja iz **Vol. 9**: Sediments, Diagenesis and Sedimentary Rocks, in **Vol. 7**: Surface and Groundwater, Weathering and Soils.
- Morse JW, Arvidson RS, Luttge A (2007) Calcium carbonate formation and dissolution. *Chemical Reviews* **107**: 342-381.
- Machel HG (2004) Concepts and models of dolomitization: a critical reappraisal. In: Braithwaite CJR, Rizzi G, Darke G (eds) *The Geometry and Petrogenesis of Dolomite Hydrocarbon Reservoirs*, Special Publication **235**. Geological Society, London, 7-63.

Cilji in kompetence:

Namen predmeta je poglobiti znanje o nastanku karbonatnih mineralov in sedimentov v različnih okoljih. Študent/ka bo spoznal in znal uporabiti osnovne fizikalno-kemične zakonitosti, ki vplivajo na nastanek karbonatnih mineralov in sedimentov. Študent/ka bo pridobil/a pregled nad aktualnimi geokemijskimi indikatorji paleokolja in diageneze. Znanje bo znal/a praktično uporabiti pri interpretaciji paleokolja in diageneze recentnih in starejših karbonatov in karbonatnih kamnin.

Objectives and competences:

The purpose of the course is to deepen the knowledge on the occurrence of carbonate minerals and sediments in different environments. Students will learn and know how to use the basic physico-chemical limitations and conditions which affect formation of carbonate minerals and sediments. The students will gain an overview of geochemical proxy indicators currently in use for the reconstruction of past environmental and diagenetic conditions. This knowledge enables interpretation of

paleoenvironment and diagenesis of recent and older carbonates and carbonate rocks.

Predvideni študijski rezultati:

Znanje in razumevanje:
Študent pozna vidike karbonatnih mineralov in njihovih interakcij z vodnimi raztopinami. Loči nastanek primarnih karbonatnih mineralov in sedimentov v različnih okoljih od kasnejših diagenetskih in metamorfnih mineralov. Za interpretacijo paleokolja nastanka karbonatnih kamnin in za ovrednotenje diageneze zna uporabiti številne geokemijske indikatorje. Pri interpretaciji (paleo)okolja in sprememb na Zemljini površini zna opredeliti vlogo globalnega kroženja ogljika.

Intended learning outcomes:

Knowledge and understanding:
The student knows the basic aspects of carbonate minerals, and their interaction with the aqueous solution. He/she differentiates between early carbonate precipitates in different surface environments from later diagenetic and metamorphic overprints. In order to interpret the paleoenvironment of carbonate rock formation and assess the diagenetic overprints, he/she is able to use a wide range of geochemical proxies. When interpreting the (paleo)environment and changes on the Earth's surface he/she is able to define the role of the global carbon cycle.

Metode poučevanja in učenja:

- Predavanja
- e-učenje
- Seminarji
- Praktične vaje

Learning and teaching methods:

- Lectures
- e-learning
- Seminars
- Practical training

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Pisni ali ustni izpit
- Predstavitev izbrane teme

Delež (v %) /
Weight (in %)

Assessment:

Type (examination, oral, coursework, project):

- Written or oral exam
- Presentation of a chosen topic

Reference nosilca / Lecturer's references:

Doc. dr. Špela Goričan

1. Cifer, T., **Goričan, Š.**, Gawlick, H.-J., Auer, M. 2020: Pliensbachian, Early Jurassic radiolarians from Mount Rettenstein in the Northern Calcareous Alps, Austria. Acta Palaeontologica Polonica, 65/1, 167-207.
2. **Goričan, Š.**, O'dogherty, L., Baumgartner, P. O., Carter, E. S., Matsuoka, A. 2018: Mesozoic radiolarian biochronology : current status and future directions. Revue de micropaléontologie, 61/3-4, 165-189.
3. Jach, R., **Goričan, Š.**, Reháková, D., Uchman, A., Iwańczuk, J. 2018: Comment on "Decadal to millennial variations in water column parameters in pelagic marine environments of the Western Tethys (Carpathian realm) during Middle-Late Jurassic : evidence from the

radiolarian record" by M. Båk, K. Båk and M. Michalik : discussion. *Global and planetary change*. str. 1-6. DOI: [10.1016/j.gloplacha.2018.10.009](https://doi.org/10.1016/j.gloplacha.2018.10.009)

4. O'Dogherty, L., Aguado Merlo, R., Baumgartner, P. O., Bill, M., **Goričan, Š.**, Sandoval, J., Sequeiros, .2018: Carbon-isotope stratigraphy and pelagic biofacies of the Middle-Upper Jurassic transition in the Tethys-Central Atlantic connection. *Palaeogeography, palaeoclimatology, palaeoecology*. 507, 129-144.
5. Gawlick, H.-J., Missoni, S., Sudar, M., **Goričan, Š.**, Lein, R., Stanzel, A. I., Jovanović, D. 2017: Open-marine Hallstatt Limestones reworked in the Jurassic Zlatar Mélange (SW Serbia) : a contribution to understanding the orogenic evolution of the Inner Dinarides. *Facies*, 63/4 1-25.

Izr. prof. dr. Aleksander Horvat

1. Tulan E., Sachsenhofer, R. F., Tari, G., Witkowski, J., Tămaş, D. M. , **Horvat, A.**, Tămaş, A. 2020: Hydrocarbon source rock potential and paleoenvironment of lower Miocene diatomites in the Eastern Carpathians Bend Zone (Sibiciu de Sus, Romania). *Geologica Carpathica*, 71.
2. Goričan, Š., Žibret, L., Košir, A., Kukoč, D., **Horvat, A.** 2018: Stratigraphic correlation and structural position of Lower Cretaceous flysch-type deposits in the eastern Southern Alps (NW Slovenia). *International journal of earth sciences*, 107/8, 2933-2953.
3. Moro, A., **Horvat, A.**, Tomić, V., Sremac, J. Bermanec, V. 2018: Facies development and paleoecology of rudists and corals : an example of Campanian transgressive sediments from northern Croatia, northeastern Slovenia, and northwestern Bosnia. *Facies*, 62/19, 18-25. DOI: [10.1007/s10347-016-0471-y](https://doi.org/10.1007/s10347-016-0471-y).
4. Moro, A., Velić, I., Mikuž, V., **Horvat, A.** 2018: Microfacies characteristics of carbonate cobble from Campanian of Slovenj Gradec (Slovenia) : implications for determining the Fleuryana adriatica De Castro, Drobne and Gušić paleoniche and extending the biostratigraphic range in the Tethyan realm. *Mining-Geology-Petroleum Engineering Bull.*, 42, 1-13. DOI: [10.17794/rgn.2018.4.1](https://doi.org/10.17794/rgn.2018.4.1).
5. **Horvat, A.** 2016: *Distephanopsis concavus* Horvat : a revised silicoflagellate species from the Middle Miocene of the Central Paratethys. *Geologija*, 59/2, 233-241. DOI: [10.5474/geologija.2016.014](https://doi.org/10.5474/geologija.2016.014).

Doc. dr. Alenka Eva Črne

1. Joosu, L., Lepland, A., Kirsimäe, k., Romashkin, A.E., Roberts, N.M.W., Martin, A.P. & **Črne, A.E.** 2015. The REE-composition and petrography of apatite in 2Ga Zaonega Formation, Russia: The environmental setting for phosphogenesis. *Chemical Geology*, 395, 88-107.
2. **Črne, A.E.**, Melezhik, V.A., Lepland, A., Fallick, A.E., Prave, A.R. & Brasier, A.T. 2014. Petrography and geochemistry of carbonate rocks of the Zaonega Formation, Russia: documentation of ¹³C-depleted non-primary calcite. *Precambrian Research*, 240, 79-93.
3. Qu, Y., **Črne, A.E.**, Lepland, A., van Zuilen, M. 2012. Methanotrophy in a Paleoproterozoic oil field ecosystem, Zaonega Formation, Karelia, Russia. – *Geobiology*, 10, 467-478.
4. Kump, L. R., Junium, C., Arthur, M. A., Brasier, A. T., Fallick, A. E., Melezhik, V. A., Lepland, A., **Črne, A.E.**, Luo, G. 2011. Isotopic evidence for massive oxidation of organic matter following the great oxidation event. – *Science*, 334 (6063), 1694-1696.

5. **Črne, A.E.**, Weissert, H.J., Goričan, Š., Bernasconi, S.M. 2011. A biocalcification crisis at the Triassic-Jurassic boundary recorded in the Budva Basin (Dinarides, Montenegro). – *Geol. Soc. Amer. Bull.*, 123 (1-2), 40-50.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PARTICIPATIVNO RAZISKOVANJE IN PLANIRANJE
Course title:	PARTICIPATORY RESEARCH AND PLANNING

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR01

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

Doc. dr. David Bole
(ostali izvajalci: doc. dr. Pavel Gantar, doc. dr. Janez Nared)

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- družbena participacija in demokratična legitimnost planiranja
- izhodišča participativnega raziskovanja in planiranja
- akterji v razvojnem procesu
- stopnje participacije
- družbena moč, vpliv, interesi in participacija v planiranju
- konflikt in soglasje v procesih planiranja in usmerjanja regionalnega razvoja
- vloga in pomen družbene participacije v različnih teorijah planiranja: enostavno in celovito racionalno planiranje,

Content (Syllabus outline):

- introduction to participatory research and planning
- public participation and democratic legitimacy of planning
- actors in the development process
- ladder of participation
- social power, influence, interests and participatory planning
- conflict and agreement in planning processes
- the role of participation in various planning theories

planiranje v majhnih korakih, več-nivojsko planiranje, komunikativno planiranje

- metode v participativnem raziskovanju in planiranju
- participativno planiranje v praksi
- družbene pobude in civilna gibanja kot oblike družbene participacije
- odprti problemi sodelovanja prebivalcev pri prostorskem in razvojnem planiranju v Sloveniji

- methods in the participatory research and planning
- participatory planning in the practice
- social initiatives and movements as a for of social participation
- participatory planning in the Slovene legislation

Temeljni literatura in viri / Readings:

- Arnstein, S. R. (1969): A Ladder of Citizen Participation. *Journal of the American Institute of Planners* 35-4. Cambridge.
- Delyser, D., Sui, D. (2014): 'Crossing the qualitative-quantitative chasm III: Enduring methods, open geography, participatory research, and the fourth paradigm', *Progress in Human Geography* 38 (2): 294-307.
- Dicks, B. (2014): 'Participatory community regeneration: a discussion of risks, accountability and crisis in devolved Wales', *Urban Studies* 51 (5): 959-977.
- Flanagan, M. (1997): *Citizen Participation in Planning*. Oxford: Pergamon Press.
- Forester, F. J. (1999): *The deliberative practitioner : encouraging participatory planning processes-* Cambridge MIT.
- Fraser, D. G. E., Dougill, A. J., Mabee, W. E., Reed, M., Mcalpine, P. (2006): 'Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management', *Journal of Environmental Management* 78, 2: 107-208.
- Gantar, P., Kos, D. (1993): Če bo vodnjak, bo tudi bomba. V: O hišah, o mestih, o podeželjih. (Ur. Alenka Bogovič). Ljubljana: KUD France Prešeren. Str. 97-122.
- Israel, B. A., Schulz, A. J., Coombe, C. M., Parker, E. A., Reyes, A. G., Rowe, Z., & Lichtenstein, R. L. (2019): 'Community-based participatory research', *Urban health* 272.
- Kos, D. (2002): *Praktična sociologija za načrtovalce in urejevalce prostora*. Ljubljana: FDV.
- Legacy, C. (2017): 'Is there a crisis of participatory planning?', *Planning Theory* 16(4): 425–442.
- Minkler, N., Wallerstein, N. (2008): 'Introduction to community-based participatory research', in Minkler, N., Wallerstein, N. (eds): *Community-Based Participatory Research for Health: From Process to Outcomes*. John Wiley & Sons, Hoboken, pp. 5-24.
- Pain, R. 2004: 'Social geography: participatory research', *Progress in Human Geography* 28, 2: 652-663.
- Shannon, J., Hankins, K. B., Shelton, T., Bosse, A. J., Scott, D., Block, D., Fischer, H., Eaves, L. E., Jung, J.-K., Robinson, J., Solís, P., Pearsall, H., Rees, A., & Nicolas, A. (2020): 'Community geography: Toward a disciplinary framework', *Progress in Human Geography*: 1-22.

- Wynne-Jones, S., North, P., & Routledge, P. (2015): 'Practising participatory geographies: Potentials, problems and politics', *Area*: 47(3): 218–221.

Cilji in kompetence:

Namen predmeta je seznaniti študente z osnovnimi načeli participativnega raziskovanja in planiranja, pri čemer se bodo študentje usposobili za:

- prepoznavanje ključnih akterjev v planerskem postopku,
- vključevanje deležnikov v raziskovanje in procese odločanja,
- razumeli vzroke individualnega in skupinskega odločanja,
- poznali osnove transdisciplinarnega in na rezultate usmerjenega raziskovanja v geografiji in načrtovanju

Objectives and competences:

The aim of the course is to introduce basic principles of participatory research and planning and thus train the students to:

- identify key actors in the planning process,
- engage stakeholders in the research and decision-making processes,
- understand the triggers of the individual and group decisions,
- know the foundations of the transdisciplinary and result oriented research in geography and planning

Predvideni študijski rezultati:

- poznavanje teorij, konceptov, modelov in metod s področja participativnega raziskovanja in planiranja
- sposobnost opredeljevanja ključnih razvojnih teženj ter navezava le teh na razvojne teorije
- sposobnost prepoznavanja ključnih akterjev ter načinov za njihovo vključevanje v razvojne procese
- identificiranje metodoloških pristopov, s katerimi je možna znanstvena obravnava razvojnih procesov na izbranem območju
- družbeno participacijo postaviti v kontekst družbene moči in vplivanja na odločanje;
- oceniti pomen participacije v različnih teorijah planiranja

Intended learning outcomes:

- knowledge on theories, concepts, models and methods in the field of participatory research and planning
- ability to define key development tendencies and to link them with the planning theories
- knowledge on engaging stakeholders in planning activities
- identification of proper methodological approaches in the participatory research and planning, able to gain representative results
- put social participation in the context of social power and influence upon decision-making
- evaluate the role of participation in various planning theories

Metode poučevanja in učenja:

- Predavanja (v živo in preko spleta)
- seminarji
- e-izobraževanje

Learning and teaching methods:

- Lectures (live and online)
- Seminars
- e-learning

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
• Ustni izpit	100	• Oral exam

Reference nosilca / Lecturer's references:

1. Alfarè, L., Nared, J. 2014: Environmental planning recommendations, Leading a participatory process. Managing cultural heritage sites in Southeastern Europe. Založba ZRC.
2. Bole, D., Šmid Hribar M., Pipan P. 2017: Participatory research in community development: a case study of creating cultural tourism products. AUC Geographica 52-2.
3. Gantar, P., Kos, D. (1993): Če bo vodnjak, bo tudi bomba. In: O hišah, o mestih, o podeželnih. (Ed. Alenka Bogovič). Ljubljana: KUD France Prešeren. pp: 97-122
4. Nared, J. 2014: Environmental planning recommendations, Participatory planning. Managing cultural heritage sites in Southeastern Europe. Založba ZRC.
5. Nared, J., Bole, D. 2020: Participatory research on heritage- and culture-based development: a perspective from South-East Europe. In: Nared, J., Bole, D. (Eds). Participatory research and planning in practice. Cham (Switzerland), Springer. pp: 107-119
6. Nared, J., Bole, D. 2020 (Eds): Participatory research and planning in practice. Cham (Switzerland), Springer, 227 pp.
7. Nared, J., Razpotnik Visković, N., Cremer-Schulte, D., Brozzi, R., Cortines Garcia, F. 2015: Achieving sustainable spatial development in the Alps through participatory planning. Acta geographica Slovenica, 55- 2. Založba ZRC.
8. Razpotnik Visković, N., Nared, J., Urbanc, M. 2008: Pogovor v kavarni: soočenje teorije in prakse. Geografski vestnik, 80-1, Zveza geografskih društev Slovenije.
9. Zumaglini, M., Nared, J., Alfarè, L., Razpotnik Visković, N., Urbanc, M. 2008: Participation process in regional development : DIAMONT's perspective, (Arbeitshefte, 52), (DIAMONT, vol. 6). Europäische Akademie Bozen.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	GOSPODARSKA GEOGRAFIJA
Course title:	ECONOMIC GEOGRAPHY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR02

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

Doc. dr. Jani Kozina
(ostali izvajalci: doc. dr. David Bole, doc. dr. Janez Nared, doc.
dr. Nika Razpotnik Visković, Damjan Kavaš, vabljeni tuji
predavatelji)

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- Pregled temeljnih tradicionalnih in sodobnih konceptov v gospodarski geografiji
- Poglavitni dejavniki konkurenčnosti gospodarstva na različnih prostorskih ravneh
- Znanje, ustvarjalnost in inovativnost v gospodarskem razvoju
- Globalizacija, glokalizacija in digitalizacija gospodarstva

Content (Syllabus outline):

- Overview of the main traditional and modern concepts of economic geography
- The main factors of the competitiveness of the economy at different spatial levels
- Knowledge, creativity and innovation in economic development
- Globalization, glocalisation and digitization of the economy
- Regional innovation strategies (smart specialization)

- Regionalne inovacijske strategije (pametna specializacija)
- Industrija 4.0
- Digitalizacija in njen vpliv na regionalni razvoj (IKT, nove tehnologije, novi poslovni modeli, družbene inovacije)
- Demografski trendi, aktivno staranje in srebrna ekonomija
- Povezanost gospodarstva z zgodovinskim, družbenim, okoljskim in kulturnim razvojem
- Politike spodbujanja gospodarstva na različnih prostorskih ravneh

- Industry 4.0
- The impact of digitalization on regional development (ICT, new technologies, new business models, social innovation)
- Demographic trends, active ageing and silver economy
- Integration of the economy with the historical, social, environmental and cultural development
- Policies to promote the economy at different spatial levels

Temeljni literatura in viri / Readings:

- Rickard, S. J. (2020). Economic Geography, Politics, and Policy. Annual Review of Political Science. 23: 187–202. DOI: 10.1146/annurev-polisci-050718-033649
- Hilpert, U. (2019). Diversities of Innovation. Routledge: London, New York.
- Huggins, R. (ed.), Thompson, P. (ed.) 2017: Handbook of Regions and Competitiveness: Contemporary Theories and Perspectives on Economic Development. Edward Elgar
- Pike, A.; Rodriguez-Pose, A., Tomaney, J. 2017: Local and Regional Development: second edition. Routledge.
- OECD, 2018: Job Creation and Local Economic Development 2018: Preparing for the Future of Work. OECD.
- Capello, R., Lenzi, C. (eds.) (2015). Territorial Patterns of Innovation: An Inquiry on the knowledge economy in European regions. Routledge, London.
- Musterd, S., Kovács, Z. (2013). Place-making and Policies for Competitive Cities. Wiley-Blackwell, Oxford.
- Karlsson, C., Johansson, B., Stough, R. (2013). Entrepreneurial Knowledge, Technology and the Transformation of Regions. Routledge, London.
- Madanipour, A. (2011). Knowledge Economy and the City: Spaces of Knowledge. Routledge, London.
- Wood, A., Roberts, S. (2011). Economic Geography: Places, Networks and Flows. Routledge, London.
- Wixted, B. (2009). Innovation Systems Frontiers: Cluster Networks and Global Value. Springer, Berlin.
- Coe, N. M., Kelly, P. F., Yeung, H., W., C. (2007). Economic Geography: A Contemporary Introduction. Blackwell Publishing, Malden.

Cilji in kompetence:

Namen predmeta je predstaviti kraje, razporeditev in prostorsko organizacijo gospodarskih dejavnosti. Študenti bodo s

Objectives and competences:

The purpose of the course is to present places, the layout and spatial organization of economic activities. Students will acquire

poglobljenim spoznavanjem klasičnih (npr. teorija centralnih krajev, marksistična politična ekonomija) in sodobnih (npr. "nova" ekonomska geografija, industrija 4.0, model četverne vijačnice, srebrna ekonomija, IKT, evolucijska ekonomska geografija) gospodarskih konceptov pridobili znanja in veščine za spodbujanje konkurenčnosti gospodarstva na različnih prostorskih ravneh. Poseben poudarek bo na znanju, ustvarjalnosti in inovativnosti ter družbeni odgovornosti kot temeljnih vidikih sodobnih gospodarstev v razvitem svetu. Hkrati bo poudarek tudi na povezovanju z ostalimi vidiki razvoja, kot so zgodovinski, družbeni, okoljski in kulturni razvoj. Študenti bodo osvojili ustrezna metodološka orodja za iskanje, zbiranje in interpretacijo relevantnih podatkovnih baz, kar bo omogočalo natančno analizo gospodarskega stanja in procesov z mednarodno primerljivimi standardi. Po zaključku pedagoškega procesa bodo študenti usposobljeni za izdelovanje samostojnih ekspertiz s področja gospodarske geografije ter razumevanje in uporabo tovrstnih študij drugih avtorjev za potrebe razvoja na različnih prostorskih ravneh.

knowledge and skills to promote the competitiveness of the economy at different spatial scales by in-depth learning about classical (e.g. central places theory, Marxist political economy) and modern economic concepts (e.g. "new" economic geography, industry 4.0, quadruple helix model, silver economy, ICT, evolutionary economic geography). Particular focus will be on knowledge, creativity, innovation and social responsibility as fundamental aspects of modern economies in the developed world. At the same time it will also focus on integration with other aspects of development, such as historical, social, environmental and cultural development. Students will demonstrate appropriate methodological tools for investigating, collecting and interpreting relevant databases, which will allow a detailed analysis of the economic situation and processes with internationally comparable standards. After the completion of the teaching process, students should be able to make independent expertise in the field of economic geography and the understanding and application of these studies by other authors for development needs at different spatial scales.

Predvideni študijski rezultati:

- Razumevanje tradicionalnih in sodobnih konceptov ter raziskovalnih metod v gospodarski geografiji
- Sposobnost kritičnega vrednotenja gospodarskih stanj in procesov na različnih prostorskih ravneh in iskanja rešitev za gospodarske izzive
- Sposobnost povezovanja aktualnih gospodarskih izzivov s širšim razvojnim in načrtovalskim kontekstom

Intended learning outcomes:

- Understanding of traditional and modern concepts and research methods in economic geography
- Ability to critically assess economic conditions and processes at different spatial scales and to find solutions to economic challenges
- Ability to relate current economic challenges with broad development and planning context

Metode poučevanja in učenja:

Learning and teaching methods:

● Predavanja ● Spletna predavanja ● Spletni tečaji (e.g. MOOC) ● Seminarji	● Lectures ● E-lectures ● Online courses (e.g. MOOC) ● Seminars
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Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
● Ustni izpit ● Seminarska naloga	50	● Oral exam
	50	● Written paper

Reference nosilca / Lecturer's references:

1. Bole, D., Kozina, J., Tiran, J. (2020). The socioeconomic performance of small and medium-sized industrial towns: Slovenian perspectives. *Moravian Geographical Reports*, 28(1), 16-28. DOI: 10.2478/mgr-2020-0002
2. Kozina, J., Clifton, N. (2019). City-region or urban-rural framework: what matters more in understanding the residential location of the creative class? *Acta Geographica Slovenica*, 59(1), 127-143. DOI: 10.3986/AGS.5137
3. Kozina, J., Poljak Istenič, S., Komac, B. (2019). Green creative environments – contribution to sustainable urban and regional development. *Acta Geographica Slovenica*, 59(1), 105-112. DOI: 10.3986/AGS.7030
4. Bole, D., Kozina, J., Tiran, J. (2019). The variety of industrial towns in Slovenia: A typology of their economic performance. *Bulletin of Geography, Socio-Economic Series*, 46, 71-83. DOI: 10.2478/bog-2019-0035
5. Kozina, J., Bole, D. (2018). The impact of territorial policies on the distribution of the creative economy: tracking spatial patterns of innovation in Slovenia. *Hungarian Geographical Bulletin*, 67(3), 259-273. DOI: 10.15201/hungeobull.67.3.4
6. Šmid Hribar, M., Kozina, J., Bole, D., Urbanc, M. (2018). Public goods, common-pool resources, and the commons: The influence of historical legacy on modern perceptions in Slovenia as a transitional society. *Urbani izziv*, 29(1), 96-109. DOI: 10.5379/urbani-izziv-en-2018-29-01-004
7. Kozina, J. (2018). Demographic Characteristics of Creative Workers: Under-activated Development Potentials in Slovenia? *Acta Geographica Slovenica*, 58(2), 111-121. DOI: 10.3986/AGS.4602
8. Nared, J., Bole, D., Breg Valjavec, M., Ciglič, R., Goluža, M., Kozina, J., Razpotnik Visković, N., Repolusk, P., Rus, P., Tiran, J., Černič Istenič, M. (2017). Central settlements in Slovenia in 2016. *Acta Geographica Slovenica*, 57(2), 7-32. DOI: 10.3986/AGS.4606
9. Kozina, J., Bole, D. (2017). Agglomeration of Bohemians Across Different Spatial Scales in Slovenia. In Murzyn-Kupisz, M., Dzialek, J. (eds.) *The Impact of Artists on Contemporary Urban Development in Europe* (pp. 185-204). Cham: Springer International Publishing AG. DOI: 10.1007/978-3-319-53217-2_8

10. Kozina, J., Bole, D. (2017). Creativity at the European Periphery: Spatial Distribution and Developmental Implications in the Ljubljana Region. In Chapain, C., Stryjakiewicz, T. (eds.) *Creative Industries in Europe: Drivers of New Sectoral and Spatial Dynamics* (pp. 227-254). Cham: Springer International Publishing AG. DOI: 10.1007/978-3-319-56497-5_11
11. Kozina, J. (2014). Delavske in bivanjske značilnosti prebivalcev Pomurja [Labour and Residential Characteristics of the Population of Pomurje Region]. In Godina Golija, M. (ed.) *Prekmurje podoba panonske pokrajine* (pp. 155-169). Ljubljana: Založba ZRC.
12. Kozina, J. (2013). Poklicna sestava slovenskih regij [Occupational Structure of Slovenian Regions]. In Nared, J., Perko, D., Razpotnik Visković, N. (eds.) *Regionalni razvoj 4: Nove razvojne perspektive* (pp. 23-34). Ljubljana: Založba ZRC.
13. Kozina, J. (2013). Selitve prebivalcev z ustvarjalnim poklicem v Sloveniji [Migration of Inhabitants in Creative Occupations in Slovenia]. *Ars & Humanitas*, 7(2), 150-162. DOI: 10.4312/ah.7.2.150-162
14. Ravbar, M., Kozina, J. (2012). Geografski pogledi na družbo znanja v Sloveniji [Geographical Perspectives on the Knowledge Society in Slovenia]. Ljubljana: Založba ZRC.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	EVROPSKA REGIONALNA POLITIKA
Course title:	EUROPEAN REGIONAL POLITICS

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR03

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
60					120	6

Nosilec predmeta / Lecturer:

Doc. dr. Janez Nared
(ostali izvajalci: dr. Damjan Kavaš, vabljeni tuji predavatelji)

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- ključni evropski izzivi
- načela evropske strukturne in regionalne politike
- evropske institucije
- zgodovina evropske strukturne in regionalne politike
- platforme za razvojno sodelovanje (TCP)
- evropski strukturni skladi 2014-2020
- programski dokumenti 2014-2020
- evropski strukturni in investicijski skladi 2021-2027
- Evropski sklad za strateške naložbe (»Junckerjev sklad«)

Content (Syllabus outline):

- key European issues
- principles of structural and regional policy of the EU
- European institutions
- history of structural and regional policy in the EC
- European cooperation platforms (TCP)
- European structural funds 2014-2020
- Programming documents 2014-2020
- European Structural and Investment Funds 2021-2027
- European Fund for Strategic Investments (»Juncker Fund«)

- Evropski zeleni dogovor
- Evropski sklad za okrevanje
- oblikovanje evropskih politik
- evropska zakonodaja
- povezovanje
- makroregije in makroregionalne strategije

- EU Green Deal
- EU Recovery Fund
- policy-making at European level
- European legislation
- European macro-regions and macro-regional strategies

Temeljni literatura in viri / Readings:

- Barnes, P. M., Hoerber, T. C. (ed.) 2015: Sustainable Development and Governance in Europe. The Evolution of the Discourse on Sustainability. Routledge.
- Bachtler, J., Begg, I., Charles, D., Polverari, L. 2016: EU Cohesion Policy in Practice: What Does it Achieve? Rowman & Littlefield Publishers.
- Piattoni, S. (ed.), Polverari, L. (ed.) 2016: Handbook on Cohesion Policy in the EU. Edward Elgar.
- Kyriakou, D., Palazuelos-Martínez, M., Periañez-Forte, I., Rainoldi, A. (ed.) 2016: Governing Smart Specialisation. Routledge.
- McCann, P., Varga, A. (ed.) 2016: Place-based Economic Development and the New EU Cohesion Policy. Routledge.
- Cooke, P. 2014: Re-framing Regional Development. Evolution, Innovation and Transition. Routledge.

Cilji in kompetence:

Namen predmeta je študente podrobno seznaniti z evropsko strukturno politiko, njenimi načeli, mehanizmi delovanja, z oblikami teritorialnega sodelovanja ter skladi, ki podpirajo razvoj v Evropski uniji. Nadalje se bodo študenti seznanili z zakonodajnim sistemom evropske unije, kako delujejo institucije in na kakšen način se evropske politike prenašajo na nižje prostorske ravni.

Objectives and competences:

The aim of the course is to acquaint the students with the European structural policy, its key principles, mechanisms, the forms of territorial cooperation, and funds that support development at European level. The students will get knowledge on the policy-making and European legislative, its institutions, and how the policies are transferred to lower territorial levels, e. g. countries and regions.

Predvideni študijski rezultati:

Intended learning outcomes:

- poznavanje ključnih razvojnih izzivov Evropske unije
- poznavanje institucij, mehanizmov, zakonodajne poti in virov financiranja
- sposobnost vzpostavljanja konceptualnih okvirjev evropske strukturne politike v navezavi na razvojne teorije in modele
- oblikovanje razvojnih konceptov z vidika obstoječe evropske zakonodaje

- knowledge on key development issues of the European Union
- knowledge on European institutions, mechanisms, principles, decision-making and financing
- ability to build conceptual frameworks/models of the European structural policy in relation to development theories and models
- shaping the development concepts in the viewpoint of the European legislation

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- e-izobraževanje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:

- Način (pisni izpit, ustno izpraševanje, naloge, projekt)
- Ustni izpit
 - Seminarjska naloga

Delež (v %) /
Weight (in %)

90
10

Assessment:

- Type (examination, oral, coursework, project):
- Oral exam
 - Written paper

Reference nosilca / Lecturer's references:

1. Nared, J., Bole, D., Razpotnik Visković, N., Tiran, J. 2020: Slovenian economy. *The geography of Slovenia : small but diverse*, Cham: Springer.
2. Nared, J. 2020: Regional development in Slovenia. *The geography of Slovenia : small but diverse*. Cham: Springer.
3. Rus, P., Nared, J., Bojnec, Š. 2018: Forms, areas, and spatial characteristics of intermunicipal cooperation in the Ljubljana urban region. *Acta geographica Slovenica* 58-2, Ljubljana.
4. Miklavčič, T., Nared, J. 2009: Vloga transnacionalnih programov pri doseganju razvojnih ciljev Slovenije. *Razvojni izzivi Slovenije, Regionalni razvoj 2*. Ljubljana: Založba ZRC.
5. Nared, J. (ur.), Razpotnik Visković, N. (ur.) 2012: Moving people : towards sustainable mobility in European metropolitan regions. Potsdam: Joint Spatial Planning Department Berlin-Brandenburg.
6. Nared, J. 2003: Legislation in the field of regional policy in Slovenia and an analysis of its spatial impact = Zakonodaja s področja regionalne politike v Sloveniji in analiza njenih učinkov v prostoru. *Acta geographica Slovenica*, 43-1.
7. Nared, J. 2007: Prostorski vplivi slovenske regionalne politike, (Geografija Slovenije, 16). Založba ZRC.
8. Nared, J. 2009: Regional policy in Slovenia. *Regions* 276, Seaford.

9. Nared, J., Kavaš, D. 2009: Spremljanje in vrednotenje regionalne politike v Sloveniji, (Georitem, 10). Ljubljana: Založba ZRC.
10. Nared, J., Ravbar, M. 2003: Starting points for the monitoring and evaluation of regional policy in Slovenia = Izhodišča za spremljanje in vrednotenje regionalne politike v Sloveniji. Acta geographica Slovenica, 43-1.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	SODOBNI DEMOGRAFSKI PROCESI
Course title:	MODERN DEMOGRAPHIC PROCESSES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR04

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

Doc. dr. Nika Razpotnik Visković

**Jeziki /
Languages:**

**Predavanja /
Lectures:**

slovenščina, angleščina / Slovene, English

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisites:

Second-cycle Bologna degree in the relevant track or a university (level VII) degree

Vsebina:

- pregled sodobnih demografskih procesov in spreminjanja strukture prebivalstva
- posledice demografskih sprememb na regionalno gospodarstvo, sestavo delovne sile in človeški kapital
- staranje prebivalstva in medgeneracijske razlike
- odgovor regionalnih razvojnih politik in strategij na demografske spremembe (prometna in ostala infrastruktura, oskrba z energijo, oskrba starejših...)

Content (Syllabus outline):

- Overview of modern demographic processes and changes in the population structure
- Impacts of demographic changes on the regional economy, workforce structure, and human capital
- Aging of the population and intergenerational differences
- Response of regional development policies and strategies to demographic changes (transport and other infrastructure, energy supply, care for the elderly, etc.)

Temeljni literatura in viri / Readings:

- Poston, D. L., Bouvier, L. F. 2013: Population and society : an introduction to demography. Cambridge University Press. New York
- Malačič, J. 2006: Demografija : teorija, analiza, metode in modeli. Ekonomska fakulteta, Ljubljana.
- Regionalni razvoj 7: Demografske spremembe in regionalni razvoj 2019. Založba ZRC. Ljubljana.
- izbor aktualnih člankov s področja predmeta / selection of current articles in the subject's field

Cilji in kompetence:

Namen predmeta je študentom predstaviti sodobne demografske procese, opredeliti njihove vzroke oz. mehanizme ter jih seznaniti, kako vplivajo na gospodarski razvoj, blaginjo, razvoj storitev in medgeneracijskega sodelovanja ter spremembe v odnosu med mestnimi in podeželskimi območji.

Osnovni koncepti demografskih sprememb bodo predstavljeni na dveh ravneh:

- na globalni ravni (zaprt sistem), ki bo služila za študij osnovnih konceptov demografskega razvoja in demografskega prehoda;
- na regionalni ravni (odprt sistem), ki bo zaradi prepletanja naravnega in selitvenega demografskega gibanja zahtevala še kompleksnejšo obravnavo procesov.

V okviru predmeta se bodo študentje seznanili tudi z demografskimi podatkovnim zbirkami in projekcijami ter njihovo uporabno vrednostjo za potrebe regionalnega načrtovanja. Pomemben poudarek bo namenjen vprašanju staranja prebivalstva in iskanju rešitev za s staranjem povezanimi problemi (srebrna ekonomija, aktivno staranje).

Objectives and competences:

The aim of this course is to present modern demographic processes to students, define their causes or mechanisms, and show how they affect economic development, prosperity, the development of services and intergenerational cooperation, and changes in the relationship between urban and rural areas.

The basic concepts of demographic changes will be presented at two levels:

- The global level (a closed system), which will be used to study the basic concepts of demographic development and demographic shifts;
- The regional level (an open system), which, due to the interconnection of natural and migration-based demographic trends, will demand even more complex coverage of the processes.

Students will also become familiar with demographic databases and projections, and their applicability in regional planning. Particular attention will be devoted to the aging population, and related problems, including the silver economy and active aging.

Predvideni študijski rezultati:

Intended learning outcomes:

• Poznavanje modernih raziskovalnih področij na področju demografije. • Poznavanje sodobnih demografskih procesov in trendov, od splošnih (globalnih) gibanj do regionalnih in lokalnih posebnosti, katerih poznavanje je nujno za učinkovito spodbujanje regionalnega razvoja. • Sposobnost osnovne obdelave in razumevanja demografskih podatkov in interpretacije demografskih projekcij. • Razumevanje razmerja med prebivalstvom in viri: prebivalstvo kot uporabnik virov / prebivalstvo kot vir.	• Familiarization with modern demographic research areas. • Familiarization with modern demographic processes and trends, from general (global) trends to regional and local special features, which one must know in order to promote regional development effectively. • Basic ability to process and understand demographic data and interpret demographic projections. • Understanding the relationship between the population and resources: the population as a resource user / the population as a resource.
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Metode poučevanja in učenja:

• Predavanja • Seminarji • e-izobraževanje
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Learning and teaching methods:

• Lectures • Seminars • e-learning
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Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Assessment:
• Izpit • Seminarska naloga	90 10	Type (examination, oral, coursework, project): • Exam • Written paper

Reference nosilca / Lecturer's references:

1. Zorn, M., Razpotnik Visković, N., Repolusk, P., Ferk, M. 2013: Prostorski in regionalni razvoj Sredozemlja - enotni pristop in izbrana orodja. Georitem 22. Založba ZRC SAZU. Ljubljana. 2. Razpotnik Visković, N. 2013: Vloga polkmetij v preobrazbi slovenskih obmestij. Georitem 21. Založba ZRC. Ljubljana. 3. Nared, J., Erhartić, B., Razpotnik Visković, N. 2013: Including development topics in a cultural heritage management plan: mercury heritage in Idrija. Acta geographica Slovenica 52-2. 4. Razpotnik Visković, N., Seručnik, M. 2013: Ugled kmečkega poklica in polkmetov v slovenski družbi po drugi svetovni vojni. Geografski vestnik 85-1. 5. Gabrovec, M., Razpotnik Visković, N. 2018: Dostopnost do javnega potniškega prometa kot pogoj za socialno vključenost dijakov. Geografski vestnik 90-2. 6. Nared, J., Razpotnik Visković, N. 2016: Somestja v Sloveniji. Geografski vestnik 88-2.
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UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PROSTORSKA SOCIOLOGIJA
Course title:	SPATIAL SOCIOLOGY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR05

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

Doc. dr. Pavel Gantar

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- Disciplinarni okvir in izhodišča preučevanja družbeno prostorskih razmerij in procesov: dosedanje raziskovanje, teoretske in metodološke usmeritve;
- Družbeni značaj, pomen in funkcije prostora;
- Teritorialnost kot element družbenega delovanja in konstituiranja družbe;
- Lokacija in dostopnost v prostoru.
- Fizična in časovno prostorska distanca, prostor kot prizorišče, spreminjajoči se pomen teritorialnih skupnosti in

Content (Syllabus outline):

- Disciplinary frameworks and approaches to the study of the socio spatial relations and processes: brief overview of the different theoretical and methodological orientations.
- Social character, meaning and the social functions of the (physical) space.
- Sociological aspects of the location and accessibility in the space.
- Physical and time-space distance; space as scene. changing importance of the territorial communities and territorial

teritorialnih identitet, hierarhično in/ali omrežno povezovanje v prostoru;

- Razvoj informacijskih in komunikacijskih tehnologij in njihov vpliv na prostorsko družbenih odnosov, časovno-prostorsko zgoščevanje, lokalno-globalna konvergenca, od »prostora krajev« k »prostoru tokov«.
- Fizični in virtualni prostor;
- Problemi družbeno prostorskega razvoja v Sloveniji v kontekstu njenega vključevanja v širše evropske povezave.

identities. hierarchical or networked relations in the space.

- The development of the information and communication technologies and their impact on the spatiality of the social relations; time-space compression, local-global convergence; from the "space of places" to the "space of flows",
- Physical and virtual space.
- Problems of socio spatial and regional development in Slovenia within the context of European integration.

Temeljni literatura in viri / Readings:

- Löw, M. 2016: The Sociology of Space. Materiality, Social Structures, and Action. Palgrave Macmillan, New York.
- Gottdiener, M., Hutchinson, R. (2006): The New Urban Sociology. Boulder: Westview Press.
- Tonkiss, F.: Space, the City and Social Theory. Social Relations and Urban Forms. Cambridge: Polity Press.
- Benko, G., Strohnayer, U. (Eds.)(1997):Space & Social Theory. Interpreting Modernity and Postmodernity. Oxford: Blackwell.
- Dickens, P. (2000) Society, Space and the Biotic Level: An Urban and Rural Sociology for the New Millennium. *Sociology*. Vol. 34, No. 1,pp. 147–164.
- Löw, M. (2008): The Constitution of Space The Structuration of Spaces Through the Simultaneity of Effect and Perception. *European Journal of Social Theory* 11(1): 25–49.
- Löw, M. (2001): Raumsoziologie. Frankfurt am Main: Suhrkamp.
- Gantar, P. (2014): Mesta v perspektivi sociološkega raziskovanja globalizacije. Teorija in praksa, Letnik LI, posebna številka. 193-220.

Cilji in kompetence:

Študentje se bodo seznanili z osnovnimi teoretskimi in konceptualnimi izhodišči sociološkega proučevanja prostora. Kako družbeni procesi vplivajo na oblikovanje prostora in kako se skozi različne prostorske ureditve izražajo družbene razmere in odnosi. Spoznali bodo kako se spreminja vloga in pomen prostora v teku družbenih transformacij.

Objectives and competences:

Students will learn basic theoretical and conceptual approaches to the sociological study of physical space. How social processes impact the spatial formations and how different spatial constellations affect social relations. They will learn the changing role and the meaning of space in the course of societal development.

Predvideni študijski rezultati:

Intended learning outcomes:

- Študentje bodo znali umestiti sociološka spoznanja o prostoru v interdisciplinarni kontekst regionalnih študij in planiranja;
- Pridobili bodo znanja o družbeni pogojenosti prostorskega razvoja in vlogi različnih družbenih akterjev v procesu produkcije prostora.
- Seznanili se bodo z metodami in tehnikami sociološkega raziskovanja prostora.

- Students will be able to integrate sociological knowledge on physical space in the interdisciplinary context of the regional studies and planning.
- They will acquire the knowledge on social determinants of spatial development and on the role of different social actors in the processes of space production.
- They will learn methods and techniques of the sociological research of the physical space.

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- e-izobraževanje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Ustni izpit	100	Oral exam
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Reference nosilca / Lecturer's references:

1. Gantar, P. (1993): Sociološka kritika teorij planiranja. Ljubljana FDV.
2. Gantar, Pavel (2007): *Prostorsko planiranje in javni interesi v pluralistični družbi* Geodetski vestnik, letn. 51, št. 2, str. 246-254.
3. Gantar, P. (2014): *Mesta v perspektivi sociološkega raziskovanja globalizacije*. Teorija in praksa, Letnik LI, posebna številka. 193-220.
4. Gantar, Pavel (2002): Tranzicija, identitete in urbani razvoj Ljubljane. V: KOS, Drago (ur.), Sociološke podobe Ljubljane. (Knjižna zbirka Teorija in praksa). ISBN 961-235-112-0 Ljubljana: Fakulteta za družbene vede, str. 43-60.
5. Gantar, P. (2016): Urbana (prostorska) sociologija : identiteta in preseganja disciplinarnih okvirov. V: MLINAR, Zdravko (ur.). Kakšna sociologija? Za kakšno družbo?, (Prispevki in izzivi sociologije na Slovenskem, 1). Ljubljana: Fakulteta za družbene vede: Slovenska akademija znanosti in umetnosti, str. 166-172.
6. Gantar, P. (2016): Sociološka spoznanja v okoljski, prostorski in v informacijski politiki : med akademsko sfero in profesionalno politiko. V: MLINAR, Zdravko (ur.). Kakšna sociologija? Za kakšno družbo?, (Prispevki in izzivi sociologije na Slovenskem, 1). Ljubljana: Fakulteta za družbene vede: Slovenska akademija znanosti in umetnosti. 2016.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	STRATEŠKO PROMETNO NAČRTOVANJE
Course title:	STRATEGIC TRANSPORT PLANNING

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR06

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

Doc. dr. Matej Gabrovec

**Jeziki /
Languages:**

**Predavanja /
Lectures:**

slovenščina, angleščina / Slovene, English

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant track or a university (level VII) degree

Vsebina:

- Prometni tokovi in prostorsko načrtovanje
- Promet in regionalni razvoj
- Dnevna mobilnosti in potovalne navade
- Značilnosti mobilnosti v Sloveniji primerjalno z ostalimi evropskimi državami
- Prometna raba tal
- Družbene razsežnosti trajnostnih načinov prevoza (hoja, kolesarjenje, javni potniški promet)

Content (Syllabus outline):

- Transport flows and spatial planning
- Transport and regional development
- Daily mobility and travel behaviour
- Characteristics of mobility in Slovenia in comparison with other European countries
- Transport land use
- Social dimension of sustainable modes of transport (walking, cycling, public transport)
- Public transport planning
- Sustainable urban mobility plans
- Measurement of transport accessibility

- Načrtovanje javnega potniškega prometa
- Celostne prometne strategije
- Merjenje prometne dostopnosti
- Načrtovanje prometne dostopnosti v podporo trajnostnemu regionalnemu razvoju: povečevanje konkurenčnosti, socialne vključenosti in okoljske vzdržnosti
- Mobilnostno načrtovanje in upravljanje
- Mobilnost kot storitev.

- Planning transport accessibility to support sustainable regional development: increasing competitiveness, social inclusion and environmental sustainability
- Mobility planning and management
- Mobility as a service.

Temeljni literatura in viri / Readings:

- Batty, P., Palacin, R., Gonzales-Gil, A. 2015: Challenges and opportunities in developing urban modal shift. *Travel Behaviour and Society*, 2 (2015): 109-123.
- Gabrovec, Matej, Bole, David. Dnevna mobilnost v Sloveniji, (Georitem, 11). Ljubljana: Založba ZRC, 2009. 102 pp.
- Guidelines. Developing and Implementing a Sustainable Urban Mobility Plan. European Platform on Sustainable Urban Mobility Plans, 2014. URL: http://www.eltis.org/sites/eltis/files/sump_guidelines_en.pdf.
- Knowles, R., Shaw, J., Docherty, I. 2008: *Transport Geographies: Mobilities, Flows and Spaces*. Malden, Oxford, Carlton: Blackwell, 293 p.
- Levinson, D. M., Krizek, K. (eds.) 2005. *Access to Destinations*. Elsevier, Amsterdam.
- Saelens, B. E., Sallis, J. F., Lawrence, L. D. 2003. Environmental correlates of walking and cycling: Findings from the transportation, urban design, and planning literatures. *Annals of Behavioral Medicine* 25, 2, 80–91.
- Bissel, D. 2018: *Transit Life: How Commuting Is Transforming Our Cities*. The MIT Press, Cambridge, London.
- Knowles, R. (ed) 2019: *Transit Oriented Development and Sustainable Cities*. Elgar Publishing, Cheltenham.
- Elena Alyavina, Alexandros Nikitas, Eric Tchouamou Njoya 2020: Mobility as a service and sustainable travel behaviour: A thematic analysis study. *Transportation Research Part F* 73 362–381.

Cilji in kompetence:

Študent je sposoben umestiti prometne tokove in njihove značilnosti v širši družbeno ekonomski in prostorski kontekst. Razume pomen prometne dostopnosti in mobilnosti za ekonomski razvoj in spozna eksterne stroške prometa. Študent spozna pomen trajnostnih načinov prevoza za kakovost življenja v mestih se seznani s temeljnimi

Objectives and competences:

The student is able to incorporate transport flows and their characteristics into a broader socio-economic and spatial context. The student understands the importance of transport accessibility and mobility for economic development and recognizes the external costs of transport. The student learns about the importance of sustainable modes for

pristopi za modeliranje dostopnosti do javnega potniškega prometa in analizo primernosti mestnega prostora za hojo in kolesarjenje. Seznani se s pomenom celostnih prometnih strategij in procesom njihove izdelave.

Študent se seznani s konceptom mobilnostnega upravljanja in pripravo mobilnostnih načrtov za posamezne organizacije, mesta oziroma regije.

the quality of life in cities and is familiar with the basic approaches for modelling accessibility to public transport and analysis of the appropriateness of urban space for walking and cycling. The student learns about the importance of sustainable urban mobility plans and the process of their production.

The student gets acquainted with the concept of mobility management and preparation of mobility plans of individual organizations, cities or regions.

Predvideni študijski rezultati:

- Celostno razumevanje prometnega sistema
- Razumevanje pomena trajnostnih prevoznih načinov
- Sposobnost integracije prometnega in prostorskega strateškega načrtovanja
- Sposobnost vključevanja trajnostnih prometnih vsebin v regionalno načrtovanje
- Sposobnost priprave, izvajanja, spremljanja in vrednotenja načrtov mobilnostnega upravljanja

Intended learning outcomes:

- Comprehensive understanding of the transport system
- Understanding of the importance of sustainable transport modes
- Capability to integrate transport and spatial strategic planning
- Capability to integrate sustainable transport facilities in regional planning
- Capability to prepare, implement, monitor and evaluate mobility management plans

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- e-izobraževanje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Ustni izpit
- Seminarska naloga

Delež (v %) /
Weight (in %)

50
50

Assessment:

Type (examination, oral, coursework, project):

- Oral exam
- Written paper

Reference nosilca / Lecturer's references:

1. GABROVEC, Matej, LEP, Marjan, BOLE, David. Analysis of commuter responses to extensive changes in the supply of public transport - a case study of Dol pri Ljubljani, Slovenia. *Slovak journal of civil engineering*, ISSN 1210-3896, 2007, pp. 19-23.
2. GABROVEC, Matej, LEP, Marjan, MESAREC, Beno. Odziv prebivalcev mestne občine Murska Sobota na izboljšave v javnem potniškem prometu. V: Pomurje, trajnostni regionalni razvoj

- ob reki Muri, 20. zborovanje slovenskih geografov, Ljutomer - Murska Sobota, 26.-28. marec 2009. KIKEC, Tatjana (ed). *Pomurje : trajnostni regionalni razvoj ob reki Muri : zbornik*. 1. izd. Ljubljana: Zveza geografov Slovenije; Murska Sobota: Društvo geografov Pomurja, 2009, pp. 395-407.
3. GABROVEC, Matej, RAZPOTNIK VISKOVIĆ, Nika. Ustreznost omrežja javnega potniškega prometa v Ljubljanski urbani regiji z vidika razpršenosti poselitve. *Geografski vestnik*, ISSN 0350-3895, 2012, 84, 2, pp. 63-72,
 4. BOLE, David, GABROVEC, Matej, NARED, Janez, RAZPOTNIK VISKOVIĆ, Nika . Integrated planning of public passenger transport between the city and the region: the case of Ljubljana = Celostno načrtovanje javnega potniškega prometa med mestom in regijo na primeru Ljubljane. *Acta geographica Slovenica*, ISSN 1581-6613, 2012, 52, no. 1, pp. 141-163.
 5. BOLE, D., GABROVEC, M. (2014). Geography of daily mobilities in post-socialist European countries: evidence from Slovenia. In: Burrell, K., Hörschmann, K. (Eds). *Mobilities in socialist and post-socialist states: societies on the move*. Basingstoke: Palgrave Macmillan, pp. 217-239.
 6. GABROVEC, Matej. Open borders with uncoordinated public transport : the case of Slovenian-Italian border. *European Journal of Geography*, ISSN 1792-1341, Dec. 2013, vol. 4, no. 4, pp. 78-87,
 7. GABROVEC, M., RAZPOTNIK VISKOVIĆ N. Dostopnost do javnega potniškega prometa kot pogoj za socialno vključenost dijakov. *Geografski vestnik* 2018, 90, 2, pp. 109-120.
 8. ZAJC, Peter, GABROVEC, Matej, PIPAN, Primož, RUPREHT, Aleš. Čezmejna dnevna mobilnost v koroški regiji. In: *Demografske spremembe in regionalni razvoj*, (Regionalni razvoj, ISSN 1855-5780, 7). Ljubljana: Založba ZRC. 2019, pp. 223-235.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	PROSTORSKO NAČRTOVANJE
Course title:	SPATIAL PLANNING

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR07

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

Doc. dr. Nika Razpotnik Visković

**Jeziki /
Languages:**

**Predavanja /
Lectures:**

slovenščina, angleščina / Slovene, English

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant track or a university (level VII) degree

Vsebina:

- teorija, modeli in metodologija prostorskega načrtovanja
- zgodovina prostorskega planiranja
- koncepti prostorskega razvoja
- zakonodaja s področja prostorskega načrtovanja
- akterji v prostorskem razvoju in njihovo medsebojno dopolnjevanje
- konflikti v rabi prostora
- raba tal
- strateško prostorsko načrtovanje in umeščanje v prostor

Content (Syllabus outline):

- theory, models and methodology of spatial planning
- history of spatial planning
- concepts of spatial planning
- legislation on spatial planning
- actors in spatial development and their interrelatedness
- conflicts in the land use
- land use
- strategic spatial planning and zoning

Temeljni literatura in viri / Readings:

- Haughton, G., 2010: The new spatial planning : territorial management with soft spaces and fuzzy boundaries. Routledge.
- Ward, V. S. 2004: Planning and Urban Change. Sage.
- Nared, J., Hudoklin, J., Kavaš, D., Zavodnik Lamovšek, A. 2019: Povezovanje prostorskega in razvojnega načrtovanja na regionalni ravni v Sloveniji. Georitem 29. Ljubljana. (poglavji 4 in 5)
- izbor aktualnih člankov s področja predmeta / selection of current articles in the subject's field

Cilji in kompetence:

Namen predmeta je seznanitev študentov s temeljnimi zakonitostmi in teorijami prostorskega razvoja, pri čemer je bistveni poudarek na prepoznavanju akterjev in gonilnih sil prostorskih sprememb. Študenti bodo osvojili različne teoretske in konceptualne poglede na prostor in njegovo urejanje, pri čemer bodo v ospredju celostno prostorsko načrtovanje in trajnostni prostorski razvoj.

Objectives and competences:

The aim of the course is to introduce basic characteristics and theories of spatial planning, focusing on identification of actors and driving forces of spatial development. The students will be acquainted with theoretical and conceptual aspects of spatial planning, where integral planning and sustainable spatial development will be in the forefront.

Predvideni študijski rezultati:

- poznavanje teorij, konceptov, modelov in metod s področja prostorskega načrtovanja
- sposobnost opredeljevanja ključnih prostorskih teženj ter navezava le teh na razvojne teorije
- sposobnost prepoznavanja ključnih akterjev ter načinov za njihovo vključevanje v razvojne procese
- identificiranje metodoloških pristopov, s katerimi je možna znanstvena obravnava prostorskih procesov na izbranem območju

Intended learning outcomes:

- knowledge on theories, concepts, models and methods in the field of spatial planning
- capacity to recognize key spatial processes and to interlink them to spatial-planning theories
- capacity to recognise key actors of spatial development and to engage them properly into the planning processes
- identification of methodological approaches, enabling high level research on spatial development of a certain area

Metode poučevanja in učenja:

- Predavanja
- Seminar
- e-izobraževanje

Learning and teaching methods:

- Lectures
- Seminar
- e-learning

Načini ocenjevanja:

Weight (in %)

Assessment:

• Ustni izpit	100	• Oral exam
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Reference nosilca / Lecturer's references:

1. Razpotnik Visković, N., Komac, B. 2018: Agriculture in modern landscapes : a factor hindering or facilitating development? Acta geographica Slovenica 58-1.
2. Razpotnik Visković, N. 2017: Spatial constraints of Slovenian farms : what does urbanization have to do with it? European Countryside 9-2.
3. Razpotnik Visković, N., Pipan, P., Gantar, D., Šuklje Erjavec, I. Prostorsko umeščanje in širitve kmetij v Sloveniji : zakonodajni okvir in izkušnje slovenskih občin. Geografski vestnik 89-1.
4. Nared, J., Razpotnik Visković, N. (ur.) 2012: Moving people : towards sustainable mobility in European metropolitan regions. Potsdam.
5. Nared, J., Razpotnik Visković, N., Cremer-Schulte, D., Brozzi, R., Cortines Garcia, F. 2015: Achieving sustainable spatial development in the Alps through participatory planning. Acta geographica Slovenica, Založba ZRC. Ljubljana.
6. Nared, J., Razpotnik Visković, N. 2015: Mednarodna razsežnost prostorskega razvoja Slovenije : primer Alp. Regionalni razvoj 5. Založba ZRC. Ljubljana.
7. Razpotnik, N., Urbanc, M., Nared, J. 2009: Prostorska in razvojna vprašanja Alp. Georitem 12. Založba ZRC. Ljubljana.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	IZBRANA POGLAVJA IZ RAZVOJA PODEŽELJA
Course title:	SELECTED TOPICS IN RURAL DEVELOPMENT

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR08

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

doc. dr. Nika Razpotnik Visković
(ostali izvajalci: doc. dr. Drago Kladnik)

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustreznosti smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant track or a university (level VII) degree

Vsebina:

- temeljni koncepti razmejitve med podeželjem in mestom, ruralni-urbani kontinuum
- sodobni procesi socialne, ekonomske in prostorske preobrazbe podeželja ter njegovih funkcij
- eksogeni in endogeni koncept razvoja podeželja
- ruralni sistemi
- raba tal kot kazalnik procesov na podeželju
- oskrba in storitve na podeželju

Content (Syllabus outline):

- Basic concepts of rural/urban divisions, the rural-urban continuum
- Modern processes of social, economic, and spatial transformation of the countryside and its functions
- Exogenous and endogenous concepts of rural development
- Rural systems
- Land use as an indicator of rural processes
- Rural supply and services
- Natural and cultural heritage development potential for sustainable rural development

- razvojni potencial naravne in kulturne dediščine za trajnostni razvoj podeželja
- javno in skupno dobro v kulturni pokrajini

- Public and common good in a cultural landscape

Temeljni literatura in viri / Readings:

- Urbanc, M. 2002: Kulturne pokrajine v Sloveniji. Geografija Slovenije 5. Ljubljana.
- Potočnik Slavič, I. 2010: Endogeni razvojni potenciali slovenskega podeželja. GeograFF 7. Ljubljana.
- Petek, F. 2005: Spremembe rabe tal v slovenskem alpskem svetu. Geografija Slovenije 11. Založba ZRC SAZU, Ljubljana.
- Gabrovec, M., Kladnik, D. 1997: Nekaj novih vidikov rabe tal v Sloveniji. Geografski zbornik 37. Ljubljana, str. 7–64.
- Logar, E. 2019: Primerjalna analiza učinkov druženja in sodelovanja v prostovoljnih gasilskih društvih na primerih podeželskih skupnosti z Gorenjske in Sauerlanda. Geografski vestnik 91-2.
- izbor aktualnih člankov s področja predmeta / selection of current articles in the subject's field

Cilji in kompetence:

Namen predmeta je predstaviti proces preobrazbe podeželja, njegovo funkcijsko-gospodarsko diverzifikacijo in temeljne koncepte razvoja podeželja. Poseben poudarek bo namenjen razumevanju spreminjajočega odnosa med podeželskimi in mestnimi območji, spodbujanju obojestranskih povezav za doseganje večje prostorske kohezije ter preprečevanju odliva človeškega in socialnega kapitala iz podeželskih območij. Predstavljena bo spremenjena demografska slika podeželja ter nove zahteve glede dostopnosti storitev in oskrbe. Študentje se bodo natančneje seznanili z značilnostmi podeželske kulturne pokrajine, procesi, ki so jo preoblikovali ter javnim in skupnim dobrim v njej. Predstavljena bodo tudi osnovna izhodišča trajnostnega upravljanja z naravnimi viri ter kulturno dediščino na podeželju.

Objectives and competences:

The aim of this course is to present the process of rural transformation, the functional and economic diversification of the countryside, and the basic concepts of rural development. Special emphasis will be on understanding the changing relationship between urban and rural areas, promoting mutual connections in order to achieve greater cohesion, and preventing the outflow of human and social capital from rural areas. The altered demographic structure of the countryside will be presented in addition to new demands concerning the accessibility of services and supply. Students will familiarize themselves in detail with the characteristics of the rural cultural landscape, the processes that have transformed it, and the public and common good in it. In addition, the basic premises of sustainable management of natural resources and cultural heritage in the countryside will be presented.

Predvideni študijski rezultati:

Intended learning outcomes:

- prepoznavanje temeljnih procesov socialne, ekonomske in prostorske preobrazbe podeželja
- prepoznavanje razvojnih potencialov podeželskih območij
- upoštevanje ekonomskega, socialnega in prostorskega vidika dostopnosti storitev in (osnovne) oskrbe na podeželskih območjih ter iskanje inovativnih možnosti za njihovo zagotavljanje v okviru regionalnega načrtovanja
- sposobnost usklajevanja varovalnih in razvojnih ukrepov trajnostnega upravljanja kulturnih pokrajin

- Familiarization with the basic processes of social, economic, and spatial transformation of the countryside
- Ability to identify the development potentials of rural areas
- Taking into account the economic, social, and spatial aspects of service and (basic) supply accessibility in rural areas, and seeking innovative options for their provision as part of regional planning
- Ability to harmonize protective and developmental measures in sustainable management of cultural landscapes

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- e-izobraževanje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)

- Izpit
- Seminarska naloga

Delež (v %) /
Weight (in %)

90
10

Assessment:

Type (examination, oral, coursework, project):

- Exam
- Written paper

Reference nosilca / Lecturer's references:

1. Kumer, P., Pipan, P., Šmid Hribar, M., Razpotnik Visković, N. 2019: The role of actors' cooperation, local anchoring and innovation in creating culinary tourism experiences in the rural Slovenian Mediterranean. *Geografski vestnik* 91-2.
2. Razpotnik Visković, N. 2017: Spatial constraints of Slovenian farms : what does urbanization have to do with it? *European Countryside* 9-2.
3. Razpotnik Visković, N., Komac, B. 2018: Agriculture in modern landscapes: a factor hindering or facilitating development? *Acta geographica Slovenica* 58-1.
4. Ravbar, M., Razpotnik Visković, N. 2010: Pomen večnamenske vloge kmetijstva v preobrazbi podeželja. V: *Podeželje na preizkušnji: jubilejna monografija ob upokojitvi izrednega profesorja dr. Antona Prosena*. Ljubljana.
5. Razpotnik Visković, N. 2013: Vloga polkmetij v preobrazbi slovenskih obmestij. *Georitem* 21. Založba ZRC. Ljubljana.
6. Razpotnik Visković, N., Seručnik, M. 2013: Ugled kmečkega poklica in polkmetov v slovenski družbi po drugi svetovni vojni. *Geografski vestnik* 85-1. Ljubljana.

7. Razpotnik Visković, N. 2011: Spatial limitations on farms in urban outskirts / Prostorska utesnjenost kmetij na obmestnih območjih. Acta geographica Slovenica 51-1. Ljubljana.
8. Razpotnik Visković, N. 2011: Vpliv stopnje urbaniziranosti na dohodkovne vire družinskih kmetij v Sloveniji. 83-1. Ljubljana.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	REGIONALNA EKONOMIKA IN REGIONALNO EKONOMSKO MODELIRANJE
Course title:	REGIONAL ECONOMICS AND REGIONAL ECONOMIC MODELING

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR09

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

doc. dr. Janez Nared
(ostali izvajalci: dr. Damjan Kavaš, vabljeni tuji predavatelji)

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- uvod v regionalno ekonomiko
- metode v regionalni ekonomiki
- gospodarska rast in njeni dejavniki
- lokacijske teorije in regionalna
specializacija
- javne politike
- projektni cikel
- vrednotenje ekonomskih učinkov
- tehnološki, demografski, družbeni in
okoljski trendi
- razvoj podjetništva

Content (Syllabus outline):

- introduction to regional economics
- methods in regional economics
- regional economic growth and its factors
- location theories and regional
specialisation
- public policies
- project cycle
- economic impact analysis
- technological, demographic, social and
environmental trends
- business development

- raziskave in inovacijske politike (strategije pametne specializacije, Industrija 4.0, digitalizacija)
- regionalno ekonomsko modeliranje
- prostorska ekonometrija
- regionalni multiplikator

- research and innovation policies (smart specialization strategies., Industry 4.0, digitalization)
- regional economic modelling
- spatial econometrics
- regional multiplier

Temeljni literatura in viri / Readings:

- McCann, P. 2001: Urban And Regional Economics. Oxford.
- Stimson, R. J., Stough, R. R., Roberts, B. H. 2006: Regional Economic Development. Analysis and Planning Strategy. Springer.
- Krugman, P. 1991: Geography and Trade. Gaston Eyskens Lecture Series.
- Armstrong, H., Taylor, J. 2000: Regional Economics and Policy. Wiley
- Huggins, R. (ed.), Thompson, P. (ed.) 2017: Handbook of Regions and Competitiveness: Contemporary Theories and Perspectives on Economic Development. Edward Elgar.
- Pike, A.; Rodriguez-Pose, A., Tomaney, J. 2017: Local and Regional Development: second edition. Routledge.
- OECD, 2018: Job Creation and Local Economic Development 2018: Preparing for the Future of Work. OECD.
- Ehlhorst, P. (2014): Spatial Econometrics - From Cross-Sectional Data to Spatial Panels, Springer.

Cilji in kompetence:

Namen predmeta je predstaviti ekonomske vidike razvoja regij, zlasti dejavnike gospodarske rasti, lokacijske teorije, podlage regionalne specializacije, načine vrednotenja ekonomskih učinkov, razvoj podjetništva ... in na ta način predstaviti ekonomske teorije in pristope, ki jih lahko uporabimo na regionalni ravni.

Objectives and competences:

The aim of the course is to present economic aspects of regional development, in particular regional economic growth factors, locational theories, regional specialisation, methods for economic impact assessment, business development, etc. and thus present economic theories and models that can be used at regional level.

Predvideni študijski rezultati:

- razumejo ekonomske osnove razvoja
- uporabljajo ekonomska znanja pri reševanju razvojnih vprašanj
- - pripravljajo ustrezne ekonomske modele in na njihovi podlagi razlagajo ekonomsko stvarnost

Intended learning outcomes:

- understand economic premises of development
- use economic knowledge for solving development issues
- - develop economic models and use them to explain economic situation

Metode poučevanja in učenja:

- Predavanja
- Seminarji

Learning and teaching methods:

- Lectures
- Seminars

• e-izobraževanje

• e-learning

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
• Izpit	90	• Exam
• Seminarska naloga	10	• Written paper

Reference nosilca / Lecturer's references:

1. Nared, J., Bole, D., Razpotnik Visković, N., Tiran, J. 2020: Slovenian economy. *The geography of Slovenia : small but diverse*, Cham: Springer.
2. Nared, J. 2020: Regional development in Slovenia. *The geography of Slovenia : small but diverse*. Cham: Springer.
3. Rus, P., Nared, J., Bojnec, Š. 2018: Forms, areas, and spatial characteristics of intermunicipal cooperation in the Ljubljana urban region. *Acta geographica Slovenica* 58-2, Ljubljana.
4. Brozzi, R., Lapuh, L., Nared, J., Streifeneder, T. 2015: Towards more resilient economies in Alpine regions. *Acta geographica Slovenica*, 55- 2. Založba ZRC.
5. Nared, J. (ur.), Razpotnik Visković, N. (ur.) 2012: Moving people : towards sustainable mobility in European metropolitan regions. Potsdam: Joint Spatial Planning Department Berlin-Brandenburg.
6. Nared, J. 2005: Geografski vidiki mreženja podjetij v Sloveniji. *Geografski vestnik*, 77- 2.
7. Nared, J. 2005: Spodbujanje turizma kot instrument trajnostnega regionalnega razvoja. *IB revija*, 39-4.
8. Nared, J. 2006: Mrežna zasnova lokalnega gospodarstva: primer Savinjsko Šaleške regije. V: Šalej, M. (ur.). *Šaleška in Zgornja Savinjska dolina : [zbornik]*. Velenje: Erico, Inštitut za ekološke raziskave.
9. Nared, J. 2007: Prostorski vplivi slovenske regionalne politike, (*Geografija Slovenije*, 16). Založba ZRC.
10. Nared, J., Kavaš, D. 2009: Spremljanje in vrednotenje regionalne politike v Sloveniji, (*Georitem*, 10). Ljubljana: Založba ZRC.
11. Ravbar, M., Bole, D., Nared, J. 2005: A creative milieu and the role of geography in studying the competitiveness of cities: the case of Ljubljana = Ustvarjalno okolje in vloga geografije pri proučevanju konkurenčnosti mest: primer Ljubljane. *Acta geographica Slovenica*, 45-2. Založba ZRC.
12. Urbanc, M., Nared, J., Bole, D. 2012: Idrija : a local player on the global market. V: Häyrynen, S. (ur.), Turunen, R. (ur.), Nyman, J. (ur.). *Locality, memory, reconstruction : the cultural challenges and possibilities of former single-industry communities*. Newcastle upon Tyne: Cambridge Scholars Publishing.
13. Zorn, M., Nared, J., Razpotnik Visković, N. 2015: Creating new opportunities for an old mining region : the case of Idrija (Slovenia) = Stvarnje novih možnosti za staro rudarsku regiju : primjer Idrije u Sloveniji. *Ekonomika i ekohistorija*, 11-11.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	ŠTUDIJE DRUŽBENIH UČINKOV POSEGOV V PROSTOR
Course title:	SOCIAL IMPACT STUDIES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR10

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40		20			120	6

Nosilec predmeta / Lecturer:

Doc. dr. Pavel Gantar

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- Teoretske osnove proučevanja družbenih učinkov;
- Kaj so družbeni učinki na individualni in kolektivnih ravneh (sosodstvo, lokalna skupnost, regija)
- Metodologije in tehnike presoje in vrednotenja družbenih učinkov posegov v prostor;
- Ex ante in ex post presoje družbenih učinkov :
- Vrednote in interesi v presoji družbenih učinkov posegov v prostor.
- Vloga (prizadetih) prebivalcev pri presoji družbenih učinkov;

Content (Syllabus outline):

- Theoretical backgrounds for the social impact assessment studies;
- What are the social impacts on individual and collective levels (neighbourhood, local community, region)
- Methods and techniques of the social impact assessment;
- Ex ante and ex post social impact assessment;
- Values and interests in social impact assessment ;
- The role of the (affected) citizens in social impact assessment;

- Študije konkretnih primerov na lokalni in regionalni ravni.
- Megaprojekti in njihovi družbeni učinki na lokalnih in regionalnih ravneh;

- Social impact assessment case studies at local and regional levels;
- - Megaprojects and their social impacts on local and regional levels

Temeljni literatura in viri / Readings:

- Social impact assessment guideline. State of Queensland, Department of State Development, Tourism and Innovation, September 2020.
- Becker, (1997): Social Impact Assessment. UCL Press: London.
- Barrow, C. J. (2000). Social Impact Assessment. An Introduction. London: Arnold.
- Vanclay, F. (2002): Conceptualising Social Impacts. Environmental Impact Assessment Review, 22 (2002) 183-211, Elsevier.
- Gantar, P. (1991): *Družbene posledice urejanja prostora*. V: KRANJC (Ur.): Prihodnost slovenskega podeželja. Novo mesto: Dolenjska založba
- Flyvbjerg, B. (2003): Megaprojects and Risk. An Anatomy of Ambition. Cambridge: Cambridge University Press.

Cilji in kompetence:

Študentje se bodo seznanili z možnimi družbenimi učinki, ki jih prinašajo posegi v prostor tako na individualni kot kolektivnih ravneh. Zanimanje možnih zelenih, predvsem pa neženih družbenih učinkov lahko v veliki meri oteži lokalni in regionalni razvoj. Študentje se bodo seznanili s pristopi, metodologijami in tehnikami ex ante in ex post presoje možnih družbenih učinkov.

Objectives and competences:

Students will acquire the knowledge on various social impacts brought about with build interventions in different social environments. The disregard of the possible desired and above all non-desired social impacts may harm local and regional development. Students will learn the approaches, methodologies and techniques of ex-ante and ex post assessments of the social impacts.

Predvideni študijski rezultati:

- Študentje bodo zmožni prepoznati različne možne družbene učinke posegov v lokalno in regionalno okolje;
- Znali bodo integrirati presoje družbenih učinkov v regionalno in razvojno planiranje;
- S sodelovanjem pri študiji konkretnega primera presoje družbenih učinkov bodo pridobili osnovne izkušnje za nadaljnje delovanje na področju regionalnega razvoja

Intended learning outcomes:

- Students will be able to recognise various social impacts brought about by build interventions into local and regional environments;
- They will be able to integrate social impact assessments into regional and developmental planning;
- - By participating in particular case studies they will acquire basic experiences for further activities in the field of regional development.

Metode poučevanja in učenja:

Learning and teaching methods:

- Predavanja
- Sodelovanje pri izvedbi študije primera presoje družbenih učinkov
- e-izobraževanje

- Lecturing
- Participation in particular case study of social impact assessment
- e-learning

Načini ocenjevanja:		Delež (v %) / Weight (in %)	Assessment:
• Izpit		100	• Exam

Reference nosilca / Lecturer's references:

1. Gantar, P. (1991): *Družbene posledice urejanja prostora*. V: KRANJC (Ur.): Prihodnost slovenskega podeželja. Novo mesto: Dolenjska založba;
2. Gantar, P. (1993): Sociološka kritika teorij planiranja. Ljubljana FDV.
3. Gantar, Pavel (2007): *Prostorsko planiranje in javni interesi v pluralistični družbi* Geodetski vestnik, letn. 51, št. 2, str. 246-254.
4. Gantar, P. (2016): Urbana (prostorska) sociologija : identiteta in preseganja disciplinarnih okvirov. V: MLINAR, Zdravko (ur.). Kakšna sociologija? Za kakšno družbo?, (Prispevki in izzivi sociologije na Slovenskem, 1). Ljubljana: Fakulteta za družbene vede: Slovenska akademija znanosti in umetnosti, str. 166-172.
5. Gantar, P. (2016): Sociološka spoznanja v okoljski, prostorski in v informacijski politiki : med akademsko sfero in profesionalno politiko. V: MLINAR, Zdravko (ur.). Kakšna sociologija? Za kakšno družbo?, (Prispevki in izzivi sociologije na Slovenskem, 1). Ljubljana: Fakulteta za družbene vede: Slovenska akademija znanosti in umetnosti. 2016.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	IZBRANA POGLAVJA IZ PREUČEVANJA NARAVNIH NESREČ
Course title:	SELECTED STUDIES ON NATURAL DISASTERS

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/elective

Univerzitetna koda predmeta / University course code:

DIR11

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
60					120	6

Nosilec predmeta / Lecturer:

doc. dr. Blaž Komac, doc. dr. Mateja Ferk
(ostali izvajalci: doc. dr. Rok Ciglič, dr. Matjaž Geršič, dr. Mauro Hrvatin, doc. dr. Drago Perko, dr. Primož Pipan, doc. dr. Matija Zorn)

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Finished second Bologna level in the appropriate field or University degree VII.

Vsebina:

Predstavljeni so različni pristopi k preučevanju naravnih nesreč, predvsem pa: sodobne metode preučevanja naravnih nesreč (terensko delo, geografski informacijski sistemi, morfografska analiza, analiza z laboratorijskimi metodami, sedimentološke analize, hidrološke analize, meteorološke raziskave), aplikacija teh metod na izbranih primerih v obliki terenskega dela in kabinetnega dela, slednje

Content (Syllabus outline):

Presented are different approaches to the study of natural hazards, in particular: modern methods of studying natural hazards (fieldwork, geographical information systems, morphographical analysis, laboratory methods, sedimentological analysis, hydrological analysis, meteorological research), the application of these methods in selected cases in the form of fieldwork and cabinet work, the latter with a focus on the use of geographic

s poudarkom na uporabi geografskih informacijskih sistemov. Poudarek je na znanstveni utemeljitvi in izdelavi ocen nevarnosti in ogroženosti ter njihovi umestitvi v načrtovanje rabe prostora. Predstavljeni so tudi humani vidiki naravnih nesreč.

information systems. The emphasis is on the scientific justification and estimates of hazard and risk and their use in land-use planning. Social aspects of natural disasters are also presented.

Temeljni literatura in viri / Readings:

- Clifford, N. et al. (ur.) 2016: Key methods in geography. Sage. Los Angeles.
- Keller, E. A., DeVecchio, D. E., Blodgett, R. H. 2019: Natural hazards: Earth's processes as hazards, disasters, and catastrophes. London, New York. Routledge.
- Zorn, M., Komac, B. 2015: Naravne nesreče kot razvojni izziv. Globalni izzivi in regionalni razvoj. Ljubljana.
- Walker, G., Whittle, R., Medd, W., Watson, N. 2010: Risk governance and natural hazards. http://eprints.lancs.ac.uk/49475/1/WP2_final.pdf
- Wisner, B., Blaikie, P., Cannon, T., Davis, I. 1994: At risk – natural hazards, people's vulnerability and disasters. Routledge.

Cilji in kompetence:

Študenti se seznaniijo s temeljnimi lastnostmi naravnih nesreč, predvsem z vidika njihovih vzrokov oziroma vplivnih dejavnikov ter temeljnih mehanizmov oziroma procesov. Seznaniijo se s sistematiko vplivnih dejavnikov z vidika geografije in so sposobni analizirati pokrajino z vidika njene podvrženosti naravnim nesrečam. Ogroženost je analizirana z vidika prostorske in časovne razporeditve nevarnih pojavov ter razvoja družbe in njenih odzivov na naravne procese.

Objectives and competences:

Students are acquainted with the main properties of natural disasters, especially in terms of their causes and influencing factors and the underlying mechanisms and processes. They study the scheme of the influential factors in terms of geography and are able to analyze the landscape in terms of its susceptibility to natural disasters. The risk is analyzed in terms of spatial and temporal distribution of dangerous phenomena and the development of the society and its responses to natural processes.

Predvideni študijski rezultati:

- poznavanje lastnosti različnih tipov naravnih nesreč, vključno z njihovimi vzroki, učinki in prostorsko-časovno razporeditvijo, ki je odvisna od številnih vplivnih dejavnikov, posebej izpostavljam upoštevanje podnebnih sprememb, ki spreminja načine součinkovanja procesov

Intended learning outcomes:

- Knowledge of the properties of different types of natural disasters, including their causes, effects and spatio-temporal distribution dependent on a number of influencing factors, climate change which changes the interaction of different processes is particularly considered
- Knowledge of the basic methods of studying natural disasters

• poznavanje temeljnih metod preučevanja naravnih nesreč • poznavanje nevarnosti in analiza ogroženosti z geografskimi informacijskimi sistemi	• - Knowledge of the risk and threat analysis with geographic information systems
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Metode poučevanja in učenja:

• Predavanja • Seminar • E-izobraževanje
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Learning and teaching methods:

• Lectures • Seminar • e-learning

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

• Ustni izpit		• Oral exam
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Reference nosilca / Lecturer's references:

1. Ferk, M., Ciglič, R., Komac, B., Lóczy, D. 2020: Management of small retention ponds and their impact on flood hazard prevention in the Slovenske Gorice Hills. Acta geographica Slovenica 60-1. Ljubljana.
2. Nagy, G., Ciglič, R., Ferk, M., et al. 2020: Soil moisture retention on slopes under different agricultural land uses in hilly regions of Southern Transdanubia. Hungarian geographical bulletin 69-3.
3. Ciglič, R., Ferk, M. 2020: Opazovanje pobočnih procesov z brezpilotnim letalnikom na primeru plazov v Slovenskih goricah. V: Ciglič, R. (ur.), et al. Modeliranje pokrajine, GIS v Sloveniji 15, Ljubljana.
4. Komac, B. 2020: Domači odzivi na globalne izzive v Sloveniji in Evropi. Naravne nesreče 5. Ljubljana.
5. Ciglič, R., Ferk, M. 2020. Opazovanje pobočnih procesov z brezpilotnim letalnikom na primeru plazov v Slovenskih goricah. Modeliranje pokrajine. Ljubljana.
6. Ferk, M., Ciglič, R., Komac, B., Lóczy, D. 2020: Management of small retention ponds and their impact on flood hazard prevention in the Slovenske Gorice Hills. Acta geographica Slovenica 60-1.
7. Breg Valjavec, M., Komac, B. 2018: Novodobna poselitve hudourniških vršajev in nevarnost drobirskih tokov: primer Zgornjesavske doline. Pokrajina v visoki ločljivosti. Ljubljana.
8. Komac, B. 2017: Prožna mesta - trajnostni razvoj in naravne nesreče. Trajnostni razvoj mest in naravne nesreče. Naravne nesreče 4.
9. Zorn, M., Komac, B. 2012: Damage caused by natural disasters in Slovenia and globally between 1995 and 2010. Acta geographica Slovenica 51-1.
10. Komac, B., Zorn, M., Kušar, D. 2012: New possibilities for assessing the damage caused by natural disasters in Slovenia: the case of the Real Estate Record. Geographical tidbits from Slovenia. Geografski vestnik 84-1.

11. Kuhlicke, C., Komac, B., Zorn, M. et al. 2011: Perspectives on social capacity building for natural hazards: outlining an emerging field of research and practice in Europe. *Environment science & policy* 14- 7.
12. Komac, B., Zorn, M., Ciglič, R. 2011: Izobraževanje o naravnih nesrečah v Evropi. *Georitem* 18. Ljubljana.
13. Komac, B., Natek, K., Zorn, M. 2008: Geografski vidiki poplav v Sloveniji. *Geografija Slovenije* 20. Ljubljana.
14. Zorn, M., Komac, B. 2008: Zemeljski plazovi v Sloveniji. *Georitem* 8. Ljubljana.
15. Komac, B., Zorn, M. 2007: Pobočni procesi in človek. *Geografija Slovenije* 15. Ljubljana.
16. Komac, B., Lapuh, L. 2014: Nekaj misli o konceptu prožnosti v geografiji naravnih nesreč. *Geografski vestnik* 86-1.
17. Zorn, M., Komac, B. 2007: Probabilistično modeliranje plazovitosti. *Acta geographica Slovenica* 47-2. Ljubljana.
18. Zorn, M., Komac, B. 2004: Deterministično modeliranje ogroženosti zaradi zemeljskih plazov in skalnih podorov. *Acta geographica Slovenica* 44-2. Ljubljana.
19. Zorn, M., Komac, B. 2007: Naravni procesi v svetih knjigah. *Geografski vestnik* 79-2. Ljubljana.
20. Natek, K., Komac, B., Zorn, M. 2003: Mass movements in the Julian Alps (Slovenia) in the aftermath of the Easter earthquake on April 12, 1998. *Studia Geomorphologica Carpatho-Balcanica* 37. Krakow.

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	IZBRANA POGLAVJA IZ PREUČEVANJA DRUŽBENO-OKOLJSKIH PROCESOV
Course title:	HUMAN-ENVIRONMENT RELATIONS: SELECTED EXAMPLES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

DIR12

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

doc. dr. Aleš Smrekar
(ostali izvajalci: doc. dr. Drago Kladnik)

Jeziki /
Languages:

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English
slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Finished second Bologna level in the
appropriate field or University degree VII.

Vsebina:

- okoljski problemi in vloga človekovega vedenja v okolju
- odzivi družbe na človekovo delovanje v okolju in razvoj okoljskih paradig
- okoljski vplivi virov obremenjevanja okolja (promet, kmetijstvo, industrija in rudarstvo, energetika, gospodinjstva)
- sodobni okoljski problemi v mestih
- odnos med človekom in življenjskim okoljem
- razvoj okoljske ozaveščenosti in okolju prijaznega vedenja

Content (Syllabus outline):

- environmental problems and the role of human behaviour in the environment
- society's responses to human activity in the environment and the development of environmental paradigms
- environmental effects of pollution sources (transport, agriculture, industry, mining, energy, households)
- contemporary environmental challenges in urban areas
- relationship between man and living environment

- metode za krepitev okoljske ozaveščenosti in vedenja

- development of environmental awareness and environmentally friendly behaviour
- methods to strengthen environmental awareness and behaviour

Temeljni literatura in viri / Readings:

- Ensuring quality of life in Europe's cities and towns. 2009. Luxembourg, Office for Official Publications of the European Communities, 108 str.
- Gardner, G. T., Stern, P. C. 2002: Environmental problems and human behaviour. Boston.
- Kirn, A. 2004: Narava – družba – ekološka zavest. Ljubljana.
- Kos, D. 2004: Tri ravni trajnostnega razvoja. Teorija in praksa, 41-1/2.
- Plut, D. 2006: Mesta in sonaravni razvoj. Ljubljana.
- Plut, D. 2008: Vrednotenje geografskega okolja in okoljska etika. Dela 29.
- Polajnar Horvat, K. 2015: Okolju prijazno vedenje. Georitem 26. Ljubljana.
- Smrekar, A. 2011: From environmental awareness in word to environmental awareness in deed: the case of Ljubljana. Acta geographica Slovenica 51-2.
- Steg, L., I. M. de Groot, J. 2018: Environmental Psychology: An Introduction. Wiley.
- Steg, L., Vlek, C. 2009: Encouraging pro-environmental behaviour: An integrative review and research agenda. Journal of environmental psychology 29.
- Špes, M. 1998: Degradacija okolja kot dejavnik diferenciacije urbane pokrajine. Geographica Slovenica 30. Ljubljana.
- Welford, M., Zarbrough, R. 2021: Human-Environment Interactions. An introduction. Springer.

Cilji in kompetence:

Temeljni cilj predmeta je seznaniti študenta z izbranimi temami iz preučevanja družbeno-okoljskih procesov. Študent s predmetom pridobi naslednje kompetence:

- razume vlogo človekovega vedenja pri nastajanju in reševanju sodobnih okoljskih problemov,
- je seznanjen s ključnimi okoljskimi paradigmi,
- razume potek razvoja okoljske miselnosti, ozaveščenosti in okoljskega vedenja kot ključnih dejavnikov pri obremenjevanju in varstvu okolja,
- prepozna temeljne vire obremenjevanja okolja ter razume njihovo delovanje in okoljske vplive

Objectives and competences:

The main objective of the course is to introduce the student to selected topics from researching human-environment relations. During the course, students will gain the following competences:

- understanding the role of human behaviour in generating and solving contemporary environmental problems,
- awareness about key environmental paradigms,
- understanding the development of environmental thought, awareness, and environmental behavior as the key factors in burdening and protecting the environment,
- ability to recognize the main sources of environmental pollution and to understand

- je sposoben obravnavati mesto kot ekosistem in je seznanjen s ključnimi okoljskimi problemi v mestih
- razume kompleksen proces razmerja med človekom, življenjskim okoljem ter njegovim dožemanjem in vrednotenjem,
- zna prepoznati in razumeti vlogo notranjih in zunanjih dejavnikov pri okoljski ozaveščenosti in vedenju ter
- je seznanjen s pomenom in vlogo informacijskih in strukturnih strategij za krepitev okoljske ozaveščenosti in vedenja.
- Študente bomo spodbujali h kritičnemu razmišljanju, uporabi problemskega pristopa in samostojnemu raziskovanju, zato bo zahtevana oddaja samostojnega seminarskega dela na izbrano temo.

- their activity and effect on the environment,
- ability to understand the city as an ecosystem and awareness about key urban environmental problems,
 - understanding the complexity of the relation between man and living environment and its perception and evaluation,
 - ability to recognize and understand the role of internal and external factors in environmental awareness and behavior and
 - awareness on the importance and role of informational and structural strategies to promote environmental awareness and behavior.
 - Students will be encouraged to adopt critical thinking, use the problem approach, and independent research. Therefore, submitting an individual seminar paper on the selected topic will be required.

Predvideni študijski rezultati:

Študent s predmetom pridobi:

- poglobljeno razumevanje izbranih sodobnih okoljskih problemov in načinov njihovega reševanja
- sposobnost prepoznavanja virov obremenjevanja okolja in njihovih pokrajinskih učinkov
- sposobnost celostnega vrednotenja mestnega okolja in njegovih sestavin
- poglobljeno razumevanje kompleksnega odnosa med človekom in življenjskim okoljem
- sposobnost razumevanja medsebojnega prepleta dejavnikov razvoja okoljske ozaveščenosti in vedenja ter
- - praktična znanja o uporabnosti informacijskih in strukturnih strategij za

Intended learning outcomes:

Participation in the course will bring the student:

- an in-depth understanding of contemporary environmental problems and ways of solving them,
- the ability to recognize environmental pollution sources and their effects on the landscape,
- the ability to perform a complex evaluation of the urban environment and its elements,
- an in-depth understanding of the complex relation between man and living environment,
- the ability to understand the reciprocal factors in the development of

krepitev okoljske ozaveščenosti in spreminjanja okoljskega vedenja.	environmental awareness and behavior, and - practical knowledge about the usefulness of informational and structural strategies for promoting environmental awareness and changing environmental behaviors.
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Metode poučevanja in učenja:

• predavanja • seminarji • e-izobraževanje
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Learning and teaching methods:

• lectures • seminars • e-learning
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Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
• Ustni izpit • Seminarska naloga	70	• Oral exam
	30	• Written paper

Reference nosilca / Lecturer's references:

1. Smrekar, A. 2006: Zavest ljudi o pitni vodi. Geografija Slovenije 12. Ljubljana. 2. Smrekar, A. 2007: Divja odlagališča odpadkov na območju Ljubljane. Georitem 1. Ljubljana. 3. Smrekar, A. 2011: From environmental awareness in word to environmental awareness in deed: the case of Ljubljana. Acta geographica Slovenica 51-2. 4. Smrekar, A., Tiran, J. 2013: Pomen zelenih površin za kakovost bivanja v mestih : razvoj misli skozi čas. Geografski vestnik 85-2. 5. Smrekar, A., Breg Valjavec, M. 2014: Vrednotenje nekdanje in sedanje proizvodnje nevarnih odpadkov v Ljubljani z vidika obremenjevanja podtalnice. Geografski vestnik 86-2. 6. Smrekar, A., Breg Valjavec, M., Polajnar Horvat, K., Tiran, J. 2019: The geography of urban environmental protection in Slovenia : the case of Ljubljana. Acta geographica Slovenica 59-3. 7. Smrekar, A., Breg Valjavec, M., Polajnar Horvat, K. 2019: Human-induced degradation in Slovenia. The geography of Slovenia : small but diverse. 8. Smrekar, A., Breg Valjavec, M., Polajnar Horvat, K., Ribeiro, D. 2019: Slovenia's protected areas. The geography of Slovenia : small but diverse.
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UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: URBANA PREOBRAZBA: TEORIJA IN PRAKSA

Course title: URBAN TRANSFORMATION: THEORY AND PRACTICE

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Regionalne študije		
Environmental and Regional Studies, doctoral study 3 rd level	Regional studies		

Vrsta predmeta / Course type

Izbirni/ Elective

Univerzitetna koda predmeta / University course code:

DIR13

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
40	20				120	6

Nosilec predmeta / Lecturer:

Doc. dr. David Bole
(vabljeni tuji predavatelj)

**Jeziki /
Languages:**

Predavanja / Lectures:
Vaje / Tutorial:

slovenščina, angleščina / Slovene, English

slovenščina, angleščina / Slovene, English

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

Končana druga bolonjska stopnja ustrezne
smeri ali univerzitetni študij VII stopnje.

Prerequisite:

Second-cycle Bologna degree in the relevant
track or a university (level VII) degree

Vsebina:

- Ključni koncepti v urbani geografiji
- Zgodovinski pregled razvoja mest v Sloveniji in tujini
- Prostorska preobrazba mest: urbanizacija, suburbanizacija in regijska mesta
- Ekonomska preobrazba mest: kulturni preobrat in komodifikacija mestnega prostora
- Družbena in politična preobrazba mest: segregacija, izključenost in kakovost bivanja

Content (Syllabus outline):

- Key concepts in urban geography
- Historical overview of urban development in Slovenia and abroad
- Spatial transformation of cities: (sub)urbanisation and regional cities
- Economic transformation of cities: the cultural turn and commodification of urban space
- Social and political transformation of cities: segregation, exclusion and quality of urban life
- Mobility and transformation of cities: transport problems and transport politics

- Mobilnost in preobrazba mest: prometni problemi in prometne politike
- Načrtovanje mest v preobrazbi
- Kritična urbana geografija: aktualne teme (mesta v pandemiji, vloga Industrije 4.0, ...).

- Planning the transformed city
- Critical urban geography: current topics (cities in the pandemics, the role of Industry 4.0, etc.)

Temeljni literatura in viri / Readings:

- Florida, R., Rodríguez-Pose, A., & Storper, M. (2020). Cities in a Post-COVID World. Papers in Evolutionary Economic Geography (PEEG) No. 2041. Utrecht University, Department of Human Geography and Spatial Planning, Group Economic Geography.
- Grandin, J., Haarstad, H., Kjærås, K., & Bouzarovski, S. (2018). The politics of rapid urban transformation. *Current Opinion in Environmental Sustainability*, 31, 16–22.
- Latham, A., McCormack, D., McNamara, K., McNeill, D. (2009). Key concepts in urban geography. Sage, London.
- Montgomery, J. (2008). The new wealth of cities: city dynamics and the fifth wave. Ashgate, Aldershot.
- Power, A. (2018). Regional politics of an urban age: Can Europe's former industrial cities create a new industrial economy to combat climate change and social unravelling? *Palgrave Communications*, 4(1), 97.
- Scott, A. J. (2012). A world in emergence: cities and regions in the 21st century. Edward Elgar, Cheltenham.
- Sieverts, T. (2003): Cities Without Cities: An Interpretation of the Zwischenstadt. Routledge, New York.
- Storper, M. (2013). Keys to the city: how economics, institutions, social interaction, and politics shape development. Princeton University Press, Princeton.
- Thorns, D. C. (2002). The transformation of cities: urban theory and urban life. Palgrave Macmillan, Basingstoke.

Cilji in kompetence:

Namen predmeta je predstaviti novejšje koncepte v urbani geografiji. Sodobna družba je urbana družba, zato mora študent pridobiti znanje o sodobnih urbanih teorijah in urbanemu življenju. Predmet se bo osredotočil na pet temeljnih sprememb, ki so povezane s preobrazbo mest. Prve so prostorske spremembe, ki se odražajo v (sub)urbanizaciji in novimi prostorskimi zakonitostmi. Druge so urbano-ekonomske spremembe, zlasti t. i. mestne kulturne industrije in komodifikacija mest. Tretje so družbenopolitične spremembe, kjer bo

Objectives and competences:

Goal of the course is to introduce newer concepts in urban geography. Modern society is an urban society and so the students should gain new knowledge of modern urban theories and urban life. The course will focus on five basic changes related to urban transformation. The first are spatial changes reflected in (sub)urbanisation and new spatial patterns. The second are urban-economic changes, especially with the rise of urban cultural industries and the commodification of cities. The third are socio-political changes with the focus on social exclusion, segregation and

poudarek na družbeni izključenosti in prostorski segregaciji ter kakovosti življenja v mestih. Četrty sklop predstavljajo spremembe v mobilnosti, avtomobilizacija mestne družbe in ukrepi za njeno zajezeitev. Zadnji tematski sklop so načrtovalske in institucionalne spremembe. Študente bomo spodbujali h kritičnemu razmišljanju in samostojnemu raziskovanju, zato bo znotraj vsakega sklopa zahtevana oddaja samostojnega seminarskega dela. Del predavanj se bo odvijal tudi na terenu.

quality of living in cities. The fourth segment is changes in the mobility of urban population, automobilisation of the society and measures taken to counter the effects of unsustainable urban mobility. The last thematic segment is planning and institutional changes. We will encourage the students to critically evaluate mentioned urban processes and carry out independent research. For this reason every mentioned segment will require a seminary paper. The lectures will be partly carried out in the field.

Predvideni študijski rezultati:

- Razumevanje sodobnih konceptov in raziskovalnih metod v urbanih študijah
- Sposobnost kritičnega vrednotenja procesov v mestih in iskanja rešitev za urbane izzive
- Sposobnost povezovanja aktualnih urbanih izzivov s širšim razvojnim in načrtovalskim kontekstom

Intended learning outcomes:

- Understanding modern concepts and research methods in urban studies
- Ability of critically evaluating urban processes and finding solutions on urban challenges
- Ability to connect contemporary urban challenges with wider development and planning context

Metode poučevanja in učenja:

- Predavanja
- Seminarji
- e-izobraževanje

Learning and teaching methods:

- Lectures
- Seminars
- e-learning

Načini ocenjevanja:

- Način (pisni izpit, ustno izpraševanje, naloge, projekt)
- Ustni izpit
 - Seminarska naloga

Delež (v %) /
Weight (in %)

50
50

Assessment:

- Type (examination, oral, coursework, project):
- Oral exam
 - Written paper

Reference nosilca / Lecturer's references:

1. Ravbar, M., Bole, D. and Nared, J. (2005). A Creative Milieu and the Role of Geography in Studying the Competitiveness of Cities: the Case of Ljubljana. Acta Geographica Slovenica, 45(2), pp. 7-34.
2. Bole, D. (2008). Cultural Industry as a Result of New City Tertiarization. Acta Geographica Slovenica, 48(2), pp. 255-276.
3. Bole, D. (2010). Secondary Business Districts in Ljubljana: Analysis of Conditions and Assessment of Planned Development. Urbani izziv, 21(1), pp. 78-93.

4. Urbanc, M., Nared, J., Bole, D. (2012). Idrija: a local player on the global market. In: Häyrynen, S., Turunen, R., Nyman, J. (Eds). *Locality, memory, reconstruction: the cultural challenges and possibilities of former single-industry communities*. Newcastle upon Tyne: Cambridge Scholars Publishing, pp. 101-122.
5. Bole, D. (2012). Socio-Economic Characteristics of the Slovene Urban System. In: M. Zorn, R. Ciglič, D. Perko, (Eds). *Geographical Bulletin, Geographical Tidbits from Slovenia : Special Issue on the Occasion of the 32nd International Geographical Congress in Cologne*. Ljubljana: Association of Slovenian Geographers, pp. 141-149.
6. Bole, D., Gabrovec, M. (2014). Geography of daily mobilities in post-socialist European countries: evidence from Slovenia. In: Burrell, K., Hörschmann, K. (Eds). *Mobilities in socialist and post-socialist states: societies on the move*. Basingstoke: Palgrave Macmillan, pp. 217-239.
7. Bole D., Nared J., Zorn M. (2016) Small Urban Centers in the Alps and Their Development Issues. In: Zhelezov G. (ed), *Sustainable Development in Mountain Regions*. Springer: Cham, pp 265-279.
8. Bole, D., Kozina, J., & Tiran, J. (2019). The variety of industrial towns in Slovenia: a typology of their economic performance, *Bulletin of Geography. Socio-economic Series*, 46(46).
9. Bole, D., Kozina, J., & Tiran, J. (2020). The socioeconomic performance of small and medium sized industrial towns: Slovenian perspectives, *Moravian Geographical Reports*, 28(1).