Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Osnove ekologije in ekologija živali
Course title:	Principal and Animal Ecology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Univerzitetni študijski program Biologija, 1. stopnja		**2.; 2nd**	**3.; 3rd**
Undergraduate university programme Biology, 1st degree			

Vrsta predmeta / Course type Obvezni / Obligatory

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
60			**15**	**15**	**150**	**8**

Nosilec predmeta / Lecturer: Nina ŠAJNA

Jeziki / Languages:	
Predavanja / Lectures:	**Slovenščina/ Slovenian**
Vaje / Tutorial:	**Slovenščina/ Slovenian**

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisits:
Jih ni.	None.

Vsebina:	Content (Syllabus outline):
• Uvod v ekologijo • Organizmi v okolju • Pogoji in viri • Življenjski cikli • Ekološke aplikacije na nivoju organizmov in ene vrste • Razširjanje, dormanca, metapopulacije • Sobivanje in odnosi med vrstami (kompeticija, plenilstvo, parazitizem,	• Introduction to ecology • Organisms in their environments • Conditions and resources • Life histories • Ecological applications at the level of organisms and single-species populations • Dispersal, dormancy, metapopulations • Species coexistence and interactions (competition, predation, parasitism, symbiosis,…)

simbioze,…) • Abundanca • Ekološke aplikacije na nivoju populacij • Združbe in ekosistemi • Pretok energije, snovi skozi ekosistem • Prehranjevalne verige • Vzorci vrstne pestrosti • Ekološke aplikacije na nivoju združbe in ekosistema	• Abundance • Ecological applications at the level of population interactions • Communities and ecosystems • The flux of energy and matter through ecosystems • Food webs • Patterns in species richness • Ecological applications at the level of communities and ecosystems

Temeljni literatura in viri / Readings:

- Begon, M., Towsend C.R., Harper J.L., 2006: Ecology: From Individuals to Ecosystems. John Wiley & Sons.
- Cain M.L., Bowman W.D., Hacker S.D., 2014: Ecology. Sinauer Associates.
- Tarman, K., 1992: Osnove ekologije in ekologija živali. DZS.
- Tome, D., 2007: Ekologija. TZS.

Dodatna literatura/ Additional literature:

- Gurevitch, J., Scheiner S., Fox G: 2002: Plant ecology. Sinauer Associates Inc. Publishers.

Cilji in kompetence:	**Objectives and competences:**
• Pregled osnovnih principov v ekologiji • Poznavanje osnovnih abiotskih in biotskih dejavnikov • Podati pregled osnovnih pravil, konceptov in teorij v ekologiji • Pregled osnovnih relacij med osebkom in okoljem • Podati osnove populacijske ekologije • Razumevanje procesov in dejavnikov sobivanja osebkov in vrst • Spodbujati zanimanje za ekološke raziskave in usposabljanje za načrtovanje takšnih raziskav	• Overview of basic basic ecological principles • To give an overview of abiotic and biotic environmental factors • To give an overview of the basic ecological laws, concepts and theories • To give an overview of the basic relations between the individual and its environment • To introduce principles of population ecology • Understanding the processes and factors enabling coexistence of individuals and species • To increase the interest for ecological investigations and training of planning such investigations

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: Študentje poznajo in razumejo temeljne ekološke zakonitosti. Poznajo glavne abiotske in biotske dejavnike v okolju. Razumejo koncept o pogojih in virih za preživetje in sobivanje. Poznajo s tem povezane prilagoditve osebkov. Spoznajo ekološke raziskave na nivoju organizma, nivoju ene vrste (avtekologija) in nivoju populacije.	Knowledge and understanding: Students are familiar with and understand basic rules in ecology. They are familiar with main abiotic and biotic factors in environment. They understand the concept about conditions and resources for survival and coexistence. They are familiar with species' adaptations in respect to environment. They get introduced into ecological investigations of individuals, single species, and

Razumejo koncept metapopulacije. Spoznajo medvrstne odnose. Poznajo definicije združb in ekosistema. Poznajo zakonitosti pretoka energije in snovi skozi ekosistem. Razumejo koncept prehranjevalne verige. • Laboratorijske in terenske vaje: na primerih ekoloških raziskav razumejo proces znanstvene metode (metode vzorčenja, vzorčenje populacij, meritve okoljskih dejavnikov,…); prepoznajo in razumejo ekološke razmere v konkretnem okolju; znajo zastaviti bazično ekološko raziskavo na nivoju vrste, populacije, združbe.	population. They understand the concept of metapopulation. They get to know different interspecific relationships. They know the definitions of communities and ecosystems. They familiar with the rule of energy and matter flow through ecosystem. They understand the concept of food webs. • Laboratory and field work: They improve their understanding of the process of scientific research through solving ecological case studies involving sampling, measurements of environmental factors,.. They improve their skills how to plan a basic ecological study on the level of species, population or community investigation.

Metode poučevanja in učenja:	**Learning and teaching methods:**
• Predavanja • Terenske vaje • Laboratorijske vaje	• Lectures • Field work • Laboratory work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt) • Laboratorijsko/Terensko delo (prisotnost, dnevnik, pisni test) pogoj za pristop k izpitu • Pisni izpit	100%	Type (examination, oral, coursework, project): • Lab/Field work (attendance, reports, written exam) mandatory for final exam • Written exam

Reference nosilca / Lecturer's references:

- ŠAJNA, Nina, KUŠAR, Primož. (2014) Modeling species fitness in competitive environments. Ecological modelling, 2014, vol. 275, str. 31-36.
- NOVAK, Tone, ŠAJNA, Nina, ANTOLINC, Estera, LIPOVŠEK DELAKORDA, Saška, DEVETAK, Dušan, JANŽEKOVIČ, Franc. (2014) Cold tolerance in terrestrial invertebrates inhabiting subterranean habitats. International journal of speleology, 2014, vol. 43, no. 3, str.
- ŠAJNA, Nina, MEISTER, Margit H., BOLHÁR-NORDENKAMPF, Harald R., KALIGARIČ, Mitja. (2013) Response of semi-natural wet meadow to natural geogenic CO2 enrichment. International journal of agriculture and biology, 15, no. 4, str. 657-664.
- ŠAJNA, Nina, KAVAR, Tatjana, ŠUŠTAR VOZLIČ, Jelka, KALIGARIČ, Mitja. (2012) Population genetics of the narrow endemic *Hladnikia pastinacifolia* Rchb. (Apiaceae) indicates survival in situ during the Pleistocene. Acta Biologica Cracoviensia. Series Botanica, 54, 1, 84-96
- KALIGARIČ, Mitja, MEISTER, Margit H., ŠKORNIK, Sonja, ŠAJNA, Nina, KRAMBERGER, Branko, BOLHÁR-NORDENKAMPF, Harald R. (2011) Grassland succession is mediated by umbelliferous

colonizers showing allelopathic potential. Plant Biosystems, 145, 3, 688-698

- ŠAJNA, Nina, KUŠAR, Primož, SLANA NOVAK, Ljuba, NOVAK, Tone. (2011) Benefits of low-intensive grazing: co-occurrence of umbelliferous plant (*Hladnikia pastinacifolia* Rchb.) and opilionid species (*Phalangium opilio*. L) in dry, calcareous grassland. Polish journal of ecology, vol. 59, issue 4, str. 777-786
- ŠAJNA, Nina, KUŠAR, Primož, SLANA NOVAK, Ljuba, NOVAK, Tone. (2009) Notes on thermo- and hygropreference in *Leiobunum roseum* C. L. Koch, 1839 (Opiliones: Sclerosomatidae) in a habitat of *Hladnikia pastinacifolia* Reichenbach, 1831 (Spermatophyta: Apiaceae). Contributions to natural history, no. 12, str. 1111-1123
- ŠKORNIK, Sonja, ŠAJNA, Nina, KRAMBERGER, Branko, KALIGARIČ, Simona, KALIGARIČ, Mitja. (2008) Last remnants of riparian wooded meadows along the middle Drava River (Slovenia) : species composition is a response to light conditions and management. Folia geobotanica, vol. 43, no. 4, str. 431-445.
- KALIGARIČ, Mitja, SEDONJA, Jožef, ŠAJNA, Nina. (2008) Traditional agricultural landscape in Goričko Landscape Park (Slovenia) : distribution and variety of riparian stream corridors and patches. Landscape and urban planning, vol. 85, iss. 1, str. 71-78,
- ŠAJNA, Nina, HALER, Maja, ŠKORNIK, Sonja, KALIGARIČ, Mitja (2007) Survival and expansion of *Pistia stratiotes* L. in a thermal stream in Slovenia. Aquatic botany, 87, 75-79.