Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

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

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
Univerzitetni program 1. stopnje Ekologija z naravovarstvom		2.; 2nd	3.; 3rd
Undergraduate university programme Ecology with Nature Conservation, 1st cycle			

Vrsta predmeta / Course type Obvezni / Obligatory

Univerzitetna koda predmeta / University course code:

Predavanja **Lectures**	**Seminar** **Seminar**	**Laboratorijske vaje** **Laboratory work**	**Terenske vaje** **Field work**	**Druge oblike študija**	**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:	**Prerequisites:**
Jih ni.	None.

Vsebina:

- 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, 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

Content (Syllabus outline):

- 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,…)
- 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:

Temeljna literatura / Basic readings:

Begon, M., & Townsend, C. R. (2021). *Ecology: from individuals to ecosystems* (5th ed., str. XIII, 844). Wiley. (ali druge izdaje/ or other editions)Tome, D. (2006). *Ekologija: organizmi v prostoru in času* (1. natis, str. 344). Tehniška založba Slovenije.

Priporočena literatura/ Recommended literature:

Janžekovič, F. (2023). *Makroekologija: analiza biodiverzitetnih podatkov* (1. izd.). Univerza v Mariboru, Univerzitetna založba. https://press.um.si/index.php/ump/catalog/book/734

Cilji in kompetence:	**Objectives and competences:**
• Študentje pojasnijo temeljne ekološke zakonitosti. • Navedejo glavne abiotske in biotske dejavnike v okolju. • Povezujejo koncepte o pogojih in virih za preživetje in sobivanje s tem povezanimi prilagoditvami osebkov. • Spoznajo ekološke raziskave na nivoju organizma, ene vrste (avtekologija) in populacije ter jih interpretirajo. • Pojasnijo koncept metapopulacije. • Primerjajo medvrstne odnose. • Navedejo definicije združb in ekosistema. • Definirajo zakonitosti pretoka energije in snovi skozi ekosistem. • Pojasnijo koncept prehranjevalne verige. • Laboratorijske in terenske vaje: na primerih ekoloških raziskav uporabijo proces znanstvene metode (metode vzorčenja, vzorčenje populacij, meritve okoljskih dejavnikov,…); kritično ovrednotijo ekološke razmere v konkretnem okolju; znajo zastaviti bazično ekološko raziskavo na nivoju vrste, populacije, združbe.	• Students are familiar with and explain basic rules in ecology. • They specify the main abiotic and biotic factors in an environment. • They relate concepts about conditions and resources for survival and coexistence with species' adaptations in respect to environment. • They get introduced and are able to interpret ecological investigations on different levels: individual, single species, or population. • They explain the concept of metapopulation. • They compare different interspecific relationships. • They quote the definitions of communities and ecosystems. • They explain the rule of energy and matter flow through ecosystem. • They explain the concept of food webs. • Laboratory and field work: They use 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.
Predvideni študijski rezultati:	**Intended learning outcomes:**
Po uspešno opravljenih obveznostih predmeta bodo študenti lahko: • pojasnili osnovne principe v ekologiji; • predstavili pregled osnovnih abiotskih in biotskih dejavnikov; • ilustrirali osnovna pravila, koncepte in teorije v ekologiji; • razložili osnovne relacije med osebkom in okoljem; • prikazali osnove populacijske ekologije; • analizirali procese in dejavnike sobivanja osebkov in vrst;	At the end of the course a successful student will be able to: • explain basic ecological principles; • review abiotic and biotic environmental factors; • interpret the basic ecological laws, concepts and theories; • explain the basic relations between the individual and its environment; • illustrate principles of population ecology; • analyse the processes and factors enabling coexistence of individuals and species;

• zagovarjali pomen ekoloških raziskav in usposobljenost za načrtovanje takšnih raziskav.	• argue the importance of ecological investigations and training of planning such investigations.

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

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
• Pisni izpit	100%	• Written exam

Reference nosilca / Lecturer's references:

Šipek, M., Horvat, E., & Šajna, N. (2023). Eastward range expansion of the ragweed leaf beetle (*Ophraella communa* LeSage, 1986) (Coleoptera, Chrysomelidae) in Slovenia. *BioInvasions Records*, *12*(2), 615–623. https://dk.um.si/IzpisGradiva.php?id=87570Horvat, E., Šipek, M., & Šajna, N. (2024). Urban hedges facilitate spontaneous woody plants. *Urban Forestry and Urban Greening*, *96*(] 128336), 11. https://dk.um.si/IzpisGradiva.php?id=88564

Šajna, N., Urek, T., Kušar, P., & Šipek, M. (2023). The importance of thermally abnormal waters for bioinvasions - a case study of Pistia stratiotes. *Diversity*, *15*(3, [ ] 421), 22. https://dk.um.si/IzpisGradiva.php?id=88134

Šipek, M., & Šajna, N. (2024). Lowland forest fragment characteristics and anthropogenic disturbances determine alien plant species richness and composition. *Biological invasions*, *26*(5), 1595–1614. https://dk.um.si/IzpisGradiva.php?id=91122