



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 Biologija	/	2.	3.
Univerzitetni program 1. stopnje Ekologija z naravovarstvom			
Undergraduate university programme Biology, 1st cycle	/	2nd	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:

Jih ni.

Prerequisites:

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>
VAUPOTIČ, Ana, ŠAJNA, Nina (avtor, fotograf, ilustrator). *Ekologija : skripta predavanj za 4. letnik enovitega magistrskega študijskega programa Predmetni učitelj smer Izobraževalna biologija*. Maribor: Fakulteta za naravoslovje in matematiko, Oddelek za biologijo, 2025. 44 str., ilustr. [COBISS.SI-ID [255760131](#)]

Cilji in kompetence:

- Študentje pojasnijo temeljne ekološke zakonitosti.
- Navedejo glavne abiotске 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.

Objectives and competences:

- 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:

Po uspešno opravljenih obveznostih predmeta bodo študenti lahko:

- pojasnili osnovne principe v ekologiji;
- predstavili pregled osnovnih abiotских 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;

Intended learning outcomes:

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.
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Metode poučevanja in učenja:

• Predavanja • Terenske vaje • Laboratorijske vaje • Samostojno delo

Learning and teaching methods:

• Lectures • Field work • Laboratory work • Individual work
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Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

• Pisni izpit	100%	• Written exam
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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=87570>

Horvat, 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>