



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.; 2nd | 3.; 3rd |
| Undergraduate university programme Biology, 1st cycle | | | |

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

| Predavanja Lectures | Seminar Seminar | Vaje Tutorial | Klinične vaje work | Druge oblike študija | Samost. delo Individ. work | ECTS |
|------------------------|--------------------|------------------|-----------------------|-------------------------|----------------------------------|------|
| 60 | | | 15 | 15 | 150 | 8 |

Nosilec predmeta / Lecturer:

Jeziki / Languages:

| | |
|-------------------------------|------------------------|
| Predavanja / Lectures: | Slovenščina/ Slovenian |
| Vaje / Tutorial: | Slovenščina/ Slovenian |

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

Prerequisites:

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., Harper J.L., 2006: Ecology: From Individuals to Ecosystems. John Wiley & Sons.
- Tome, D., 2007: Ekologija. TZS.

Priporočena literatura/ Recommended literature:

- Cain M.L., Bowman W.D., Hacker S.D., 2014: Ecology. Sinauer Associates.
- Gurevitch, J., Scheiner S., Fox G: 2002: Plant ecology. Sinauer Associates Inc. Publishers.

Cilji in kompetence:

- 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 (avteknologija) 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:

Znanje in razumevanje:

- osnovnih principov v ekologiji;
- osnovnih abiotskih in biotskih dejavnikov;
- osnovnih pravil, konceptov in teorij v ekologiji;
- osnovnih relacij med osebkom in okoljem;
- osnov populacijske ekologije;
- procesov in dejavnikov sobivanja osebkov in vrst;

Intended learning outcomes:

Knowledge and Understanding:

- of basic ecological principles;
- of abiotic and biotic environmental factors;
- of the basic ecological laws, concepts and theories;
- of the basic relations between the individual and its environment;
- of principles of population ecology;
- of the processes and factors enabling coexistence of individuals and species;

- pomena ekoloških raziskav in usposabljenost za načrtovanje takšnih raziskav.

- importance of the ecological investigations and training of planning such investigations.

Metode poučevanja in učenja:

- Predavanja
- Terenske vaje
- Laboratorijske vaje
- Samostojno delo

Learning and teaching methods:

- Lectures
- Field work
- Laboratory work
- Individual work

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

| | | |
|---|-------------|---|
| <p>Način (pisni izpit, ustno izpraševanje, naloge, projekt)</p> <ul style="list-style-type: none"> • Laboratorijsko/Terensko delo (prisotnost, dnevnik, pisni test) pogoj za pristop k izpitu • Pisni izpit | <p>100%</p> | <p>Type (examination, oral, coursework, project):</p> <ul style="list-style-type: none"> • Lab/Field work (attendance, reports, written exam) mandatory for the final exam • Written exam |
|---|-------------|---|

Reference nosilca / Lecturer's references:

- ŠAJNA, Nina. (2019) First record of non-native Asian seed beetle, *Megabruchidius dorsalis* (Fåhræus, 1839) and its parasitoid, in Slovenia. *BiInvasions Records*, vol. 8.
- KARLO, Tamara, ŠAJNA, Nina. (2017) Biodiversity related understorey stability of small peri-urban forest after a 100-year recurrent flood. *Landscape and Urban Planning*, vol. 162, str. 104-114.
- ŠAJNA, Nina, KUŠAR, Primož. (2014) Modeling species fitness in competitive environments. *Ecological Modelling*, vol. 275, str. 31-36.
- 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, 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*, vol. 12, str. 1111-1123.