



Univerza v Mariboru
University of Maribor

Fakulteta za naravoslovje in
matematiko
Oddelek za biologijo

(znak
članice
UM)

OPIS PREDMETA / SUBJECT SPECIFICATION

Predmet:	Osnove ekologije
Subject Title:	Fundamentals in ecology

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Izobraževalna biologija / Educational Biology		3	5

Univerzitetna koda predmeta / University subject code:

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

Nosilec predmeta / Lecturer:

Jeziki / Predavanja / Lecture:
Languages: Vaje / Tutorial:

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

Prerequisites:

Vsebina:

Contents (Syllabus outline):

- Uvod v ekologijo, definicije
- Organizmi kot odprti kibernetični sistemi
- Organizmi in fizično okolje
- Ekofiziologija (prilagoditve in odzivi organizmov na dejavnike okolja)
- Pregled okoljskih dejavnikov
- Svetloba
- Toplota
- Voda
- Kompleksno delovanje okoljskih dejavnikov
- Populacijska ekologija (struktura in rast populacij, življenjski cikli, demografija)
- Združbe in lastnosti združb, intra- in interspecifična razmerja: plenilstvo, herbivorija, kompeticija, disturbanca, stres, sukcesije
- Ekosistemi, biomi in ekosfera
- Ekosistemski procesi

- Introduction into ecology, definitions
- Organisms as open cybernetic systems
- Organisms and physical environment
- Ecophysiology (adaptations and organismic response to environmental factors)
- An overview of environmental factors
- Light
- Heat
- Water
- Complex functioning of the environmental factors
- Population ecology (structure and growth of populations, life histories, plant demography)
- Communities and community properties, intra- and interspecific relationships: predation, herbivory, competition, disturbance, stress, successions
- Ecosystems, biomes, Earth ecosystem
- Ecosystem processes

Temeljni študijski viri / Textbooks:

- Chapin, F. S., P. A. Matson & H. A. Mooney, 2002: Principles of terrestrial ecosystem ecology. Springer Verlag.
- Gurevitch, J., Scheiner S., Fox G: 2002: Plant ecology. Sinauer Associates Inc. Publishers, Sunderland, Massachusetts, USA.
- Nentwig, W., S. Bacher, C. Beierkuhnlein, R. Brandl & G. Grabherr, 2004: Ökologie. Spektrum Akad.

Verlag, Heidelberg, Berlin.

- Ricklefs, R. E. 2007. The Economy of Nature. W. H. Freeman & Co., New York.
- Stiling, P., 2002: Ecology: theories and applications. Prentice Hall.
- Tarman, K., 1992: Osnove ekologije in ekologija živali. DZS.
- Tome, D., 2007: Ekologija. TZS.

Cilji:

- Podati definicije v ekologiji
- Podati pregled osnovnih ekoloških zakonitosti, konceptov in teorij
- Prikazati nekatere osnovne metode ekološkega vzorčenja
- Podati pregled abiotičkih in biotičkih ekoloških dejavnikov
- Pregled osnovnih relacij med osebkom in okoljem
- Podati osnove populacijske ekologije rastlin
- Spodbujati zanimanje za ekološke raziskave in usposabljanje za načrtovanje takšnih raziskav
- Podati pregled biotičkih Zemlje, Evrope in Slovenije

Objectives:

- To give definitions in ecology
- To give a review of the basic ecological laws, concepts and theories
- To present selected sampling methods in ecology
- To give a review of abiotic and biotic environmental factors
- To give a review of the basic relations between the individual and its environment
- To introduce principles of population ecology
- To rouse the interest for ecological investigations and training of planning such investigations
- To introduce the overview on biomes of the Earth, Europe and Slovenia

Predvideni študijski rezultati:

Znanje in razumevanje:

- Poznavanje in razumevanje temeljnih ekoloških zakonitosti
- Razumevanje homeostaze in ekološkega ravnovesja kot osnovna biotička kibernetična mehanizma
- Poznavanje glavnih abiotičkih dejavnikov
- Poznavanje glavnih biotičkih dejavnikov
- Razumevanje ekoloških procesov v kontekstu globalnih sprememb
- Razumevanje lastnosti in procesov v ekosistemih
- Prepoznavanje in razumevanje ekoloških razmer v konkretnem okolju in sposobnost sodelovanja pri njihovi obravnavi
- Pregled biotičkih ter vegetacije Zemlje, Evrope in Slovenije

Prenesljive/ključne spretnosti in drugi atributi:

- Sposobnost razumevanja ključnih segmentov ekologije rastlin in živali
- Sposobnost izmeriti in razumeti okoljske dejavnike, ki vplivajo na osebek, populacijo in združbo
- Sposobnost uporabe osnovnih ekoloških metod
- Usposobljenost za pripravo ustreznih seznamov, tabel in grafičnih analiz

Intended learning outcomes:

Knowledge and Understanding:

- Knowledge about and understanding basic ecological principles
- Understanding of homeostasis and ecosystem dynamics as basic biotička cybernetic mechanisms
- Knowledge about common abiotic factors
- Knowledge about common biotic factors
- Understanding of the ecological processes in the context of global changes
- Understanding of ecosystem properties and processes
- Recognizing and understanding of the ecological state within a concrete environment, and ability to take a part within discussing them
- An overview over the biomes and vegetation of the Earth, Europe and Slovenia

Transferable/Key Skills and other attributes:

- Ability to understand the key issues in plant and animal ecology
- Capability to measure and understand the environmental factors affecting individuals, populations and communities
- Ability in use of basic ecological methods
- Capability of preparing corresponding lists, tables and graphics

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje
- Terenske vaje

Learning and teaching methods:

- Lectures
- Laboratory excersises
- Field excersises

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

<ul style="list-style-type: none"> • Praktični kolokvij iz vaj in ustni zagovor • Pisni izpit 	50 50	<ul style="list-style-type: none"> • Practical examination of exercises and oral discussion • Written examination
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Materialni pogoji za izvedbo predmeta :

- *Multimedijska predavalnica*
- *Laboratorij z osnovno ekološko opremo*
- *Ekскурzije na teren*

Material conditions for subject realization

- *Lecture hall for multimedia presentations*
- *Laboratory with basic ecological equipment*
- *Field excursions*

Obveznosti študentov:

(pisni, ustni izpit, naloge, projekti)

- Praktični kolokvij iz vaj in ustni zagovor
- Pisni izpit

Students' commitments:

(written, oral examination, coursework, projects):

- Practical examination of exercises and oral discussion
- Written examination