



OPIS PREDMETA / SUBJECT SPECIFICATION

Predmet:	Izbrana poglavja iz raznovrstnosti in identifikacije mikroorganizmov
Subject Title:	Selected Topics in Diversity and Identification of Microorganisms

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Doktorski študij Ekološke znanosti / Doctoral Study Ecological Sciences		Izbirni 1 ali 2 ali 3	2 ali 3 ali 4 ali 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
15	30		15		90	5

Nosilec predmeta / Lecturer:

Maja RUPNIK

Jeziki / Predavanja / Lecture:

slovenski / Slovenian

Languages: Vaje / Tutorial:

slovenski / Slovenian

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

Prerequisites:

Poznavanje mikrobiologije ter citologije in histologije na ravni univerzitetnega programa

Knowledge microbiology, and citology and histology at graduate level

Vsebina:

Contents (Syllabus outline):

Obravnavana so i zbrana poglavja iz naslednjih sklopov.

Selected topics in the following chapters are discussed.

- V okviru predmeta bodo predstavljene reprezentativne skupine bakterij, arhej, gliv, alg in praživali iz normalnih in ekstremnih habitatov s poudarkom na posebnostih fizioloških in biokemijskih karakteristik izbranih taksonov. Predstavljena bo njihova vloga v okolju (pozitivne in negativne posledice).
- Predstavljene bodo teoretične osnove taksonomije mikroorganizmov (vrsta kot osnovna taksonomska enota, taksonomski sistemi) in metode filogenetskega raziskovanja v mikrobiologiji.
- Študentje se bodo seznanili s praktični pristopi za identifikacijo določenih skupin mikroorganizmov iz okolja po izolaciji in gojenju v laboratorijskih razmerah (metode za ugotavljanje fenotipskih znakov, molekularno-biološki pristopi).
- Nadalje bodo predstavljene tehnike shranjevanja mikroorganizmov v laboratorijskih razmerah in metode revitalizacije mikroorganizmov.
- Seznanili se bodo tudi z računalniškimi orodji za taksonomsko obdelavo pridobljenih podatkov.

- Students will get familiar with the representative groups of bacteria, archaea, algae and protozoa from normal and extreme habitats. Focus will be on physiological and biochemical characteristics of selected taxons. Their role in the environment will be presented (positive and negative).
- Theoretical basis of microbial taxonomy will be discussed (concept of species as a basic taxonomic unit, taxonomic systems) and the methods used for inferring the microbial phylogeny.
- Students will get familiar with practical approaches for identification of certain groups of microorganisms previously isolated and cultivated under laboratory conditions (methods for identification of phenotypic characters, molecular-biological approaches).
- Further on, techniques for preservation of microorganisms under the laboratory conditions will be presented as well as the methods for their revitalization.
- Students will get familiar also with computer tools for performing taxonomical analysis of data obtained in the laboratory.

Temeljni študijski viri / Textbooks:

- Bergey's manual of determinative microbiology
- Bergey's manual of systematic bacteriology
- Logan, N.A., 1994: Bacterial Systematics, Blackwell Scientific Publications.
- Prescott, L. M., J. P. Harley, D. A. Klein, 2004: Microbiology. 6th Edition, McGraw-Hill College.

Cilji:

- Slušatelje podrobno seznaniti z različnimi taksonomskimi skupinami prokariotskih in evkariotskih mikroorganizmov ter z njihovo vlogo v okolju
- Podrobno predstaviti klasične in moderne molekularno-biološke pristope za klasifikacijo in identifikacijo mikroorganizmov, pridobljenih po izolaciji, ter za njihovo neposredno sledenje v okolju
- Podrobno predstaviti možnosti računalniške obdelave podatkov v mikrobni taksonomiji

Objectives:

- To present in detail different taxonomical groups of prokaryotic and eukaryotic microorganisms and their role within an environment
- To present in detail classical as well as modern molecular-biological approaches for classification and identification of microorganisms after their isolation, and methods of tracing them in environments
- To present in detail possibilities for computer analysis in microbial taxonomy

Predvideni študijski rezultati:

Znanje in razumevanje:

- Biokemijska in fiziološka raznovrstnost mikroorganizmov iz različnih habitatov v podrobnosti
- Taksonomija mikroorganizmov v podrobnosti
- Poznavanje metod za identifikacijo mikroorganizmov v podrobnosti

Prenesljive/ključne spretnosti in drugi atributi:

- Podrobna seznanjenost z raznovrstnostjo mikroorganizmov v okolju

Knowledge and Understanding:

- Biochemistry and physiology of microorganisms from different habitats in detail
- Advanced taxonomy of microorganisms
- Advanced methods for identification of microorganisms

Transferable/Key Skills and other attributes:

- Getting familiar with the microbial diversity within environments in detail

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje

Learning and teaching methods:

- Lectures
- Laboratory excersises

Načini ocenjevanja:

- Kolokvij
- Pisni izpit

Delež (v %) /
Weight (in %)50 %
50 %**Assessment:**

- Partial exam
- Written exam

Materialni pogoji za izvedbo predmeta :

- *Multimedijska predavalnica*
- *Laboratorij z mikroskopi, vodo in plinsko napeljavo*

Material conditions for subject realization

- *Lecture hall for multimedia presentations*
- *Laboratory with microscopes, water and gas infrastructure*

Obveznosti študentov:*(pisni, ustni izpit, naloge, projekti)*

- Kolokvij
- Pisni izpit

Students' commitments:*(written, oral examination, coursework, projects):*

- Partial exam
- Written exam