



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Izbrana poglavja iz ekotoksikologije
Course title:	Selected topics in Ecotoxicology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Doktorski študij Ekološke znanosti, 3. stopnja		1. ali 2.; 1st or 2nd	1.- 4.; 1st-4th
Doctoral Study Ecological Sciences, 3rd degree			

Vrsta predmeta / Course type: Izbirni/Elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Terenske vaje Field work	Samost. delo Individ. work	ECTS
25	5				150	6

Nosilec predmeta / Lecturer: Bojana Vončina

Jeziki / Predavanja / Lectures: slovenski / Slovene  
Languages: Vaje / Tutorial: slovenski / Slovene

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

Poznavanje kemije in biokemije na ravni univerzitetnega programa.

**Prerequisites:**

Knowledge of chemistry and biochemistry at graduate level.

**Vsebina:**

Definicije v ekotoksikologiji

Tipi onesnaževanja okolja:

- Kovine
- Nekovine
- Organske snovi
- Organokovinske snovi

Načini vnosa določenih onesnaževal v ekosisteme;

**Content (Syllabus outline):**

Definitions in ecotoxicology

Different pollutants:

- Metals
- Non-metals
- Organic compounds
- Organometallic compounds

Entry of specific pollutants in ecosystems;  
Study of mechanisms of some selected

Razporejanje onesnaževal v ekosistemih;  
Mehanizmi delovanja nekaterih izbranih onesnaževal;  
Napredne analize metode v ekotoksikologiji in ocena tveganja za različne onesnaževalce nizkih koncentracij;  
Biomarkerji in biosenzorji.

pollutans;  
Advanced testing in ecotoxicology and risk assessment of chemicals of low doses;  
Biomarkers and biosensors.

### Temeljna literatura in viri / Readings:

Newman, M.C., Unger, M.A., 2003, Fundamentals of Ecotoxicology, Lewis Publishers, 2nd edition  
Čehić, S., 2007, Kemikalije v okolju, Statistični urad republike Slovenije  
Visser, J.E., Ecotoxicology Around the Globe, 2010, Nova Science Publishers, Incorporated  
Various scientific papers chosen according to selected topics.

### Cilji in kompetence:

Študent spozna:

- Različne tipe onesnaževal ter njihovo razporejanje v ekosistemih
- Načine testiranja v ekotoksikologiji
- Učinke onesnaženja v nizkih koncentracijah na populacije in ekosisteme
- Oceno tveganja
- Biomarkerje in biosenzorji

### Objectives and competences:

Students learn:

- Various types of pollutants and their distributions in ecosystems
- Testing methods in ecotoxicology
- Effects of pollutants of low concentrations on populations and ecosystems
- Risk assessment
- Biomarkers and biosensors

### Predvideni študijski rezultati:

#### Znanje in razumevanje:

Študent pridobi znanja in razume:

- Možne učinke onesnaževal na populacije in ekosisteme
- Načine testiranja v ekotoksikologiji
- Nekatere (izbrane) mehanizme v ekotoksikologiji
- Delovanje biomarkerjev in biosenzorjev

#### Prenesljive/ključne spretnosti in drugi atributi:

- Spretnosti komuniciranja
- Reševanja problemov

### Intended learning outcomes:

#### Knowledge and understanding:

Student understands:

- Possible influences of pollutants on population and ecosystem
- Knows basic principles of testing in ecotoxicology
- Some selected mechanisms in ecotoxicology
- Activity of biomarkers and biosensors
- Understand some selected mechanisms in ecotoxicology

#### Transferable/Key Skills and other attributes:

- Communication skills
- Problem solving ability
- Collaboration during lectures

- Sprotno delo
- Spretnosti priprave seminarskih nalog in javnega nastopanja
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- Ability to prepare a seminar work and public presentations

**Metode poučevanja in učenja:**

**Learning and teaching methods:**

- Predavanja
- Seminar

- Lectures
- Seminar work

Delež (v %) /

**Načini ocenjevanja:**

Weight (in %)

**Assessment:**

- Pisni izpit
- Projektno naravnana seminarska naloga

80%  
20%

- Written exam
- Project oriented seminar work

**Reference nosilca / Lecturer's references:**

1. FECZKÓ, Tivadar, VONČINA, Bojana. Organic nanoparticulate photochromes. *Current organic chemistry*, ISSN 1385-2728, Aug. 2013, vol. 17, no. 16, str. 1771-1789, ilustr., doi: [10.2174/1385272811317160011](https://doi.org/10.2174/1385272811317160011). [COBISS.SI-ID [17107990](#)], [[JCR](#), [SNIP](#), [WoS](#) do 19. 4. 2017: št. citatov (TC): 5, čistih citatov (CI): 5, [Scopus](#) do 26. 1. 2017: št. citatov (TC): 5, čistih citatov (CI): 5]
2. FECZKÓ, Tivadar, SAMU, Krisztián, WENZEL, Klára, NERAL, Branko, VONČINA, Bojana. Textiles screen-printed with photochromic ethyl cellulose-spirooxazine composite nanoparticles. *Coloration technology*, ISSN 1472-3581, Feb. 2013, vol. 129, iss. 1, str. 18-23, doi: [10.1111/j.1478-4408.2012.00404.x](https://doi.org/10.1111/j.1478-4408.2012.00404.x). [COBISS.SI-ID [16435734](#)], [[JCR](#), [SNIP](#), [WoS](#) do 27. 11. 2016: št. citatov (TC): 6, čistih citatov (CI): 6, [Scopus](#) do 26. 4. 2017: št. citatov (TC): 9, čistih citatov (CI): 9]
3. VONČINA, Bojana, FRAS ZEMLIČ, Lidija, RISTIĆ, Tijana. Active textile dressings for wound healing. V: LANGENHOVE, Lieva van (ur.). *Advances in smart medical textiles : treatments and health monitoring*, (Woodhead publishing series in textiles, no. 173). Amsterdam [etc.]: Elsevier, cop. 2016, str. [73]-92, ilustr. [COBISS.SI-ID [19244310](#)]
4. VONČINA, Bojana. Application des cyclodextrines dans le secteur textiles. V: MORIN-CRINI, Nadia (ur.), FOURMENTIN, Sophie (ur.), CRINI, Grégorio (ur.). *Cyclodextrines : histoire, propriétés, chimie & applictions*. [Besançon cedex]: Presses universitaires de Franche-Comté, cop. 2015, str. [301]-313. [COBISS.SI-ID [18794006](#)]