



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

**UČNI NAČRT PREDMETA / COURSE SYLLABUS**

<b>Predmet:</b>	<b>Izbrana poglavja iz ekotoksikologije</b>
<b>Course title:</b>	<b>Selected topics in Ecotoxicology</b>

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. ali 3.; 1st or 2nd or 3rd	2. ali 3. ali 4. ali 5.; 2nd or 3rd or 4th or 5th
Doctoral Study Ecological Sciences, 3rd degree			

**Vrsta predmeta / Course type**

**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
5	5				140	5

**Nosilec predmeta / Lecturer:**

<b>Jeziki /</b>	<b>Predavanja / Lectures:</b>	slovenski / slovene
<b>Languages:</b>	<b>Vaje / Tutorial:</b>	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
- Pesticidi
- Kemikalije (REACH)
- Zdravila, detergenti

In njihovi vplivi na ekosisteme;  
Načini vnosa v ekosisteme;  
Razporejanje onesnaževal v ekosistemih;

**Content (Syllabus outline):**

Definitions in ecotoxicology  
Different pollutants:

- Metals
- Non-metals
- Pesticides
- Chemicals (REACH)
- Pharmaceutical compounds; detergents

and their influences on ecosystems;  
Entry of pollutants in ecosystems;  
Study of mechanisms of some selected

Študij mehanizmov delovanja nekaterih izbranih strupov;  
Napredne metode v ekotoksikologiji in ocena tveganja za različne onesnaževalce nizkih koncentracij;  
Biomarkerji in biosenzorji.

pollutants;  
Advance testing's in ecotoxicology and risk assessment of chemicals at low doses;  
Biomarkers and biosensors.

### Temeljni 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 onesnaževanja onesnaževal v nizkih koncentracijah na populacije in ekosisteme
- Ocena tveganja
- Biomarkerji in biosenzorji

### Objectives and competences:

Student learns:

- Various types of pollutants and their distributions in ecosystems
- Testing methods in ecotoxicology
- Effects of pollution of low concentration pollutants on populations and ecosystems
- Risk assessments
- 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
- Sprotno delo
- Spretnosti priprave seminarskih nalog in javnega nastopanja

### Intended learning outcomes:

#### Knowledge and understanding:

Student understand:  
Possible influences of pollutants on population and ecosystem  
Knows basic principles of testing's 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
- Problems solving ability
- Collaboration during lectures
- Ability to prepare a seminar work and public presentations

### Metode poučevanja in učenja:

- Predavanja
- Seminar

### Learning and teaching methods:

- Lectures
- Seminar work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
<ul style="list-style-type: none"> <li>• Pisni izpit</li> <li>• Projektno naravnana seminarska naloga</li> </ul>	80  20	<ul style="list-style-type: none"> <li>• Written exam</li> <li>• Project oriented seminar work</li> </ul>

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

VONČINA, Bojana, PINTAR, Marija. Na odlagališčih že preveč tekstilnih materialov. *Embalaza, okolje, logistika*, feb. 2011, 56, str. 28-29

MATAIČ, Maja, VONČINA, Bojana. Recikliranje tekstilnih materialov. *Tekstilec*, 2010, letn. 53, št. 1/3, str. 50-58

VONČINA, Bojana, VIVOD, Vera. Cyclodextrins in textile finishing. V: GÜNAY, Melih (ur.). *Eco-friendly textile dyeing and finishing*. Rijeka: InTech, 2013, str. 53-75,

MEDRONHO, Bruno, ANDRADE, Rita, VIVOD, Vera, ÖSTLUND, A., MIGUEL, Maria de Graça Martins, LINDMAN, Bjorn, VONČINA, Bojana, VALENTE, Artur J. M. Cyclodextrin-grafted cellulose : physico-chemical characterization. *Carbohydr. polym.* [Print ed.], str. 324-330

VONCINA, B., et. al., Eco-friendly durable press finishing of textile interlinings, *FIBRES & TEXTILES IN EASTERN EUROPE*, 2002, Volume: 10 Issue: 3 Pages: 68-71