



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

| | |
|----------------------|-----------------------------|
| Predmet: | Ekološki procesi |
| Course title: | Ecological Processes |

| 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 cycle | | | |

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 |
|------------------------|--------------------|------------------|------------------------------|-----------------------------|-------------------------------|------|
| 10 | 10 | | 5 | 5 | 150 | 6 |

Nosilec predmeta / Lecturer:

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

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

| Vsebina: | Content (Syllabus outline): |
|--|--|
| <ul style="list-style-type: none">• Dinamika in funkcija ekosistemov v prostoru in času• Ekološke sukcesije in invazije• Pregled pristopov, konceptov, modelov o stabilnosti, prožnosti in trajnostnosti ekosistemov• Persistenca in razširjenost rastlin in živali• Mehanizmi sobivanja (koeksistence), | <ul style="list-style-type: none">• Dynamics and functions of ecological systems at multiple spatial and temporal scales• Ecological successions and invasions• Overview of approaches, concepts and models of ecosystem stability, resilience and sustainability• Persistence and distribution of plants and animals |

- alelopatije, facilitacije
- Učinek globalnih sprememb na ekološke procese

- Mechanisms of coexistence, allelopathy, facilitation
- Global Change impact on ecological processes

Temeljni literatura in viri / Readings:

Temeljna literatura / Basic readings:

Dietze, M. C. (2017). *Ecological Forecasting*. Princeton University Press.

Kelly, C. K., Bowler, M. G. in Fox, G. A. (ur.). (2013). *Temporal dynamics and ecological process*. Cambridge University Press.

Dodatna literatura / Additional readings:

Šajna, N., & Kušar, P. (2014). Modeling species fitness in competitive environments. *Ecological modelling*, 275, 31–36. <http://dx.doi.org/10.1016/j.ecolmodel.2013.12.007>

Šipek, M., Kutnar, L., Marinšek, A., & Šajna, N. (2022). Contrasting responses of alien and ancient forest indicator plant species to fragmentation process in the temperate lowland forests. *Plants*, 11(23), 13. <https://www.mdpi.com/2223-7747/11/23/3392>

Wilkinson, D. M. (2006). *Fundamental processes in ecology: an earth systems approach*. (str. XI, 182). Oxford University Press.

Cilji in kompetence:

- Analiza dinamike in funkcij ekosistemov v različnih prostorskih merilih (lokalno-globalno) in v različnih časovnih okvirih (sukcesije).
- Ovrednotenje pomena stabilnosti, prožnosti in trajnostnosti ekosistemov na primerih npr. bioloških invazij.
- Diskutiranje o dejavnikih za persistenco in razširjenost rastlin in živali na primerih.
- Kritično ovrednotenje mehanizmov sobivanja.
- Diskutirati učinek globalnih sprememb na ekološke procese.

Objectives and competences:

- Analysis of ecosystem dynamics and functions in various space (local-global) and time frames (e.g. succession).
- Evaluation of the meaning of ecosystem stability, resilience and sustainability on the cases of biological invasions.
- Discussion of factors defining persistence and distribution of plants and animals.
- Critical evaluation of coexistence mechanisms.
- Discussing the effect of global change on ecological processes.

Predvideni študijski rezultati:

Študenti bodo sposobni:

- ovrednotiti ekološke procese (npr. sukcesije, biološke invazije) in funkcij;
- diskutirati spreminjanje ekoloških procesov v prostoru in času;
- ovrednotiti primere konceptov: stabilno sobivanje, časovna dinamika niše,

Intended learning outcomes:

Student will be able to:

- evaluate ecological processes (e.g. succession, biological invasions) and functions;
- discuss spatial and temporal variation of ecological processes;
- evaluate concepts: stable coexistence,

dinamika kompetitivnega izključevanja in drugi;

- diskutirati vpliv globalnih sprememb in njihovih interferenc z ekološkimi procesi.

temporal niche dynamics, dynamics of competitive exclusion etc. with case studies;

- discuss the impact of global change on ecological processes.

Metode poučevanja in učenja:

- Predavanja
- Seminar
- Terenske vaje
- Laboratorijske vaje
- Individualno delo

Learning and teaching methods:

- Lectures
- Seminar
- Field work
- Laboratory work
- Individual work

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

| | | |
|---|-------------|---|
| <ul style="list-style-type: none"> • Ustni izpit | <p>100%</p> | <ul style="list-style-type: none"> • Oral exam |
|---|-------------|---|

Reference nosilca / Lecturer's references:

Šajna, N., Urek, T., Kušar, P., & Šipek, M. (2023). The importance of thermally abnormal waters for bioinvasions - a case study of *Pistia stratiotes*. *Diversity*, 15(3, [] 421), 22. <https://dk.um.si/lzpisGradiva.php?id=88134>

Šipek, M., Ravnjak, T., & Šajna, N. (2023). Understorey species distinguish late successional and ancient forests after decades of minimum human intervention: a case study from Slovenia. *Forest ecosystems*, 10(] 100096), 10. <https://dk.um.si/lzpisGradiva.php?id=88130>

Šipek, M., Kutnar, L., Marinšek, A., & Šajna, N. (2022). Contrasting responses of alien and ancient forest indicator plant species to fragmentation process in the temperate lowland forests. *Plants*, 11(23), 13. <https://www.mdpi.com/2223-7747/11/23/3392>