

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	OSNOVE BIOLOŠKIH PROCESOV
Course title:	THE BASICS OF BIOLOGICAL PROCESSES

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Vede o Zemlji in okolju, magistrski študij 2. stopnje	Biodiverziteteta, ekologija in evolucija	1	1
Earth and Environmental Sciences, Master study 2nd level	Biodiversity, ecology and evolution	1	1

Vrsta predmeta / Course type	Izbirni (*obvezen za študente brez biološkega dodiplomskega predznanja) / Elective (*mandatory for students without undergraduate biological training)
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Univerzitetna koda predmeta / University course code: **MIB01**

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	10				35	3

Nosilec predmeta / Lecturer: Matjaž Gregorič
(asistentka: Shakira G. Quiñones Lebron)

Jeziki / Languages:	Predavanja / Lectures: angleščina, angleščina / Slovenian, English
	Vaje / Tutorial: angleščina, angleščina / Slovenian, English

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

Končan študijski program 1. stopnje ali dodiplomski študijski program za pridobitev univerzitetne izobrazbe, sprejet pred 11. 6. 2004 s področja naravoslovja.

Prerequisites:

First-cycle Bologna degree or a university degree in the natural sciences.

Vsebina:

Content (Syllabus outline):

- Kemijski gradniki življenja in biomolekule
- Zgradba in delovanje celic
- Celično dihanje in metabolizem
- Fotosinteza
- Zgradba in podvojevanje DNA
- Sinteza proteinov
- Ekspresija genov
- Obtočila in prebava
- Izločala
- Hormoni
- Izmenjava plinov
- Razmnoževanje
- Delovanje živčnih celic
- Delovanje mišičnih celic

- Chemical constituents of life and biomolecules
- Cell structure and function
- Cellular respiration and metabolism
- Photosynthesis
- DNA structure and replication
- Protein synthesis
- Gene expression
- Circulation and digestion
- Excretion
- Hormones
- Gas exchange
- Reproduction
- Nerve cell function
- Muscle cell function

Temeljni literatura in viri / Readings:

- Reece, J. B., Urry, L. A., Cain, M. L., Wasserman, S. A., Minorsky, P. V., Jackson, R. B. (2013). *Campbell biology*. Pearson Higher Education AU. Izbrana poglavja.
- Izbrani članki iz znanstvenih revij / Selected articles from scientific journals

Cilji in kompetence:

Namen predmeta je seznaniti študente z osnovami bioloških procesov. Skozi predavanja bodo študenti spoznali procese od osnovne ravni, kot je organizacija žive snovi, pa do kompleksnih procesov, kot so prebava in presnova, razmnoževanje, lokomocija in delovanje živčevja. Študenti bodo med spoznavanjem posameznih bioloških procesov izvedeli kako se ti procesi razlikujejo med osnovnimi skupinami organizmov in kako to odraža njihovo biologijo. S kratko seminarsko nalogi bodo pridobili izkušnje samostojnega zbiranja izbranih vsebin in njihove smiselne umestitve v tematiko bioloških procesov v biologiji.

Objectives and competences:

The purpose of the course is to familiarize students with the basics of biological processes. The course will define and explain processes from the lowest levels, such as the organization of living matter, to complex processes such as metabolism and digestion, reproduction, locomotion, and nerve cell function. During the lectures about individual biological processes, students will gain the insight into how these processes differ between main groups of organisms, and how this reflects their biology. With a short seminar paper, they will gather experience in independent information gathering of selected topics, and their meaningful implementation into the topic of biological processes.

Predvideni študijski rezultati:

- Razumevanje osnov poglavitnih bioloških procesov.
- Poznavanje kako se biološki procesi razlikujejo med osnovnimi skupinami organizmov.

Intended learning outcomes:

- Understanding of the basics of main biological processes.
- Insight into how biological processes differ between main groups of organisms.

Metode poučevanja in učenja:

Learning and teaching methods:

- Predavanja
- Seminar

- Lectures
- Seminar

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment
• Izpit (ustni)	50%	• Exam (oral)
• Kratka seminarska naloga, predstavitev	50%	• Short seminar, presentation

Reference nosilca / Lecturer's references:

1. Luo Y., Goh S. P., Li D., Gonzaga M. O., Santos A. J., Tanikawa A., Yoshida H., Haddad C. R., May-Collado L. J., **Gregorič M.**, Turk E., Kuntner M., Agnarsson I. (2020). Global diversification of *Anelosimus* spiders driven by long distance overwater dispersal and Neogene climate oscillations. *Systematic Biology* syaa017.
2. Garb J. E., Haney R. A., Schwager E. E., **Gregorič M.**, Kuntner M., Agnarsson I. & Blackledge T. A. (2019). The transcriptome of Darwin's bark spider silk glands predicts proteins contributing to dragline silk toughness. *Communications Biology* 2: 275.
3. **Gregorič M.**, Šuen K., Cheng R. C., Kralj-Fišer S. & Kuntner M. (2016). Spider sexual behaviors include oral sexual encounters. *Scientific Reports* 6:25128.
4. **Gregorič, M.**, Agnarsson, I., Blackledge, T. A., & Kuntner, M. (2015). Phylogenetic position and composition of Zygiellinae and *Caerostris*, with new insight into orb-web evolution and gigantism. *Zoological Journal of the Linnean Society*.
5. **Gregorič, M.**, Agnarsson, I., Blackledge, T. A., & Kuntner, M. (2011). How did the spider cross the river? Behavioral adaptations for river-bridging webs in *Caerostris darwini* (Araneae: Araneidae). *PLoS one*, 6(10), e26847.