



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Citološki praktikum
Course title:	Practicum of cytology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	2	3
Five-year master's degree program Subject Teacher	/		

Vrsta predmeta / Course type

Obvezni / Obligatory

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
15			30		45	3

Nosilec predmeta / Lecturer:

Saška Lipovšek

Jeziki /

Predavanja / Lectures:

slovenski / slovene

Languages:

Vaje / Tutorial:

slovenski / slovene

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

Positivno opravljeno laboratorijsko delo je pogoj za pristop k opravljanju izpita.

Obe naštetii obveznosti v načinih ocenjevanja morata biti opravljeni s pozitivno oceno.

Prerequisites:

Positive result of the laboratory work is a prerequisite for the written exam.

Both of the mentioned commitments must be assessed with a passing grade.

Vsebina:

Razumevanje biologije celice je temeljno za razumevanje drugih področij biologije. Študenti se seznajajo z raziskovalnimi metodami, ki se uporabljajo v moderni biologiji celice. Študenti spoznajo celične strukture, njihove funkcije.

Povzetek vsebin:

- Metode proučevanja celic
- Celični kompartmenti
- Mitoza, mejoza
- Apoptoza, nekroza

Content (Syllabus outline):

Understanding the biology of the cell is fundamental for understanding of other biological sciences. This subject provides an introduction to the basic methods for studying cells. It focuses on different cell structures and their functions.

Abstract of contents:

- Tools of cell biology
- Cell compartments
- Mitosis, meiosis
- Apoptosis, necrosis

Temeljni literatura in viri / Readings:

Temeljni vir/Basic literature:

Alberts, B. (2002). *Molecular biology of the cell* (4th ed., str. XXXIV, 1463, 86). Garland Science.

Jezernik, K., Veranič, P., & Sterle, M. (2018). *Celična biologija: učbenik za študente Medicinske fakultete* (1. izd., str. 263). DZS.

Priporočena literatura / Recommended literature:

Veranič, P., Romih, R., & Pšeničnik, M. (2010). *Praktični pouk celične biologije* (3. natis, str. 118). Tehniška založba Slovenije.

Karp, G. (2010). *Cell biology* (6th ed., International student version, str. XVIII, 765, 46). J. Wiley & sons.

Pavelka, M., & Roth, J. (2015). *Functional ultrastructure: atlas of tissue biology and pathology* (3rd revised and enlarged ed., str. XX, 402). Springer.

Lodish, H. F. (2016). *Molecular cell biology* (8th ed., str. XL, 1170). W.H. Freeman, Macmillan Learning.

Dariš, B., & Lipovšek Delakorda, S. (2021). *Biologija celice: navodila za vaje za študijski program Biologija* (1. izd., str. 70). Univerzitetna založba. doi:10.18690/978-961-286-368-5

Cilji in kompetence:

Razumevanje metod, ki se uporabljajo v moderni biologiji celice.

Poznavanje struktur in razumevanje osnovnih procesov v celicah.

Objectives and competences:

Understanding of basic methods used in modern cell biological research.

Knowledge of cell structures and understanding of basic cell processes.

Predvideni študijski rezultati:**Znanje in razumevanje:**

Študent bo:

- znal samostojno načrtovati laboratorijsko delo in pripraviti material za izvedbo dela;
- pridobil izkušnje in spretnosti, ki so nujno potrebne pri samostojnem laboratorijskem delu;
- razumel kemijske lastnosti makromolekul v celici in na osnovi znanja bo predvideval o strukturnih značilnostih celičnih organelov;
- sposoben uporabiti znanje o strukturnih značilnostih različnih tipov evkariotskih celic in posledično bo pravilno predvideval o njihovih funkcijah;

Intended learning outcomes:**Knowledge and understanding:**

Student will be able to:

- plan the laboratory work and the material independently;
- acquire experience and skills that are essential for individual laboratory work;
- understand chemical characteristics of different macromolecules in the cell, consequently he will be able to predict structural characteristics of the cell organelles;
- use the knowledge about structural characteristics of different types of eukaryotic cells, and consequently, he will be able to make important conclusions about their functions;

- na osnovi novega znanja znal ovrednotiti pomen kompleksne povezanosti celic v tkivih;	- evaluate the importance of complex connectivity of different types of cells in the tissue;
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Metode poučevanja in učenja:
Learning and teaching methods:

- Predavanja - Laboratorijske vaje	- Lectures - Laboratory exercises
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Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Laboratorijsko delo	30	Laboratory work
Pisni izpit	70	Written exam

Reference nosilca / Lecturer's references:

1. Lipovšek Delakorda, S., Vajs, T., Dariš, B., Novak, T., & Kozel, P. (2024). Autophagic activity in the midgut cells of three arachnids responds selectively to different modes of overwintering in caves. *Protoplasma*, 14. <https://doi.org/10.1007/s00709-024-02009-x>
2. Lipovšek Delakorda, S., Dolenšek, J., Dariš, B., Valladolid-Acebes, I., Vajs, T., Leitinger, G., Stožer, A., & Skelin, M. (2024). Western diet-induced ultrastructural changes in mouse pancreatic acinar cells. *Frontiers in cell and developmental biology*, 12(1380564), 17. <https://www.frontiersin.org/articles/10.3389/fcell.2024.1380564/full>
3. Kozel, P., Novak, T., Janžekovič, F., & Lipovšek Delakorda, S. (2023). Starvation hardiness as preadaptation for life in subterranean habitats. *Scientific reports*, 13(9643), 18. <https://dk.um.si/IzpisGradiva.php?id=86400>
4. Lipovšek Delakorda, S., Novak, T., Dariš, B., Hofer, F., Leitinger, G., & Letofsky-Papst, I. (2022). Ultrastructure of spherites in the midgut diverticula and Malpighian tubules of the harvestman *Amilenus aurantiacus* during the winter diapause. *Histochemistry and cell biology*, 157(1), 107–118. doi:10.1007/s00418-021-02046-0