



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Citologija in histologija
Course title:	Cytology and Histology

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Biologija in ekologija z naravovarstvom, 2. stopnja	/	1	2
Biology and Ecology with Nature Conservation, 2 nd cycle	/	1	2

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	10	30			110	6

Nosilec predmeta / Lecturer:

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

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

Jih ni.

Prerequisites:

No.

Vsebina:

Content (Syllabus outline):

Razumevanje citoloških in histoloških vsebin je temeljno za razumevanje drugih področij biologije. Študenti se seznanijo z različnimi raziskovalnimi metodami v citologiji in histologiji, predvsem metodami vizualizacije celic. Spoznajo značilnosti prokariotske in evkariotske celice, njihovo strukturo in funkcijo, ter značilnosti različnih vrst tkiv.

Understanding of the cytology and histology is fundamental to all biological sciences. This subject provides an introduction of different methods in cytology and histology, especially for visualizing cells. It focuses on the main characteristics of prokaryotic and eukaryotic cells, their structure and function. Additionally, the subject provides the knowledge of the structure and function of different types of tissue.

Temeljni literatura in viri / Readings:

Temeljna literatura / Basic:

Mescher A. L, 2017. Junqueira's Basic Histology Text and Atlas, 14th Edition. Lange, New York.
Young B. et al. (2013) Wheater's Functional Histology. A Text and Colour Atlas. Elsevier.
Gartner L. P. et al. (2012) Color Atlas and Text of Histology. Lippincott Williams & Wilkins.

Priporočena literatura / Recommended:

Alberts, B. s sod., 2014. Molecular Biology of the Cell, 6th Edition. Garland Science, New York.
Karp G., 2013. Cell and Molecular Biology. Concepts and experiments, 7th Edition. John Wiley and Sons Inc.
Lodish H. s sod., 2010. Molecular Cell Biology. W.H. Freeman, New York.
Pavelka M., Roth J., 2015. Functional Ultrastructure. Springer, Wien, New York.

Cilji in kompetence:

Študenti razumejo značilnosti raziskovalnih metod v moderni citologiji in histologiji, ter jih znajo uporabiti v novih situacijah pri raziskovalnem delu.
Študenti pridobijo poglobljena znanja na specifičnih področjih citologije in histologije.

Objectives and competences:

Students understand research methods in cytology and histology, and are able to use the knowledge in new research projects.
Students acquire advanced knowledge in specific fields of cytology and histology.

Predvideni študijski rezultati:

Po uspešno opravljeni učni enoti naj bi bil študent sposoben:

- samostojno načrtovati laboratorijsko delo in pripraviti material za izvedbo dela;
- upoštevati pravila za mikroskopiranje;
- razumeti kemijske lastnosti makromolekul v celici in na osnovi

Intended learning outcomes:

By the end of this course students should be able to:

- plan the laboratory work and the material independently;
- use the microscope according to the instructions;
- understand chemical characteristics of different macromolecules in the cell,

<p>znanja bo predvideval o strukturnih značilnostih celičnih kompartmentov;</p> <ul style="list-style-type: none"> - razumeti mehanizme delovanja različnih tipov evkariotskih celic in posledično bo pravilno predvideval o strukturnih in funkcionalnih značilnostih tkiv. - na osnovi novega znanja ovrednotiti pomen kompleksne povezanosti tkiv v posameznih organskih sistemih. 	<p>consequently he will be able to predict structural characteristics of the cell compartments;</p> <ul style="list-style-type: none"> - understand functional mechanisms of different eukaryotic cells, consequently he will be able to make important conclusions about the structure and function of different types of the tissue; - evaluate the importance of complex connectivity of different types of the tissue in individual systems.
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Metode poučevanja in učenja:

<ul style="list-style-type: none"> - Predavanja; - Seminarji; - Laboratorijske vaje.

Learning and teaching methods:

<ul style="list-style-type: none"> - Lectures; - Seminar work; - Laboratory work.
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Delež (v %) /

Weight (in %)

Načini ocenjevanja:

Assessment:

<p>Način (pisni izpit, ustno izpraševanje, naloge, projekt):</p> <ul style="list-style-type: none"> - Seminarska naloga (20%); - Pisni izpit (80%). 	<p>20%</p> <p>80%</p>	<p>Type (examination, oral, coursework, project):</p> <ul style="list-style-type: none"> - Seminar work (20 %); - Written exam (80 %).
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Reference nosilca / Lecturer's references:

LIPOVŠEK DELAKORDA, Saška, LEITINGER, Gerd, JANŽEKovič, Franc, KOZEL, Peter, DARIŠ, Barbara, PERC, Matjaž, DEVETAK, Dušan, WEILAND, Nina, NOVAK, Tone. Towards understanding partial adaptation to the subterranean habitat in the European cave spider, *Meta menardi* : an ecocytological approach. Scientific reports. 2019, vol. 9, art. no. 9121, str. 1-15. ISSN 2045-2322. DOI: 10.1038/s41598-019-45291-z. [COBISS.SI-ID 24633608]

LIPOVŠEK DELAKORDA, Saška, KOZEL, Peter, LEITINGER, Gerd, NOVAK, Tone. Malpighian tubules in harvestmen. *Protoplasma*. 2021, vol. 258, iss. 5, str. 1145-1153, ilustr. ISSN 0033-183X. DOI: 10.1007/s00709-021-01634-0. [COBISS.SI-ID 57977603]

LIPOVŠEK DELAKORDA, Saška, NOVAK, Tone, DARIŠ, Barbara, HOFER, Ferdinand, LEITINGER, Gerd, LETOFSKY-PAPST, Ilse. Ultrastructure of spherites in the midgut diverticula and Malpighian tubules of the harvestman *Amilenus aurantiacus* during the winter diapause. *Histochemistry and cell biology*. Jan. 2022, vol.157, iss. 1, str. 107-118, ilustr. ISSN 0948-6143. DOI: 10.1007/s00418-021-02046-0. [COBISS.SI-ID 83684611]

SKELIN, Maša, DOLENŠEK, Jurij, VALLADOLID-ACEBES, Ismael, STOŽER, Andraž, LIPOVŠEK DELAKORDA, Saška. Application of transmission electron microscopy to detect changes in pancreas physiology. V: MHADHBI, Mohsen (ur.). *Electron microscopy*. London: IntechOpen, 2022. Str. 1-22, ilustr. ISBN 978-1-80355-946-9, ISBN 978-1-80355-947-6.

<https://www.intechopen.com/chapters/81936>, DOI: 10.5772/intechopen.104807. [COBISS.SI-ID 118338051]

SUNKARA, Sowmya, RADULOVIĆ, Snježana, LIPOVŠEK DELAKORDA, Saška, BIRKL, Christoph, EGGENREICH, Stefan, BIRKL-TOEGLHOFER, Anna Maria, SCHINAGL, Maximilian, FUNK, Daniel, STÖGER-POLLACH, Michael, HAYBAECK, Johannes, GÖSSLER, Walter, ROPELE, Stefan, LEITINGER, Gerd. Autolysis affects the iron cargo of ferritins in neurons and glial cells at different rates in the human brain. *Applied biochemistry and biotechnology*. 2023, 15 str., ilustr. ISSN 0273-2289. DOI: 10.1007/s10571-023-01332-w. [COBISS.SI-ID 145448963]