Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Izbrana poglavja iz citologije in histologije**
Course title:	**Selected Topics in Cytology and Histology**

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 degree			

Vrsta predmeta / Course type Izbirni/Elective

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	15				150	6

Nosilec predmeta / Lecturer: Saška LIPOVŠEK

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisits:
Poznavanje citologije in histologije na ravni univerzitetnega programa	Knowledge of cytology and histology at Graduate level

Vsebina:	Content (Syllabus outline):
Obravnavana so izbrana poglavja iz naslednjih sklopov. Pri predmetu se študenti seznanijo z izbranimi raziskovalnimi metodami citologije, histologije ter s kemijsko sestavo celic. Študenti spoznajo značilnosti rastlinske in živalske celice, celične strukture in njihove funkcije in različne vrste tkiv. -Organizacija evkariotske in prokariotske celice	Selected topics in the following chapters are discussed. This subject provides an introduction to the selected methods for studying cells and the chemical structure of the cells. It focuses on main characteristics of plant and animal cells, cell structures, their function and different types of tissue. -Organisation of eukaryotic and prokaryotic cell -Cells as experimental models

-Celice kot eksperimentalni modeli -Molekularna sestava celic -Metode proučevanja celic -Celične membrane in transport snovi skoznje -Mitohondriji in mehanizem oksidativne fosforilacije -Endoplazemski retikulum in Golgijev aparat -Lizosomi in peroksisomi -Citoskelet in gibanje celice (aktinski filamenti, intermediatni filamenti in mikrotubuli) -Jedro, kromatin in kromosomi -Celicni ciklus, mitoza in mejoza -Medcelicne povezave -Vrste tkiv in njihove funkcije	-The molecular composition of cells -Tools of cell biology -Cell membranes and membrane transport -Mitochondria and the mechanism of oxidative phosphorylation -Endoplasmic reticulum and Golgi apparatus -Lysosomes and peroxisomes -The cytoskeleton and cell movement (actin filaments, intermediate filaments and microtubules) -The nucleus, chromatin and chromosomes Cell cycle, mitosis and meiosis -Cell to cell interaction -Types of tissue and their function

Temeljni literatura in viri / Readings:

Alberts B. s sod. (2014) Molecular biology of the cell, 6th Ed. Garland Science, New York.
Alberts B. s sod. (2009) Essential cell biology. Garland Science, New York.
Karp G. (2013) Cell and Molecular Biology. Concepts and Experiments. John Wiley & Sons, Inc., New York.
Lodish H. s sod. (2010) Molecular Cell Biology. W.H. Freeman, New York.
Jezernik K., Veranič P., Sterle M. (2012) Celična biologija. Učbenik za študente Medicinske fakultete. DZS, Ljubljana.

Cilji in kompetence:	**Objectives and competences:**
Študenti obvladajo izbrane metode v moderni citologiji in histologiji. Usvojijo vrhunska znanja na specifičnih področjih v citologiji in histologiji.	Students get skills in selected methods used in modern cytology and histology. Students acquire top-level knowledge in specific fields in cytology and histology.

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: - Poglobljeno razumejo znanja s področj biologije celice, ki so nujno potrebna na drugih podrocjih biologije. - Podrobno spoznajo izbrana podrocja, kjer uporabljamo znanja biologije celice (ekologija, kmetijstvo, biotehnologija, medicina itd.). **Prenesljive/ključne spretnosti in drugi atributi:** - Študenti izpopolnijo izkušnje in	**Knowledge and understanding:** - Students advanced understand knowledge concerning cytology and histology, which are essential for other field of biology. They get acquainted advanced konwledge with the areas in which cell biology is applied (ecology, agriculture, biotechnology, medicine and others). **Transferable/Key Skills and other attributes:** - Students acquire advanced experience

laboratorijske spretnosti, ki so nujno potrebne pri samostojnem laboratorijskem delu. Razumejo najzahtevnejše znanstvene prispevke.	and laboratory skills which are essential for an autonomous laboratory work. They understand most advanced scientific contributions.

Metode poučevanja in učenja:	**Learning and teaching methods:**
• Predavanja, seminarsko delo, seminarska naloga	• Lectures, seminar work, seminar essay

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Seminarska naloga , Pisni izpit	30 70	Seminar essay Written exam

Reference nosilca / Lecturer's references:

LIPOVŠEK DELAKORDA, Saška, JANŽEKOVIČ, Franc, LEITINGER, Gerd, RUPNIK, Marjan. Rab3a ablation related changes in morphology of secretory vesicles in major endocrine pancreatic cells, pituitary melanotroph cells and adrenal gland chromaffin cells in mice. *General and comparative endocrinology*, ISSN 0016-6480, 2013, vol. 185, str. 67-79. http://dx.doi.org/10.1016/j.ygcen.2013.01.007. [COBISS.SI-ID 19733768]

LIPOVŠEK DELAKORDA, Saška, NOVAK, Tone, JANŽEKOVIČ, Franc, LEITINGER, Gerd. Changes in the midgut diverticula in the harvestmen Amilenus aurantiacus (Phalangiidae, Opiliones) during winter diapause. *Arthropod structure & development*, ISSN 1467-8039, 2015, vol. 44, iaa. 2, str. 131-141, ilustr., doi: 10.1016/j.asd.2014.12.002. [COBISS.SI-ID 21035272]

LIPOVŠEK DELAKORDA, Saška, NOVAK, Tone, JANŽEKOVIČ, Franc, WEILAND, Nina, LEITINGER, Gerd. Malpighian tubule cells in overwintering cave crickets Troglophilus cavicola (Kollar, 1833) and T. neglectus Krauss, 1879 (Rhaphidophoridae, Ensifera). *PloS one*, ISSN 1932-6203, 2016, vol. 11, iss. 7, str. e0158598-1-e0158598-16, ilustr., doi: 10.1371/journal.pone.0158598. [COBISS.SI-ID 22340104]

LIPOVŠEK DELAKORDA, Saška, NOVAK, Tone. Autophagy in the fat body cells of the cave cricket Troglophilus neglectus Krauss, 1878 (Rhaphidophoridae, Saltatoria) during overwintering. *Protoplasma*, ISSN 0033-183X, 2016, vol. 253, iss. 2, str. 457-466, ilustr., doi: 10.1007/s00709-015-0824-3. [COBISS.SI-ID 21368072]

LIPOVŠEK DELAKORDA, Saška, JANŽEKOVIČ, Franc, NOVAK, Tone. Ultrastructure of fat body cells and Malpighian tubule cells in overwintering Scoliopteryx libatrix (Noctuoidea). *Protoplasma*, ISSN 0033-183X, 2017, str. 1-11, ilustr., doi: 10.1007/s00709-017-1110-3. [COBISS.SI-ID 23074056]