



OPIS PREDMETA / SUBJECT SPECIFICATION

Predmet:	Izbrana poglavja iz citologije in histologije
Subject Title:	Selected Topics in Cytology and Histology

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Doktorski študij Ekološke znanosti / Doctoral Study Ecological Sciences		Izbirni 1 ali 2 ali 3	2 ali 3 ali 4 ali 5

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Lab. work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
5	5				140	5

Nosilec predmeta / Lecturer:

Jeziki /	Predavanja / Lecture:	slovenski / Slovenian
Languages:	Vaje / Tutorial:	slovenski / Slovenian

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

Poznavanje citologije in histologije na ravni univerzitetnega programa

Prerequisites:

Knowledge of cytology and histology at graduate level

Vsebina:

Obravnavana so izbrana poglavja iz naslednjih sklopov.

Pri predmetu se študenti seznanijo z izbranimi raziskovalnimi metodami citologije in histologije ter s kemijsko sestavo celic. Študenti spoznajo značilnosti rastlinske in živalske celice, celične strukture in njihove funkcije ter različne vrste tkiv.

- Organizacija evkariotske in prokariotske celice; celice kot eksperimentalni modeli
- Molekularna sestava celic
- Metode proučevanja celic
- Celične membrane in transport snovi skozi
- 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
- Celični ciklus, mitoz in mejoza
- Medcelične povezave
- Vrste tkiv in njihove funkcije

Contents (Syllabus outline):

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 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
- 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 študijski viri / Textbooks:

- Alberts, B., A. Johnson, J. Lewis, M. Raff, , K. Roberts, P. Walter, 2004: Molecular Biology of the Cell (5th Ed.). Garland Science, Taylor & Francis Group, New York.
- Becker, M. W., L. J. Kleinsmith, J. Hardin, 2004: The World of the Cell (5th Ed.). The Benjamin/Cummings Publishing Company, San Francisco.
- Cooper, G. M., R. F. Hausman, 2004: The Cell: a molecular approach (3rd Ed.). ASM Press, Washington, D. C.
- Junqueira, L. C. , J.Carneiro, 1996: Histologie – Zytologie, Histologie und mikroskopische Anatomie des Menschen. Springer-Verlag Berlin, Heidelberg.
- Lodish, H., A. Berk, P. Matsudaira, C. A. Kaiser, M. Krieger, M. P. Scott, S. L. Zipursky, J. Darnell, 2004: Molecular Cell Biology (5th Ed.). W. H. Freeman and Company, New York.
- Mauseth, J. D., 2003: Botany: an introduction to plant biology (3rd Ed.).
- Raven, P. H., R. F. Evert, S. E. Eichhorn, 1999: Biology of plants (6th Ed.). W. H. Freeman and Company, New York.

Cilji:

- Študenti obvladajo izbrane metode v moderni citologiji in histologiji
- Usvojijo vrhunska znanja na specifičnih področjih v citologiji in histologiji

Predvideni študijski rezultati:

Znanje in razumevanje:

- Poglobljeno razumejo znanja s področja biologije celice, ki so nujno potrebna na drugih področjih biologije
- Podrobno spoznajo izbrana področja, kjer uporabljamo znanja biologije celice (ekologija, kmetijstvo, biotehnologija, medicina itd.)

Prenesljive/ključne spretnosti in drugi atributi:

- Študenti izpopolnijo izkušnje in laboratorijske spretnosti, ki so nujno potrebne pri samostojnem laboratorijskem delu
- Razumejo najzahtevnejše znanstvene prispevke

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje
- Seminarjska naloga

Načini ocenjevanja:

- Opravljene laboratorijske vaje in napisana poročila (dnevnik)
- Pisni izpit

Objectives:

- Students get skills in selected methods used in modern cytology and histology
- Students acquire top-level knowledge in specific fields in cytology and histology

Intended learning outcomes:

Knowledge and Understanding:

- Students advanced understand knowledge concerning cytology and histology, which are essential for other field of biology
- They get acquainted advanced knowledge 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 and laboratory skills which are essential for an autonomous laboratory work
- They understand most advanced scientific contributions

Learning and teaching methods:

- Lectures
- Laboratory excersises
- Seminar essay

Delež (v %) /
Weight (in %)

Assessment:

- | | | |
|---|------|---|
| • Opravljene laboratorijske vaje in napisana poročila (dnevnik) | 50 % | • Passing laboratory exercises and written experimental reports (diary) |
| • Pisni izpit | 50 % | • Written exam |

Materialni pogoji za izvedbo predmeta :

Material conditions for subject realization

- *Multimedijska predavalnica*
- *Laboratorij z mikroskopi in binokularnimi lupami*

- *Lecture hall for multimedia presentations*
- *Laboratory with microscopes and binocular lenses*

Obveznosti študentov:

(pisni, ustni izpit, naloge, projekti)

- Opravljene laboratorijske vaje in napisana poročila (dnevnik)
- Pisni izpit

Students' commitments:

(written, oral examination, coursework, projects):

- Passing laboratory exercises and written experimental reports (diary)
- Written exam