



OPIS PREDMETA / SUBJECT SPECIFICATION

Predmet:	Citologija in histologija
Subject Title:	Cytology and Histology

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Biologija in ekologija z naravovarstvom / Biology and ecology with nature conservation	Biologija; Ekologija z naravovarstvom / Biology; Ecology with nature conservation	2	3

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
30	10		30		170	8

Nosilec predmeta / Lecturer:

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

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

Prerequisites:

Vsebina:

Contents (Syllabus outline):

Razumevanje citologije in histologije je temeljno za razumevanje drugih področij biologije. Pri predmetu se študenti seznanijo z 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.

Understanding the cytology and histology is an area of research that is fundamental to all of the biological sciences. This subject provides an introduction to the 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.

Kratek povzetek vsebin:

Short abstract of contents:

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

- 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 razumejo metode v moderni citologiji in histologiji
- Usvojijo poglobljena znanja na specifičnih področjih v citologiji in histologiji

Objectives:

- Students understand basic methods used in modern cytology and histology
- Students acquire advanced knowledge in specific fields in cytology and histology

Predvideni študijski rezultati:

Znanje in razumevanje:

- Razumejo znanja s področja biologije celice, ki so nujno potrebna na drugih področjih biologije
- Spoznajo področja, kjer uporabljamo znanja biologije celice (ekologija, kmetijstvo, biotehnologija, medicina itd.)

Prenesljive/ključne spretnosti in drugi atributi:

- Študenti pridobijo izkušnje in laboratorijske spretnosti, ki so nujno potrebne pri samostojnem laboratorijskem delu
- Razumejo znanstvene prispevke in zahtevnejšo študijsko literaturo

Intended learning outcomes:

Knowledge and Understanding:

- Students understand knowledge concerning cytology and histology, which are essential for other field of biology
- They get acquainted with the areas in which cell biology is applied (ecology, agriculture, biotechnology, medicine and others)

Transferable/Key Skills and other attributes:

- Students acquire experience and laboratory skills which are essential for an autonomous laboratory work
- They understand articles in scientific journals and advanced text-books

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje
- Seminararska naloga

Learning and teaching methods:

- Lectures
- Laboratory excersises
- Seminar essay

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

• Opravljene laboratorijske vaje in napisana poročila (dnevnik)	25	• Passing laboratory exercises and written experimental reports (diary)
• Pisni praktični kolokvij iz prepoznavanja različnih histokemijskih reakcij	25	• Written partial exam of determination of different histochemical reactions
• Pisni praktični kolokvij iz prepoznavanja različnih tipov celic in tkiv	25	• Written partial exam of determination of different types of cells and tissue
• Pisni izpit		• Written exam

Materialni pogoji za izvedbo predmeta :

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

Material conditions for subject realization

- *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 praktični kolokvij iz prepoznavanja različnih histokemijskih reakcij
- Pisni praktični kolokvij iz prepoznavanja različnih tipov celic in tkiv
- Pisni izpit

Students' commitments:*(written, oral examination, coursework, projects):*

- Passing laboratory exercises and written experimental reports (diary)
- Written partial exam of determination of different histochemical reactions
- Written partial exam of determination of different types of cells and tissue
- Written exam