



OPIS PREDMETA / SUBJECT SPECIFICATION

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| Predmet: | Citološki praktikum |
| Subject Title: | Practicum of cytology |

| Študijski program Study programme | Študijska smer Study field | Letnik Year | Semester Semester |
|--|-------------------------------|----------------|----------------------|
| <i>Izobraževalna biologija</i> , pedagoški dvopredmetni študijski program 2. stopnje | | 1 | Zimski |
| <i>Educational Biology</i> , pedagogical two stream study, 2 nd. degree | | 1 | Winter |

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 |
|------------------------|--------------------|-----------------------|------------------------|---------------------------|-------------------------------|------|
| 15 | | | 30 | | 45 | 3 |

Nosilec predmeta / Lecturer:

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

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

Prerequisites:

Vsebina:

Razumevanje biologije celice je temeljno za razumevanje drugih področij biologije. Pri predmetu se študenti seznanijo s temeljnimi metodami, ki se uporabljajo v moderni biologiji celice. Študentje spoznajo celične strukture in njihove funkcije.

Povzetek vsebin:

- Izvor celic, organizacija evkariotske in prokariotske celice
- Metode proučevanja celic
- Celične membrane
- Transport snovi skozi membrano
- Mitochondriji in mehanizem oksidativne fosforilacije
- Endoplazemski retikulum
- Golgijev aparat
- Lizosomi in peroksisomi
- Citoskelet in gibanje celice (aktinski filamenti, intermediatni filamenti in mikrotubuli)
- Jedro, jedrna ovojnica in transport snovi med jedrom in citoplazmo
- Kromatin in kromosomi
- Mitoza in mejoza
- Medcelične povezave
- Apoptoza in nekroza

Contents (Syllabus outline):

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

Abstract of contents:

- The origin of cells, organisation of eucariotic and prokariotic cell
- Tools of cell biology
- Cell membranes
- Membrane transport
- Mitochondria and the mechanism of oxidative phosphorylation
- The endoplasmic reticulum
- The Golgi apparatus
- Lysosomes and peroxisomes
- The cytoskeleton and cell movement (actin filaments, intermediate filaments and microtubules)
- The nucleus, nuclear envelope and traffic between the nucleus and cytoplasm
- Chromatin and chromosomes
- Mitosis and meiosis
- Cell-cell interactions

- Apoptosis and necrosis

Temeljni študijski viri / Textbooks:

- Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., Walter, P., 2004: Molecular Biology of the Cell (5th Ed.). Garland Science, Taylor & Francis Group, New York.
- Cooper, G. M., R. F. Hausman, 2004: The Cell: a molecular approach (3rd Ed.). ASM Press, Washington, D. C.
- Lodish, H., Berk, A., Matsudaira, P., Kaiser, C. A., Krieger, M., Scott, M. P., Zipursky, S. L., Darnell, J., 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.).

Cilji:

- Razumevanje metod, ki se uporabljajo v moderni biologiji celice
- Poznavanje struktur in razumevanje osnovnih procesov v celicah
- spoznajo področja, na katerih se uporabljajo znanja biologije celice (npr. ekologija, kmetijstvo, biotehnologija in medicina)

Objectives:

- Understanding of basic methods used in modern cell biological research
- Knowledge of cell structures and understanding of basic cell processes
- In addition, students get to know the areas in which cell biology is applied (e. g. ecology, agriculture, biotechnology and medicine)

Predvideni študijski rezultati:

Znanje in razumevanje:

- Študenti razumejo metode, ki se uporabljajo v moderni biologiji celice
- Študenti pridobijo znanja o biologiji celice, ki so nujno potrebna na drugih področjih biologije

Prenesljive/ključne spretnosti in drugi atributi:

- Študenti se usposobijo za delo v biološkem laboratoriju pri zahtevnejših bioloških eksperimentih

Intended learning outcomes:

Knowledge and Understanding:

- Students understand methods used in modern cell biology research
- Students capture knowledge of cell biology that is essential to other subjects in the field of biology

Transferable/Key Skills and other attributes:

- Students qualify for work in the biological laboratory at advanced biological experiments

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje
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Learning and teaching methods:

- Lectures
- Laboratory excersises

Načini ocenjevanja:

- Kolokvij
- Pisni izpit

Delež (v %) /
Weight (in %)

40
60

Assessment:

- Grade in laboratory work
- Written and oral exam

Materialni pogoji za izvedbo predmeta :

- Predavalnica
- Laboratorij

Material conditions for subject realization

- Lecture hall
- Laboratory

Obveznosti študentov:

(pisni, ustni izpit, naloge, projekti)

- Izvedene laboratorijske vaje in pisna poročila o eksperimentih
- Pisni izpit

Students' commitments:

(written, oral examination, coursework, projects):

- Performed laboratory exercises and written experimental reports
- Written exam