



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Biologija celice
Course title:	Biology of the Cell

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Univerzitetni študijski program Biologija, 1. stopnja		1. ; 1st	1.; 1st
Undergraduate university programme Biology, 1st degree			

Vrsta predmeta / Course type:

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
30			30		120	6

Nosilec predmeta / Lecturer:

Jeziki / Predavanja / Lectures:
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 z metodami, ki se uporabljajo v moderni biologiji celice in s kemijsko sestavo celic. Študentje spoznajo celične strukture in njihove funkcije.
Povzetek vsebin:
Izvor celic, organizacija evkariotske in prokariotske celice; modelni organizmi v biologiji celice

Content (Syllabus outline):
Understanding the biology of the cell is an fundamental research area to all biological sciences.
This subject provides an introduction to the methods for studying cells and the chemical structure of cells. It focuses on cell structures and their functions.
Abstract of contents:
The origin of cells, organisation of eucariotic and prokariotic cell; cells as experimental

<p>Molekularna sestava celic Metode proučevanja celic Celične membrane Transport snovi skozi membrano Mitohondriji 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 Celični ciklus Mitoza in mejoza Medcelične povezave Apoptoza in nekroza</p>	<p>models The molecular composition of cells 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 Cell cycle Mitosis and meiosis Cell-cell interactions Apoptosis and necrosis</p>
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Temeljni literatura in viri / Readings:

- Alberts B. s sod. (2011) Molecular biology of the cell, 5th Ed. Garland Science, New York.
- Alberts B. s sod. (2009) Essential cell biology. Garland Science, New York.
- Karp G. (2005) 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:

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 and competences:

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:

Intended learning outcomes:

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
 Študenti se seznanijo, na katerih področjih se aplicirajo znanja biologije celice (npr. ekologija, kmetijstvo).

Prenesljive/ključne spretnosti in drugi atributi:

Študenti se usposobijo za delo v biološkem laboratoriju pri zahtevnejših bioloških eksperimentih
 Študenti pridobijo izkušnje in spretnosti, ki so nujno potrebne pri samostojnem laboratorijskem delu.

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
 Students get knowledge of areas in which cell biology is applied (e. g. ecology, agriculture, biotechnology).

Transferable/Key Skills and other attributes:

Students qualify for work in the biological laboratory at advanced biological experiments
 Students acquire experience and skills that are essential for individual laboratory work.

Metode poučevanja in učenja:

Predavanja
 Laboratorijske vaje

Learning and teaching methods:

Lectures
 Laboratory excersises

Načini ocenjevanja:

Pisni in praktični kolokviji
 Pisni izpit

Delež (v %) /

Weight (in %)

Assessment:

Written and practical examinations
 Written examination

Reference nosilca / Lecturer's references:

LIPOVŠEK DELAKORDA, Saška, JANŽEKOVIC, Franc, NOVAK, Tone. Autophagic activity in the midgut gland of the overwintering harvestmen *Gyas annulatus* (Phalangidae, Opiliones). *Arthropod structure & development*, ISSN 1467-8039, 2014, str. 1-8, ilustr., doi: [10.1016/j.asd.2014.06.001](https://doi.org/10.1016/j.asd.2014.06.001). [COBISS.SI-ID [20696584](https://www.cobiss.si/id/20696584)]

NOVAK, Tone, JANŽEKOVIC, Franc, LIPOVŠEK DELAKORDA, Saška. Contribution of non-troglobiotic terrestrial invertebrates to carbon input in hypogean habitats = Prispevek prezimujočih netroglobiontskih kopenskih nevretenčarjev k vnosu ogljika v podzemeljske habitate. *Acta carsologica*, ISSN 0583-6050, 2013, letn. 42, št. 2/3, str. 301-309, tabele. <http://ojs.zrc-sazu.si/carsologica/article/view/669/600>, doi: [10.3986/ac.v42i2-3.669](https://doi.org/10.3986/ac.v42i2-3.669). [COBISS.SI-ID [20238600](https://www.cobiss.si/id/20238600)]

LIPOVŠEK DELAKORDA, Saška, LEITINGER, Gerd, RUPNIK, Maja. Ultrastructure of *Clostridium difficile* colonies. *Anaerobe*, ISSN 1075-9964, 2013, vol. 24, str. 66-70, ilustr., doi: [10.1016/j.anaerobe.2013.09.014](https://doi.org/10.1016/j.anaerobe.2013.09.014). [COBISS.SI-ID [20178184](https://www.cobiss.si/id/20178184)]

LIPOVŠEK DELAKORDA, Saška, JANŽEKOVIC, 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.ygcn.2013.01.007>. [COBISS.SI-ID [19733768](#)]

LIPOVŠEK DELAKORDA, Saška, LETOFSKY-PAPST, Ilse, HOFER, Ferdinand, LEITINGER, Gerd, DEVETAK, Dušan. The evidence on the degradation processes in the midgut epithelial cells of the larval antlion *Euroleon nostras* (Geoffroy in Fourcroy, 1785) (Myrmeleontidae, Neuroptera).

Micron, ISSN 0968-4328. [Print ed.], 2012, vol. 43, iss. 5, str. 651-665, ilustr., doi:

[10.1016/j.micron.2011.11.012](http://dx.doi.org/10.1016/j.micron.2011.11.012). [COBISS.SI-ID [18855176](#)]

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