Univerza v Mariboru

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Izbrana poglavja iz medicinske celične biologije**
Course title:	**Selected Topics in Medicine Cell Biology**

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Biomedicinska tehnologija/Biomedical Technology 3. stopnja/3rd Degree		2	3 ali 4

Vrsta predmeta / Course type	Izbirni/Elective
Univerzitetna koda predmeta / University course code:	

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. Delo Individ. Work	ECTS
15	20	10			105	5

Nosilec predmeta / Lecturer:	Izr. prof. dr. Saša Lipovšek

Jeziki / Languages:	**Predavanja / Lectures:**	Slovenščina/Slovene
	Vaje / Tutorial:	Slovenščina/Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisites:**
Kandidat mora doseči 300 ECTS na predhodnem študiju.	Graduate degree 300 ECTS

Vsebina:	**Content (Syllabus outline):**
Sodobne metode v biologiji celice s poudarkom na imunocitokemiji, mikroskopiji in celičnih kulturah; Celične membrane, receptorji in transporterji; Vezikularni transport, lizosomi in peroksisomi; Mitohondriji in bioenergetika; Matične celice in diferenciacija; Celični ciklus in apoptoza; Kovinski ioni in metabolizem celice; Mehanizmi celične detoksifikacije.	Advanced methods in cell biology with emphasis on immunocytochemistry, microscopy and cell cultures; Cell membranes, receptors and transporters; Vesicular transport, lysosomes and peroxisosmes; Mitochondria and bioenergetics; Stem cells and differentiation; Cell cycle and apoptosis; Metal ions and cell metabolism; Mechanisms of cell detoxification.

Temeljni literatura in viri / Readings:

- Alberts, B. et al. 2002. Molecular Biology of the Cell. 4th edition. Garland Science, New York
- Griffiths G., 1993. Fine Structure Immunocytochemistry. Springer Verlag.
- Bozzola J. J. and L.D.Russel. 1999. Electron Microscopy. Principles and Techniques for Biologists. Jones and Bartlett Publ.
- Karp G. 2002. 3rd Edition.Cell and Molecular Biology. Concepts and experiments. John Wiley and Sons Inc.
- Introduction to toxicology, A.J. Timbrell, Taylor and Francis, London, UK, 1995 (ta je zelo medicinska, večina primerov je vezna na človeka)
- Molecular toxicology, N. Plant, Taylor and Francis Group, Oxon, UK, 2003
- Ustrezne revije: Nature Reviews: Molecular cell biology, npg, Journal of Microscopy, Blackwell Publ.,
- Novejši članki s področja celične biologije.

Cilji in kompetence:	Objectives and competences:
Metode za študij strukture in delovanja celic. Mehanizmi membranskega in vezikularnega transporta, ki vzdržujejo celično homeostazo. Delovanje celičnih organelov, ki uravnavajo celično presnovo in zagotavljajo energijo. Procesi celične diferenciacije in pomen matičnih celic za razvoj tkiv in organov. Regulacija celičnega cikla in procesi regeneracije ter programirane celične smrti Mehanizmi celične detoksifikacije.	Methods for studying the structure and functioning of cells. Mechanisms of membrane and vesicular transport that maintain cellular homeostasis. The action of cellular organelles that regulate cellular metabolism and provide energy. Cell differentiation processes and the importance of stem cells for the development of tissues and organs. Cell cycle regulation and regeneration processes and programmed cell death Cell detoxification mechanisms.

Predvideni študijski rezultati:	Intended learning outcomes:
Znanje in razumevanje: Zgradbe in delovanja celic, načini preskrbe z energijo in vzdrževanja celične homeostaze. Procesi diferenciacije, degeneracije in odmiranja celic. Mehanizmi celične detoksifikacije v normalnih in stresnih razmerah. **Prenesljive/ključne spretnosti in drugi atributi:** Uporaba metod dela s področja biologije celice, mikroskopiranje, priprava preparatov, celičnih kultur. Poznavanje literature in dosežkov s področja. Pisanje poročil, izdelava seminarske naloge, predstavitev rezultatov lastnega dela.	**Knowledge and understanding:** Cell structure and function, means of energy supply and maintenance of cell homeostasis. Cell differentiation, regeneration and degeneration processes. Detoxification mechanisms under normal and stress conditions, **Transferable/Key Skills and other attributes:** laboratory skills in cell and tissue preparation, microscopy, cell cultures. Knowledge of literature and recent achievements in the cell biology field. Writing reports, papers and projects.

Metode poučevanja in učenja:	Learning and teaching methods:
Teoretične osnove v obliki predavanj; Laboratorijsko delo s poudarkom na pripravi kultur celic in tkiv, mikroskopiranje in fiziološke tehnike za opazovanje transportnih procesov na membranah, toksikološki poskusi; Priprava seminarske naloge in predstavitev dela.	Lectures providing theoretical background; Laboratory work focused to sample preparation, microscopy, cell physiological methods, toxicological experiments. Project work, presentations and discussions

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
pisni in ustni izpit seminarska naloga laboratorijsko delo		written and oral examination project work and presentation laboratory work