



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Biologija človeka
Course title:	Human Biology

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

Obvezni/Obligatory

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:

Marjan Slak Rupnik

Jeziki /

Predavanja / Lectures:

slovenski / slovene

Languages:

Vaje / Tutorial:

slovenski / slovene

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

Pogojev ni.

Prerequisites:

None.

Vsebina:

Pri obravnavi telesa se vseskozi prepletata funkcionalna anatomija in fiziologija posameznih organov.

- Uvod v zgradbo in delovanje človeškega organizma; homeostaza, regulacijski procesi
- Organizacijske ravni organizma: celica, tkivo, organ, organski sistem, organizem kot celota
- Koža
- Okostje, vezi, sklepi, nesklepne

Content (Syllabus outline):

During the course, the functional anatomy and physiology are the current way of discussing the human body.

- Introduction into the structure and function of the human body; homeostasis, regulation processes
- Organisational levels of the human body: cell, tissue, organ, organic system, organism as a whole
- Integumentary system

povezave

- Mišičje: ogrodno, srčno, gladko
- Živčevje: osrednje, obrobno; somatsko, vegetativno (simpatik, parasimpatik)
- Čutila
- Endokrini sistem, žleze z notranjim izločanjem
- Srčno-krvožilni sistem: kri, srce, krvne žile; cirkulacija: sistemski in mali krvni obtok, limfatski sistem
- Dihala: dihanje: zunanje, notranje, celično; dihalni plini
- Prebavila: presnova, prebava, prebavna cev, prebavne žleze
- Sečila: prvotni, drugotni seč
- Spolovila: urogenitalni sistem; menstrualni cikel; razvoj zarodka in ploda
- Zdravstvene težave v sodobni razviti družbi: debelost, rak, stres
- Človek v okolju, omejenost virov, uničevanje in onesnaževanje okolja; odgovornost za ohranjanje globalne biodiverzitete in nujnost zaradi lastnega preživetja

- Skeletal system, ligaments, articulations, joints
- Musculature: skeletal, heart, smooth muscle
- Nervous system: CNS, peripheral nerves; somatic, autonomous nervous system (sympathetic, parasympathetic)
- Sensory system: sensory organs
- Endocrine system: endocrine glands
- Cardiovascular system: blood, heart, blood vessels, blood circulation: systemic, pulmonary, lymphatic system
- Respiratory system: pulmonary, tissue, cellular respiration, respiration gasses
- Digestive system: metabolism, digestion, digestion tract, digestive glands
- Urinary system: urogenital system, menstrual cycle; embryonal and fetal development
- Health and disease in developed modern society
- The man in its environments, resources limits, devastation and pollution of environments, responsibility for the maintenance of global biodiversity and its necessity for the survival.

Temeljni literatura in viri / Readings:

Mader, S.S., 2007: Human Biology. McGraw-Hill Education.

B. M. Koeppen, B. A. Stanton, Berne and Levy Physiology, Ed. 6 2008, Mosby, ISBN 0323033903

E-J, Speckmann, R. Köhling, Physiologie. Aufl. 4. 2008, Urban & Fischer bei Elsevier, ISBN 343741318X

Cilji in kompetence:

- Študenti se seznani s človeškim organizmom kot biotskim bitjem
- Spoznajo osnovne mehanizme kibernetkega delovanja organizma
- Seznani se s temeljno zgradbo in delovanjem posameznih organskih sistemov ter celotnega organizma
- Seznani se s pomenom razmerij med človeškim organizmom in okoljem

Objectives and competences:

- Students get acquainted with the human organism as a biotic being
- Students get acquainted with the main mechanisms of the cybernetic functioning of the human organism
- They get basic knowledge of the structure and function of each organic system, and the organism as a whole
- They get acquainted with the significance of the interactions between the human organism and its environment

Predvideni študijski rezultati:**Znanje in razumevanje:**

- Poznajo osnovno zgradbo in delovanje posameznih organov, organskih sistemov ter celotnega organizma
- Razumejo pomen kakovostnega okolja ter nujnost aktivnosti za njegovo ohranjanje
- Razumejo pomen kulture za ohranitev civilizacije

Prenesljive/ključne spretnosti in drugi atributi:

- Znajo anatomske orientirati posamezne organe in opisati njihovo lego ter vlogo v organizmu
- Znajo splošno presojati o ustreznosti oziroma neustreznosti konkretnih dejavnikov okolja za ohranjanje zdravja

Intended learning outcomes:**Knowledge and understanding:**

- Students know the basic structure and function of each organ, organic system and the whole organism
- They understand the significance of quality environments and need for their active preservation
- They understand the meaning of culture in the maintenance of the civilisation

Transferable/Key Skills and other attributes:

- They get skills to properly anatomically orient each organ and to describe their position and function within the organism
- They can generally judge the environmental factors for their appropriateness or inappropriateness, respectively, for the health maintenance

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje
- Individualno delo

Learning and teaching methods:

- Lectures
- Laboratory excersises
- Individual work

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

• Kolokvij iz praktičnega dela	30 %	• Partial exam of experimental practice
• Pisni izpit	70 %	• Written exam

Reference nosilca / Lecturer's references:

- HUANG, Ya-Chi, RUPNIK, Marjan, KARIMIAN, Negar, HERRERA, Pedro L., GILON, Patrick, FENG, Zhong-Ping, GAISANO, Herbert Y. In situ electrophysiological examination of pancreatic [alpha] cells in the streptozotocin-induced diabetes model revealing the cellular basis of glucagon hypersecretion. Diabetes, ISSN 0012-1797, Feb. 2013, vol. 62, no. 2, str. 519-530
- STOŽER, Andraž, GOSAK, Marko, DOLENŠEK, Jurij, PERC, Matjaž, MARHL, Marko, RUPNIK, Marjan, KOROŠAK, Dean. Functional connectivity in islets of Langerhans from mouse pancreas tissue slices. PLoS computational biology, ISSN 1553-734X, Feb. 2013
- STOŽER, Andraž, DOLENŠEK, Jurij, RUPNIK, Marjan. Glucose-stimulated calcium dynamics in Islets of Langerhans in acute mouse pancreas tissue slices. PloS one, ISSN 1932-6203, 2013, vol. 8, iss. 1, str. 1-13
- DOLENŠEK, Jurij, STOŽER, Andraž, SKELIN, Maša, MILLER, Evan, RUPNIK, Marjan. The

relationship between membrane potential and calcium dynamics in glucose-stimulated beta cell syncytium in acute mouse pancreas tissue slices. PloS one, ISSN 1932-6203, 2013, vol. 8, iss. 12, str. 1-16

- LIPOVŠEK DELAKORDA, Saška, JANŽEKOVIČ, 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
- SKELIN, Maša, RUPNIK, Marjan. cAMP increases the sensitivity of exocytosis to Ca²⁺ primarily through protein kinase A in mouse pancreatic beta cells. Cell calcium, ISSN 0143-4160, 2011, vol. 49, issue 2, str. 89-99
- NYQVIST, Daniel, SPEIER, Stephan, RODRIGUEZ-DIAZ, Rayner, MOLANO, R. Damaris, LIPOVŠEK DELAKORDA, Saška, RUPNIK, Marjan, DICKER, Andrea, ILEGEMS, Erwin, ZAHR-AKRAWI, Elsie, MOLINA, Judith, LOPEZ-CABEZA, Maite, VILLATE, Susana, ABDULREDA, Midhat, RICORDI, Camillo, CAICEDO, Alejandro, PILEGGI, Antonello, BERGGREN, Per-Olof. Donor islet endothelial cells in pancreatic islet revascularization. Diabetes, ISSN 0012-1797, 2011, vol. 60, no. 10, str. 2571-2577
- MANDIC, SA, SKELIN, Maša, JOHANSSON, JU, RUPNIK, Marjan, BERGGREN, Per-Olof, BARK, C. Munc18-1 and Munc18-2 proteins modulate β -cell Ca²⁺ sensitivity and kinetics of insulin exocytosis differently. The Journal of biological chemistry, ISSN 0021-9258, 2011, v HUANG, Ya-Chi, RUPNIK, Marjan, GAISANO, Herbert Y. Unperturbed islet [alpha]-cell function examined in mouse pancreas tissue slices. Journal of physiology, ISSN 0022-3751, 15. jan. 2011, str. 395-408 ol. 286, no. 32, str. 28026-28040
- SEDEJ, Simon, SINGH GURUNG, Iman, BINZ, Thomas, RUPNIK, Marjan. Phosphatidylinositol-4,5-bisphosphate-dependent facilitation of the ATP-dependent secretory activity in mouse pituitary cells. Annals of the New York Academy of Sciences, ISSN 0077-8923, 2009, letn. 1152, str. 165-173
- PAULMANN, Nils, GROHMANN, Maik, VOIGT, Jörg-Peter, BERT, Bettina, VOWINCKEL, Jakob, BADER, Michael, SKELIN, Maša, JEVŠEK, Marko, FINK, Heidrun, RUPNIK, Marjan, WALTHER, Diego J. Intracellular serotonin modulates insulin secretion from pancreatic β -cells by protein serotonylation. PLoS biology, ISSN 1544-9173, oct. 2009, vol. 7, iss. 10