



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
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	1	2
Five-year master's degree program Subject Teacher	/		

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		90	5

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:

Poznavanje citologije in histologije na ravni univerzitetnega programa

Prerequisites:

Knowledge of cytology and histology at graduate level

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 povezave
- Mišičje: ogrodno, srčno, gladko
- Živčevje: osrednje, obrobno; somatsko, vegetativno (simpatik, parasimpatik)
- Čutila
- Endokrini sistem, žleze z notranjim izločanjem

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
- Skeletal system, ligaments, articulations, joints
- Musculature: skeletal, heart-, smooth muscle
- Nervous system: CNS, peripheral nerves; somatic, autonomous nervous system (sympathetic, parasympathetic)

- 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, stress
- Človek v okolju, omejenost virov, uničevanje in onesnaževanje okolja; odgovornost za ohranjanje globalne biodiverzitete in nujnost zaradi lastnega preživetja.

- 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. Koepfen, 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 seznanijo s človeškim organizmom kot biotskim bitjem
- Spoznajo osnovne mehanizme kibernetkega delovanja organizma
- Seznanijo se s temeljno zgradbo in delovanjem posameznih organskih sistemov ter celotnega organizma
- Seznanijo 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 anatomsko orientirati posamezne organe in opisati njihovo lego ter vlogo v organizmu

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

- Znajo splošno presojati o ustreznosti oziroma neustreznosti konkretnih dejavnikov okolja za ohranjanje zdravja

inappropriateness, respectively, for the health maintenance

Metode poučevanja in učenja:

Learning and teaching methods:

- Predavanja
- Laboratorijske vaje
- Individualno delo

- Lectures
- Laboratory excersises
- Individual work

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

- Kolokvij iz praktičnega dela
- Pisni in ustni izpit

20%
80%

- Partial exam of experimental practice
- Written and oral exam

Reference nosilca / Lecturer's references:

1. Huang YC, **Rupnik MS**, Karimian N, Herrera PL, Gilon P, Feng ZP, Gaisano HY. (2012) In situ electrophysiological examination of pancreatic α cells in the streptozotocin-induced diabetes model revealing the cellular basis of glucagon hypersecretion. **Diabetes** PMID: 23043159
2. Mandic SA, Skelin M, Johansson JU, **Rupnik MS**, Berggren PO, Bark C. (2011) Munc18-1 and Munc18-2 Proteins Modulate β -Cell Ca^{2+} Sensitivity and Kinetics of Insulin Exocytosis Differently. **J Biol Chem.** 286(32):28026-40.
3. *Skelin M, **Rupnik M**. (2011) cAMP increases the sensitivity of exocytosis to Ca^{2+} primarily through protein kinase A in mouse pancreatic beta cells. **Cell Calcium.** 49(2):89-99.
4. Paulmann N, Grohmann M, Voigt JP, Bert B, Vowinckel J, Bader M, Skelin M, Jevsek M, Fink H, **Rupnik M**, Walther DJ. Intracellular serotonin modulates insulin secretion from pancreatic beta-cells by protein serotonylation. **PLoS Biol.** 2009 Oct;7(10):e1000229.
5. ***Rupnik M** (2009) The physiology of rodent beta-cells in pancreas slices. **Acta Physiol (Oxf).** 195(1):123-38.