



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Biologija človeka
<b>Course title:</b>	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		1 <sup>st</sup>	2 <sup>nd</sup>

Vrsta predmeta / Course type

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30			30		120	6

Nosilec predmeta / Lecturer:

Jeziki / Languages:	Predavanja / Lectures:	<input type="text" value="slovenski / slovene"/>
	Vaje / Tutorial:	<input type="text" value="slovenski / slovene"/>

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

Prerequisites:

**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: ogradno, 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

**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)
- 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:**

Faller The human body: An Introduction to structure and Function. Thieme, 2004.  
Mader, S.S., 2018: Human Biology. McGraw-Hill Education.  
Costanzo Physiology, Elsevier 2017.

**Cilji in kompetence:****Objectives and competences:**

- Študenti se seznanijo s človeškim organizmom kot biotskim bitjem
- Spoznajo osnovne mehanizme kibernetnega 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

- 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
- 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

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
<ul style="list-style-type: none"> <li>• Kolokvij iz praktičnega dela</li> </ul>	30 %	<ul style="list-style-type: none"> <li>• Partial exam of experimental practice</li> </ul>
<ul style="list-style-type: none"> <li>• Pisni izpit</li> </ul>	70 %	<ul style="list-style-type: none"> <li>• Written exam</li> </ul>

#### Reference nosilca / Lecturer's references:

**DOLENŠEK, Jurij**, RUPNIK, Marjan, STOŽER, Andraž. Structural similarities and differences between the human and the mouse pancreas. *Islets*, ISSN 1938-2022, 2015, vol. 7, iss. 1, 16 str.

SKELIN, Maša, **DOLENŠEK, Jurij**, RUPNIK, Marjan, STOŽER, Andraž. The triggering pathway to insulin secretion : functional similarities and differences between the human and the mouse [beta] cells and their translational relevance. *Islets*, ISSN 1938-2022, 2017, vol. 9, no. 6, str. 109-139.

GOSAK, Marko, STOŽER, Andraž, MARKOVIČ, Rene, **DOLENŠEK, Jurij**, PERC, Matjaž, RUPNIK, Marjan, MARHL, Marko. Critical and supercritical spatiotemporal calcium dynamics in beta cells. *Frontiers in physiology*, ISSN 1664-042X, 2017, vol. 8, str. 1-17

GORGIEVA, Selestina, VIVOD, Vera, MAVER, Uroš, GRADIŠNIK, Lidija, **DOLENŠEK, Jurij**, KOKOL, Vanja. Internalization of (bis)phosphonate-modified cellulose nanocrystals by human osteoblast cells. *Cellulose*, ISSN 0969-0239, October 2017, vol. 24, iss. 10, str. 4235-4252.

GOSAK, Marko, MARKOVIČ, Rene, **DOLENŠEK, Jurij**, RUPNIK, Marjan, MARHL, Marko, STOŽER, Andraž, PERC, Matjaž. Network science of biological systems at different scales : a review. *Physics of life reviews*, ISSN 1873-1457, 2018.