



OPIS PREDMETA / SUBJECT SPECIFICATION

Predmet:	Izbrana poglavja iz senzoričnih sistemov
Subject Title:	Selected Topics in Sensory Systems

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Doktorski študij Ekološke znanosti / Doctoral Study Ecological Sciences		Izbirni 1 ali 2 ali 3	2 ali 3 ali 4 ali 5

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Lab. work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
5			5		140	5

Nosilec predmeta / Lecturer:

Dušan DEVETAK

Jeziki / Languages:	Predavanja / Lecture: Vaje / Tutorial:	slovenski / Slovenian
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Pogoji za vključitev v delo oz. za opravljanje
študijskih obveznosti:

Poznavanje fiziologije živali na ravni univerzitetnega programa ter eksperimentalnih metod v fiziologiji na ravni drugostopenjskega programa

Knowledge of animal physiology at graduate level, and of experimental methods in physiology at master level

Vsebina:

Obravnavana so izbrana poglavja iz naslednjih sklopov.

- Celična in molekularna biologija nevrona. Nastanek in prevajanje živčnih impulzov.
- Komunikacija med nevroni, sinaptični prenos. Posinaptični mehanizmi; integracija in sinaptična plastičnost.
- Senzorični receptorji: zgradba in senzorična transdukcija. Razmerje med jakostjo dražljaja in odgovorom. Adaptacija. Senzorični vzdražni prag.
- Mehanorecepција. Mehanotransdukcija. Mehanoreceptorji nevretenčarjev. Mehanoreceptorji vretenčarjev.
- Fotorecepција. Svetloba. Fotokemiја. Elektrofiziologија. Nastanek slike. Barvno gledanje

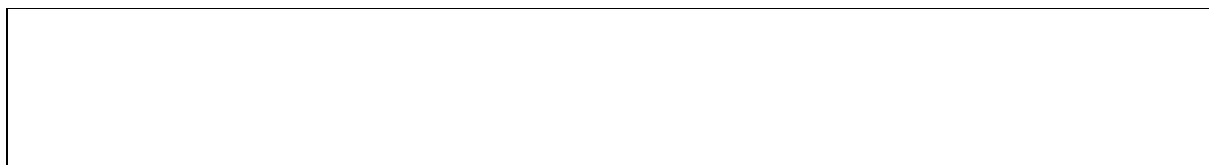
Contents (Syllabus outline):

Selected topics in the following chapters are discussed.

- Cell and molecular biology of the neuron. Generation and conduction of the nerve impulses.
- Communication between neurons, synaptic transmission. Postsynaptic mechanisms; integration and synaptic plasticity.
- Sensory receptors: structure and sensory transduction. Relationship between stimulus intensity and response. Adaptation. Sensory threshold.
- Mechanoreceptors. Mechanotransduction. Invertebrate mechanoreceptors. Vertebrate mechanoreceptors.
- Phororeception. Light. Photochemistry. Electrophysiology. Image formation. Colour vision.

Temeljni študijski viri / Textbooks:

- Halliday, T. 1998: The senses and communication. Springer and The Open University, Berlin, New York.
- Kandell, E. R., J. H. Schwartz, T. M. Jessel, 2000: Principles of Neural Science: 4th edition. McGraw-Hill Professional Publishing
- Withers, P. C., 2002: Comparative Animal Physiology. Saunders College Publishing, Philadelphia, New York.

**Cilji:**

- Podrobno predstaviti raznolikost in kompleksnost senzoričnih sistemov
- Podrobno podati povezavo med živalskim organizmom in njegovim zunanjim in notranjim okoljem
- Podrobno pojasniti integracijsko vlogo senzoričnega sistema, živčevja ter motoričnega sistema

Objectives:

- To present in detail diversity and complexity of the sensory systems
- To give in detail the connection between animal organism and its internal and external environment
- To explain in detail integrative role of sensory system, nervous system and motor system

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

- Povezava med organizmom in njegovim zunanjim in notranjim okoljem v podrobnostih
- Vloga integracijskih sistemov - senzoričnega sistema in živčevja ter motoričnega sistema v podrobnostih
- Kompleksnost centralnega živčnega sistema v podrobnostih

Prenesljive/ključne spremnosti in drugi atributi:

- Sposobnost načrtovati in izvesti zahtevne eksperimente za testiranje odzivov osebka na kontrolirane spremembe v njegovem okolju
- Sposobnost podrobno ovrednotiti rezultate fiziološkega poskusa

Intended learning outcomes:**Knowledge and Understanding:**

- Connection between organism and its internal and external environment in detail
- Integrative role of sensory system, motor system and nervous system in detail
- Complexity of central nervous system in detail

Transferable/Key Skills and other attributes:

- Ability to arrange complex experiments testing responses of an individual to controlled changes of its environment
- Ability to evaluate in detail results of an experiment in animal physiology

Metode poučevanja in učenja:

- Predavanja
- Laboratorijske vaje – individualno eksperimentalno delo

Learning and teaching methods:

- Lectures
- Laboratory excercises – individual experimental practice

Načini ocenjevanja:Delež (v %) /
Weight (in %)**Assessment:**

- | | |
|---------------------|------|
| • Kolokvij iz vaj | 30 % |
| • Seminarska naloga | 30 % |
| • Pisni izpit | 40 % |

- Partial examination of experimental practice
- Seminar essay
- Written exam

Materialni pogoji za izvedbo predmeta :

- Multimedija predavalnica
- Laboratorij za fiziologijo živali

Material conditions for subject realization

- Lecture hall for multimedia presentation
- Laboratory for animal physiology

Obveznosti študentov:**Students' commitments:**

<i>(pisni, ustni izpit, naloge, projekti)</i>	<i>(written, oral examination, coursework, projects):</i>
<ul style="list-style-type: none">• Kolokvij iz vaj• Seminarska naloga• Pisni izpit	<ul style="list-style-type: none">• Partial examination of experimental practice• Seminar essay• Written exam