

Course plan

Year: 2025-2026	Semester: ☐ First, ☒ Second, ☐ Summer	Number of students:								
Major: Medical doctorate	☒ Basic sciences, ☐ Physiopathology	Department: Physiology								
Course Title: Neurophysiology	☒ Theoretical, ☐ Practical	Credit: 1.41 Code N.: 1294029								
Prerequisite: Cell physiology	Day & Time: Sunday, 10-12 A.M	Place: Shahid Soleimani Building								
Instructor: Prof. HojjatAllah Alaei & Prof. Parham Reisi	Office address: School of Medicine, Department of physiology	Tel: 031-3792 9007-9033								
Email: alaei@med.mui.ac.ir , p_reisi@med.mui.ac.ir	Response Hours and Days:	Student representative name and mobile number:								
Main objective: Introduction to neurophysiology and familiarity with somatic and special sensory systems, Motor system and higher brain functions										
Specific objects: 1- Functional Levels of the Nervous System, Synapses, and Synaptic Transmission (Knowledge Domain) 2- Function of Sensory Receptors, Neuronal Signal Production, and Information Processing (Knowledge Domain) 3- Somatic Sensations: Stimulation, Transmission, Interpretation, and Perception Across Nervous System Levels (Knowledge Domain) 4- Special Sensations: Vision, Hearing, Taste, and Smell - Stimulation, Transmission, Interpretation, and Perception (Knowledge Domain) 5- Disorders with Physiological Basis (Knowledge Domain) 6- Functional Levels of Motor Activity (Knowledge Domain) 7- Basics of Voluntary and Involuntary Muscle Control (Knowledge Domain) 8- Mechanisms of Sensory Perception and Generation of Motor Responses (Knowledge Domain) 9- Higher Functions of the Brain (Knowledge Domain)										
References (Text books): 1- Guyton and Hall Textbook of Medical Physiology (Latest Version) 2- Berne & Levy Physiology (Latest Version) 3- Class Slides and Contents										
Student evaluation and the value related to each evaluation: (The assessment tools employed to evaluate students' comprehension of course content and their attainment of the skills and competencies outlined in the learning outcomes.) <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <th style="width: 70%;">ASSESSMENT TOOLS</th> <th style="width: 30%;">From</th> </tr> <tr> <td>Midterm Exam</td> <td style="text-align: center;">10</td> </tr> <tr> <td>Final Exam (Written exam)</td> <td style="text-align: center;">10</td> </tr> <tr> <td>TOTAL MARKS</td> <td style="text-align: center;">20</td> </tr> </table>			ASSESSMENT TOOLS	From	Midterm Exam	10	Final Exam (Written exam)	10	TOTAL MARKS	20
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Students' responsibilities: 1- Prepare for class by reviewing topics beforehand and afterwards. 2- Adhere to class order and rules. 3- Ensure attendance in all classes.										
Discipline and educational rules: 1- Attendance Policy:										

- A deduction of 0.5 points from a total of 20 points will be applied for each unplanned absence. If the number of absences exceeds the permissible limit, the overall score for the course will be reduced to zero.

2- Punctuality:

- Participants are allowed a maximum grace period of 5 minutes after the scheduled start time to join the class. Beyond this timeframe, latecomers may not be admitted.

3- Mobile Phone Usage:

- The use of mobile phones is strictly prohibited during class. Participants are expected to keep their phones on silent or vibrate mode and refrain from any phone-related activities to maintain a focused learning environment.

Other important notes for students:

Reading the guidelines and rights governing both professors and students.

Note: In each class session, a quiz may be taken or questions asked.

Mid exam date:

Final exam date:

Row	date	Time	Topic	Professor	Theoretical or practical	References	Chapter
1	Sep 20	10-12	Title: Organization of the Nervous System, Synapses, and Neurotransmitters Topics: General structure of the nervous system, levels of function, types of synapses, synaptic properties, and neural transmission.	Prof. Reisi	Offline	Textbook of Medical Physiology (Guyton and Hall)	46
2	Sep 27	10-12	Title: Sensory Receptors and Information Processing Topics: Types of receptors, transduction of stimuli into neural signals, temporal and spatial summation, and neural circuits of information processing.	Prof. Reisi	Offline	Textbook of Medical Physiology (Guyton and Hall)	47
3	Oct 4	10-12	Title: Somatic Senses: Touch and Proprioception Topics: Dorsal column pathways, lemniscal system, features of fine touch and proprioception, and related neural circuits.	Prof. Reisi	Offline	Textbook of Medical Physiology (Guyton and Hall)	48
4	Oct 11	10-12	Title: Pain and Temperature Topics: Types of pain (fast/slow), pain pathways, referred	Prof. Reisi	Offline	Textbook of Medical Physiology (Guyton and Hall)	49

			pain, brain/spinal anti-nociceptive system, and thermoreceptors.				
5	Oct 18	10-12	Title: Eye and Retina Topics: Structure of the eye, optical principles, intraocular pressure, phototransduction, color vision, and retinal function.	Prof. Reisi	In-person Offline	Textbook of Medical Physiology (Guyton and Hall)	50-51
6	Oct 25	10-12	Title: Visual Pathways and Eye Movements Topics: Cortical and subcortical visual pathways, pupillary control, eye movements, convergence, and accommodation for visual clarity.	Prof. Reisi	In-person	Textbook of Medical Physiology (Guyton and Hall)	51-52
7	Nov 1	10-12	Title: Hearing, Olfaction, and Taste Topics: Structure of the cochlea and the organ of Corti, auditory pathways, taste buds, olfactory epithelium, neural pathways, and their connections with the limbic system.	Prof. Reisi	In-person	Textbook of Medical Physiology (Guyton and Hall)	53-54
Midterm							
8	Nov 8	10-12	Title: Spinal Cord and Motor Reflexes Topics: Motor organization of the spinal cord, stretch reflexes, and the role of muscle and tendon receptors in motor control.	Prof. Reisi	In-person	Textbook of Medical Physiology (Guyton and Hall)	55
9	Nov 15	10-12	Title: Cortical Control of Movement and Motor Pathways Topics: Corticospinal tract, roles of the primary and secondary motor cortices, and motor centers in the brainstem.	Prof. Reisi	In-person	Textbook of Medical Physiology (Guyton and Hall)	56
10	Nov 22	10-12	Title: Balance and the Cerebellum Topics: Vestibular system, utricle, saccule, and semicircular canals; cerebellar circuits; and the role of the cerebellum in coordination.	Prof. Reisi	In-person	Textbook of Medical Physiology (Guyton and Hall)	56-57
11	Nov 29	10-12	Title: Basal Ganglia and Motor Regulation Topics: Structure and	Prof. Reisi	In-person	Textbook of Medical Physiology (Guyton and Hall)	57

			function of the basal ganglia, movement disorders (Parkinson's, Huntington's), and regulation of voluntary movement.				
12	Dec 6	10-12	Title: Cerebral Cortex, Cognitive Functions, Memory, and Learning Topics: Cerebral cortex, interconnections between cortical areas, short-term and long-term memory, learning, and consciousness.	Prof. Reisi	In-person	Textbook of Medical Physiology (Guyton and Hall)	58
13	Dec 13	10-12	Title: Limbic System, Hypothalamus, Sleep, and EEG Topics: Roles of the hippocampus and amygdala, hypothalamus, NREM/REM sleep, EEG, epilepsy, motivation, and emotions.	Prof. Reisi	In-person	Textbook of Medical Physiology (Guyton and Hall)	59-60
14	Dec 20	10-12	Title: Autonomic Nervous System, CSF, and Cerebral Blood Supply Topics: Sympathetic and parasympathetic systems, autonomic neurotransmitters, hypothalamic control, cerebrospinal fluid, blood-brain barrier, and cerebral circulation.	Prof. Reisi	In-person	Textbook of Medical Physiology (Guyton and Hall)	61-62

The total content is based on the **approved curriculum of the General Medical Doctorate Program (ratified on 23 July 2017)** and the reference sources of the Comprehensive Basic Medical Sciences Examination, with the volume of material adjusted accordingly. However, certain topics may be presented in a more concise manner, and repetition of obvious points or content already covered in related courses will be avoided.