

# In the Name of God



**Hamadan University of Medical Sciences and Health Services  
Educational Deputy of the University  
Center for Studies and Development of Medical Sciences Education**

## **Theory/Practical Lesson Plan Form**

**Dear Colleagues,**

As the teaching-learning process is one that requires careful planning to achieve its objectives, the preparation of a lesson plan at the beginning of the educational process (as a map and guide for instructors and students) is essential. It serves as one of the main tools for the educational activities of instructors. Therefore, we kindly ask all instructors to pay utmost attention to completing the lesson plan.

**Course and Instructor Details (Completing all items in this section is essential)**

### **Course Information**

<b>Field</b>	<b>Details</b>
<b>Course Title</b>	Physiology of the Nervous System and Special Senses
<b>Instructor</b>	Dr. Abdolrahman Sarikhi
<b>Course Coordinator</b>	Dr. Abdolrahman Sarikhi
<b>Head of Department</b>	Dr. Siamak Shahidi
<b>Credit Hours</b>	Theory: 1.4 units; Practical: 1 unit
<b>Program &amp; Level</b>	Doctor of Medicine (Professional Doctorate)
<b>Teaching Location</b>	School of Medicine, Hamadan University of Medical Sciences

## Session-by-Session Syllabus

Session	Topic(s)	Expected Learning Outcomes (Behavioral)	Learning Domain	Teaching Method(s)	Duration	Teaching Aids	Assessment Method(s)
1	Organization of the Nervous System, Basic Functions of Synapses, and Neurotransmitters	1. Describe organization of central & peripheral nervous system, sensory & motor divisions, and their functions. 2. Explain types and characteristics of synapses. 3. List major groups of neurotransmitters.	Cognitive	Lecture, Q&A	2 hrs	Video projector, computer, PowerPoint, whiteboard	Oral questioning
2	Sensory Receptors, Neuronal Circuits for Processing Information	1. Name types of sensory receptors. 2. Explain neuronal circuits and information-processing systems.	Cognitive	Lecture, Q&A	2 hrs	Video projector, computer, PowerPoint, whiteboard	Oral questioning
3	Somatic Sensations I: General Organization, Tactile and Position Senses	1. List types of somatic sensory receptors. 2. Explain sensory transmission pathways and their features. 3. Describe submodalities	Cognitive	Lecture, Q&A	2 hrs	Video projector, computer, PowerPoint, whiteboard	Oral questioning

		s of touch and position sense.					
<b>4</b>	Somatic Sensations II: Pain, Headache, and Thermal Sensations	1. List submodalities of pain sensation and their features with neural pathways. 2. Describe types and origins of headaches. 3. List submodalities of thermal sensation and describe their features with neural pathways.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>5</b>	The Eye I: Optics of Vision	1. Compare optical properties of eye lens and image formation to photographic cameras. 2. Describe refractive errors and factors affecting visual acuity.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>6</b>	The Eye II: Receptor and Neural Function of the Retina	1. Describe retinal photoreceptors, their characteristics, and roles in color and black-white vision. 2. Explain retinal	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning

		neuronal circuits, cell types, and their functions.					
<b>7</b>	The Eye III: Central Neurophysiology of Vision	Explain central visual pathways, relay centers, and their roles in processing various aspects of vision.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>8</b>	The Sense of Hearing	1. Describe anatomical structures of the ear. 2. Explain cochlear structure, receptors, and stimulation mechanisms. 3. Explain central auditory pathways and their roles.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>9</b>	Chemical Senses – Taste and Smell	1. Describe receptors for taste and smell. 2. Explain stimulation mechanisms. 3. Describe central pathways for each sense.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>10</b>	Motor Functions of the Spinal Cord; Cord Reflexes	1. Identify structures involved in movement control and their roles.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning

		2. Describe muscle receptors, spinal reflexes, and their mechanisms.					
<b>11</b>	Cortical and Brain Stem Control of Motor Function	1. Explain brainstem reflexes and their structural basis. 2. Describe motor cortex regions and functions.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>12</b>	Contributions of the Cerebellum to Overall Motor Control	1. Describe cerebellar functions and anatomical parts. 2. Explain cerebellar circuits and disorders from lesions.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>13</b>	Contributions of Basal Ganglia to Overall Motor Control	Describe basal ganglia structures, circuits, and their roles in motor control.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>14</b>	Cerebral Cortex, Higher Brain Functions, Learning, and Memory	1. Describe higher brain functions (memory, learning, speech) and neural mechanisms. 2. Identify CNS regions involved in these functions.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning

<b>15</b>	Behavioral and Motivational Mechanisms – Limbic System and Hypothalamus	1. Explain CNS role in behavior and motivation. 2. Describe limbic system structures and their known functions.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>16</b>	States of Brain Activity – Sleep, Brain Waves, Epilepsy, Psychoses, Dementia	1. Explain EEG basics and brain wave patterns. 2. Describe structures controlling sleep–wake cycle. 3. List sleep stages and their features.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>17</b>	Autonomic Nervous System and Adrenal Medulla	Describe ANS organization , adrenal medulla functions, and control of body systems.	Cognitive	Lecture , Q&A	2 hrs	Video projector, computer, PowerPoint , whiteboard	Oral questioning
<b>18</b>	Vision Tests (Practical)	Perform and interpret: Ophthalmoscopy, Perimetry, Dominant eye test, Snellen chart test, Color blindness test (Ishihara).	Cognitive + Psychomotor	Lecture + practical lab	2 hrs	PC, PowerPoint , whiteboard, ophthalmoscope, perimeter, Snellen chart, Ishihara plates	Attendance, lab report, final exam
<b>19</b>	Hearing Tests (Practical)	Perform and interpret: Tuning fork tests for	Cognitive + Psychomotor	Lecture + practical lab	2 hrs	PC, PowerPoint , whiteboard,	Attendance, lab report,

		conductive & sensorineural loss; Otoscopy examination.				tuning fork, otoscope	final exam
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## Grading Scheme

Assessment Type	Assessment Tool	Weight (%)
Quiz	1–2 short-answer questions	5%
Project/Practical Evaluation	Attendance, lab reports, final practical exam	Based on practical unit share
Midterm Exam	Multiple-choice questions	45%
Final Exam	Multiple-choice questions	45%
Other	Attendance, participation in class discussions	5%
<b>Total</b>	Theory + Practical weighted sum	100%

## References

### Main Textbook

- Guyton and Hall, *Textbook of Medical Physiology*, 2021 Edition (Translation in Persian)

### Supplementary

- Ganong's *Review of Medical Physiology*, latest edition (2021)
- Berne & Levy, *Physiology*, latest edition (2021)