

International School of Medicine / Medicine (English)

2023 - 2024 Academic Year

Musculoskeletal System

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
Musculoskeletal System	06. Committee	Spring Semester	78+18	0	7
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Committee				
Course Coordinator	Assoc.Prof. Ali Timuçin ATAYOĞLU				
Name of Lecturer(s)	Assoc.Prof. Ali Timuçin ATAYOĞLU				
Assistant(s)					
Aim	The objective of this committee is to provide information about structure, development, function and dysfunction of musculoskeletal system.				
Course Content	This course contains; Biophysics: Structure of nerve cells, signal transduction; Structure and dynamics of muscle cells, mechanism of muscle contraction; General organization of nervous system, visual and auditory system; Electromagnetic waves and radiation; General principles of EMG, CT, X-ray, MR, PET and EEG, and recorded neural signals, Histology and Embryology: Head and neck development, skeletal and muscular system development, Physiology: Sensory system, somatic sensations, pain; Motor system, reflexes and motor functions of the cortex, cerebellum, basal ganglia, reticular system; Senses of vision, hearing, taste and smell; Autonomic and enteric nervous system; Limbic system, sleep, learning, memory and higher brain functions, Anatomy: Introduction to nervous system; Anatomy and syndromes of spinal cord, ascending/descending tracts; Clinical anatomy of cervical, brachial, lumbal and sacral plexuses; Brain stem and cranial nerves; Diencephalon, cerebellum, limbic system, telencephalon; Ventricles of brain, cerebrospinal fluid, meninges; Venous sinuses of brain, cerebrovascular diseases, brain stem syndromes; Vessels of CNS; Autonomic nervous system, Pathophysiology: Muscular and skeletal system pathophysiology.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
To gain knowledge about cells and tissues forming the musculoskeletal system, their relationship with microscopic anatomical structures and functions, the link between embryonic development and diseases, structure and functional changes occurring at certain stages of the embryonic and fetal life cycle.			16, 6, 9	A, D	
To gain knowledge about the structure and functioning of nerve and muscle cells in musculoskeletal system, signal formation and transmission, muscle mechanics and dynamics, EMG method.			10, 14, 16, 19, 20, 9	A	
To gain knowledge about signal transduction and the basic principles and physiological mechanisms of muscle contraction, the systemic organization of cells and tissues and the relationship with other systems in musculoskeletal system.			16, 17, 9	A, D	
To gain knowledge about the structures, formations and functions that make up the musculoskeletal system.			16, 6, 9	A, D	
To gain knowledge about how the physiological mechanisms in the musculoskeletal system deteriorate and how pathological changes emerges.			16, 9	A	
Teaching Methods	10: Discussion Method, 14: Self Study Method, 16: Question - Answer Technique, 17: Experimental Technique, 19: Brainstorming Technique, 20: Reverse Brainstorming Technique, 6: Experiential Learning, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam, D: Oral Exam				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Biophysics: Structure of nerve cells, signal transduction; Structure and dynamics of muscle cells, mechanism of muscle contraction; General organization of nervous system, visual and auditory system; Electromagnetic waves and radiation; General principles of EMG, CT, X-ray, MR, PET and EEG, and recorded neural signals	Reading the material given before the lectures			
2	Histology and Embryology: Head and neck development, skeletal and muscular system development	Reading the relevant chapter from the recommended textbook			
3	Physiology: Sensory system, somatic sensations, pain; Motor system, reflexes and motor functions of the cortex, cerebellum, basal ganglia, reticular system; Senses of vision, hearing, taste and smell; Autonomic and enteric nervous system; Limbic system, sleep, learning, memory and higher brain functions	Reading the relevant chapter from the recommended textbook			
4	Anatomy: Introduction to nervous system; Anatomy and syndromes of spinal cord, ascending/descending tracts; Clinical anatomy of cervical, brachial, lumbal and sacral plexuses; Brain stem and cranial nerves; Diencephalon, cerebellum, limbic system, telencephalon; Ventricles of brain, cerebrospinal fluid, meninges; Venous sinuses of brain, cerebrovascular diseases, brain stem syndromes; Vessels of CNS; Autonomic nervous system	Reading the relevant chapter from the recommended textbook			
5	Pathophysiology: Muscular and skeletal system pathophysiology	Reading the relevant chapter from the recommended textbook.			
Evaluation Methods		Weight(%)			
Midterm Exam		60			
General Exam		40			

Resources	
1. Glaser, Biophysics: An introduction. 2nd ed., 2012, Springer	
2. Guyton and Hall Textbook of Medical Physiology, 13th ed. John E. Hall (ed). Elsevier, 2016	
3. Gartne ve Hiatt: Color Text Book of Histology. 2nd ed., Saunders	
4. Sadler, Langman's Medical Embryology, 11th ed., LWW	
5. Mattson-Porth ve Matfin, Pathophysiology: Concepts of Altered Health States. 8th ed., 2008 Course notes, presentations, open online courses on Coursera, EdX and Khan Academy	