**T.C.**

**ATILIM UNIVERSITY MEDICAL FACULTY**

**EDUCATION IN 2021-2022 ACADEMIC YEAR**

**ACADEMIC CALENDAR**

**Laboratory Lessons:**

1. The superficial back and The suboccipital region and deep muscles of the back (2 hour, Dr. Öktem)
2. Muscle Tissue (1 hour, Dr. Süzer)
3. The anterior and posterior aspects of the shoulder, arm and the mammary glands (2 hour, Dr. Öktem)
4. The axilla and the brachial plexus (2 hour, Dr. Öktem)
5. Purification and acid hydrolysis of glycogen (1 hour, Dr. Kılıç)
6. The flexor and extensor aspects of the forearm and the cubital fossa , Anatomy of the hand(2 hour, Dr. Öktem)
7. Nervous Tissue (1 hour, Dr. Süzer)
8. Nerve conductance rate (1 hour, Dr. Sarıkaya)
9. The gluteal region and lateral and posterior aspects of the thigh and popliteal fossa (2 hour, Dr. Öktem)
10. Cell Division, mitosis ( 2 hours, Dr. Özalp)
11. The anterior, medial of the thigh and popliteal fossa (2 hour, Dr. Öktem)
12. The lateral, anterior and posterior aspects of the leg and Anatomy of the foot (2 hour, Dr. Öktem)
13. Peripheral nerve diseases and muscle (1 hour, Dr. Boduroğlu & Dr. Yurdakan)

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| **COMMITTEE NAME** | **STARTING DATE** | **COMPLETION DATE** |
| **MED 102** | 07.02.2022 | 18.03.2022 |
| **MED 104** | 21.03.2022 | 29.04.2022 |
| **MED 106** | 02.05.2022 | 10.06.2022 |

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| **COMMITTEE NAME** |
|  | **MED 101** | **MED 102** | **MED 103** | **MED 104** | **MED 105** | **MED 106** |
| **ANATOMY PRACTICAL EXAM DATE** | - | - | - | 28.04.2022 | - |  |
| **COMMITTEE EXAM DATE** |  | - |  | 29.04.2022 |  |  |

**MED104 LOCOMOTION**

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| **PHASE I COORDINATOR** | Prof. Dr. Veli Cengiz ÖZALP |
| **PHASE I COORDINATOR ASSISTANT** | Asst. Prof. Dr. Nuriye Ezgi BEKTUR AYKANAT |
| **CHAIRMAN OF THE MED 104 COMMITTEE** | Assoc. Prof. Dr. Hale ÖKTEM |
| **MED 104 COMMITTEE DATE RANGE** | 21.03.2022 - 29.04.2022 |
| **ACADEMIC STAFF AT THE MED 104 COMMITTEE** | Prof. Dr. Nedret KILIÇ- Medical BiochemistryProf. Dr. Necla TÜLEK- Medical MicrobiologyProf. Dr. Ali ACAR- Medical MicrobiologyProf. Dr. Gamze YURDAKAN- Medical PathologyProf. Dr. Veli Cengiz ÖZALP – Medical BiologyAssoc. Prof. Dr. Hale ÖKTEM- AnatomyAssoc. Prof. Dr. Filiz KORKMAZ ÖZKAN - BiophysicsAss. Prof. Dr. Ayşegül SÜZER - Histology and EmbryologyAss. Prof. Dr. Esin BODUROĞLU- Medical PathologyAss. Prof. Dr. Ali Doğan DURSUN – PhysiologyAss. Dr. Gökşen ÖZ – Medical PharmacologyAss. Prof. Dr. Fatma YERLİKAYA ÖZKURT - BiostatisticsAss. Prof. Dr. Badegül SARIKAYA - Physiology |
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**ACADEMIC STAFF** | **THEORETICAL LESSON TIME** | **PRACTICAL LESSON TIME** | **INTERACTIVE EDUCATION****TIME** | **TOTAL TIME** |
| **Anatomy** | 22 | 14 | 3( 3 hours for TBL) | 39 |
| **Histology and Embryology** | 8 | 2 | - | 10 |
| **Medical Microbiology** | 7 | - | 1 ( 1 hour CBL) | 8 |
| **Medical Biochemistry** | 18 | 1 | - | 19 |
| **Pathology** | 9 | 1 | - | 10 |
| **Physiology** | 19 | 1 | - | 20 |
| **Medical Biology** | 2 | 2 | - | 4 |
| **Medical Pharmacology** | 2 | - | - | 2 |
| **Biostatistics** | 7 | - | - | 7 |
| **Biophysics** | 4 | - | - | 4 |
| **TOTAL** | 98 | 21 | 4 | 123 |

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| **CONTENT OF THE MED 104 COMMITTEE**  |
| Muscles general consideration and introduction to nervous system, General Structural Properties, Classification and Development of Muscle Tissue, Organization and process of nervous system, conduction properties of peripheral nervous system, Synapses, types of synapse, chemical synaptic transmission, The superficial back, The suboccipital region and deep muscles of the back, Synaptic integration, Skeletal Muscle, Cardiac and Smooth Muscle, Biochemistry of muscle tissue, Neurotransmitters, Sensory physiology, sensory receptors and receptor potentials, The posterior aspect of the shoulder and arm, The innervation of skeletal muscle and skeletal muscle potentials, The innervation of smooth muscle and smooth muscle potentials, Somatic sensation - touch and position, Digestion of carbohydrates, The anterior aspect of the shoulder and arm, Mammary glands, Bone, bone marrow and muscle stem cells, Introduction to soft tissue and adipose neoplasms, Soft tissue neoplasms: Fibrohistiocytic neoplasms, Somatic sensation - pain and thermal sensation, Aeorobic and anaerobic glycolysis, The Neuron and neuroglias, Soft tissue neoplasms of muscular origin, Regulation of glycolysis and energetics, The molecular structure of skeletal muscle and its neuro muscular function, Biochemical markers of muscle-skeleton system diseases, Peripheral nerve, peripheral ganglia and myelinization, The axilla and the brachial plexus, Clostridium tetani, The flexor aspect of the forearm and the cubital fossa, The extensor aspect of the forearm, The molecular mechanism of skeletal muscle contraction, the types of contraction and tetanus, Gluconeogenesis, Clostridium botulinum, Anatomy of the hand, The structure and innervation of smooth muscle, The contraction and relaxation mechanism of smooth muscles and latch mechanism, The gluteal region, The lumbosacral plexus, Pathology of the peripheral nerve injury, atrpohy, neuropathy, Polyneuritis, inflammatory neuropathies, Peripheral nerve sheath tumors, Pathology of Neuromuscular junction, muscle injury, atrophy, myopathies, Claude-Bernard on curare, Pentose phosphate pathway, Utilization of other carbohydrates through glycolytic pathway, Glycogenesis and glycogenolysis, The structure and innervation of cardiac muscle, The lateral and posterior aspects of the thigh and the popliteal fossa, The anterior and medial aspects of the thig, Reciprocal regulation of glycolysis and gluconeogenesis, Citric acid cycle and its regulation, Clostridium perfringes and other clostridium species, Oxidative Phosphorylation and ATP Synthesis, Biochemistry of nervous tissue, Cell Division, mitosis, Other anaerobic bacilli and cocci, Nutrition & Public Health, The lateral and anterior aspects of the leg, Local anesthetics, The posterior aspect of the leg, Anatomy of the foot, Univariate charts, Bivariate and multivariate graphs, Sectional and clinical anatomy, Probability, Skeletal Muscle Relaxants, Cross tables, Frequency Tables |
| **MED 104 COMMITTEE AIM** |
| Identify examples of the primary causes of infections due to anaerobics and which factors contribute to the development of diseases. Describes the diagnosis, emergency approach and prevention of tetanus. To define soft tissue tumors and to give their general characteristics.To describe the etiopathogenetic features of common soft tissue tumors. To explain the mechanisms of peripheral nerve damage and to describe inflammatory neuropathies with their developmental mechanisms Introduction to neuromuscular junction disorders. To give general characteristics of peripheral nerve sheath tumors. Learning the local anesthetics mechanism of action, usage and toxicity. Learning the effects of skeletal muscle relaxants. Describe and understand the one of the important pathogen causing food poisoning and causing weakness of muscles. Understand the gas gangren and learn emergency approach. Definition of origin, insertion, functions and innervation of suboccipital and back muscles to describe the disfunctions of these muscles like fibromyalgia, disc herniations, trauma, injuries. Definition of origin, insertion, functions and innervation of upper extremity muscles to describe the disfunctions of these muscles like fibromyalgia, disc herniations, trauma, injuries. Definition of origin, insertion, functions and innervation of lower extremity muscles to describe the disfunctions of these muscles like fibromyalgia, disc herniations, trauma, injuries. Defines the muscle tissiue with subtypes in order to correlate muscular patologies in skeletal in cardiovascular systems. Defines the neurons and neroglial cells as well as peripheral components of nervous tissue in order to correlate the neuromuscular patologies, peripheral nerve pathologies with microanatomic compartments. |
| **MED 104 COMMITTEE LEARNING OBJECTIVES** |
| The students who succeeded in this course;1. Describe the classification of bacteria based upon oxygen requirements, and list examples of each.
2. Describe how aerobic respiration (or fermentation) differs from anaerobic
3. Identify examples of the primary causes of infections due to anaerobics and describe the predispositional factors.
4. Describe structure andotoxins of Clostridium tetani.
5. Explain what are important virulance factors for Clostridium tetani and how do these factors contribute to the pathogenesis of tetanus?
6. Explain which kind o wounds are typically necessary for development of tetanus
7. Recall the signs and symptoms of Clostridium tetani infection.
8. Summarize the treatment options for Clostridium tetani.
9. Explain how can tetanus be prevented
10. Explain the harmful activities of the anaerobic microorganisms.
11. Name the most important ones and explain which factor contribute to the development of diseases
12. Defines the general properties of soft tissue.
13. Describe the etiopathogenetic features of adipose tissue tumors and tumors of fibrous tissue origin.
14. Explain the physiopathology of tumor-like proliferative lesions of fibrous tissue.
15. Defines the etiopathogenetic and morphological features of frequently seen tumors of skeletal muscle.
16. Describes benign and malignant tumors of smooth muscle origin. Explain the differences between malignant and benign tumors.
17. Identfy common soft tissue tumors of uncertain origin, simple and complex karyotype.
18. Explain the general histomorphological features of soft tissue tumors of uncertain origin.
19. Defines peripheral nerve damage patterns and explains the physiopathological features of common peripheral neuropathies associated with this damage.
20. Explain the disorders affecting the neuromuscular junction with their mechanisms.
21. Defines the damage and atrophy patterns of skeletal muscle.
22. Describes hereditary and acquired disorders of skeletal muscle with physiopathological and morphological features.
23. Describes the etiopathogenetic and general histomorphological features of peripheral nerve sheath tumors that are part of special syndromes and observed sporadically.
24. Explain the different features of malignant and benign peripheral nerve sheath tumors.
25. Know the elements in a neuromuscular junction
26. Know the importance of myelin sheath around the nerves for controlling skeletal muscle
27. Describe the events in axon terminal, synaptic cleft and muscle membrane in sequential order
28. Know the function T-tubules
29. Know that the sarcoplasmic reticulum releases Ca2+ upon arrival of an action potential
30. Describe the possible outcomes when Ach receptor protein is blocked
31. Describe the possible outcomes when vesicle fusion is interrupted for any reason
32. Know that nerve fibers do not make direct contact with the muscle sheet
33. Know that hormones, chemical factors and neurotransmitters can excite a smooth muscle
34. Know that some visceral muscle cells self-excite
35. Know that a smooth muscle can be axcited as well as inhibited
36. Able to compare the mechanism of excitation of smooth mucle to that of skeletal muscle
37. Describe the phases of muscle contraction
38. Know the factors affecting the tension developed in muscle
39. Define and differentiate tetanus and twitch
40. Know the terms concentric, isometric, eccentric and isotonic contraction.
41. Define active and passive forces for the development of total tension
42. Be familiar with Hill's equation and know that the relation between force and velocity is inverse
43. Describe the working principle of electromyography
44. List the factors affecting nerve conduction speed
45. Know the difference between neuropathy and myopathy by the amplitude of EMG signal
46. Describes the function of muscle tissue within the body
47. Defines the transduction of chemical energy into mechanical energy in muscles.
48. Describes major proteins and filaments in muscles and their mechanism of contraction.
49. Explains biochemical process of muscle tissue contraction and its alterations in diseases
50. Explains the biochemical markers of musculoskeletal diseases.
51. Defines the biochemical process of direct and indirect damages in muscle-skeleton system diseases.
52. Describes the crucial serum markers in direct and indirect damages in muscle-skeleton system diseases.
53. Explains the muscle enzymes in the diagnosis of neuromuscular disorders.
54. Explains the function of nervous tissue in the human body.
55. Defines the biochemical composition of neuronal cell membrane.
56. Describes the biochemical process of impulse initiation and propagation in the neuron.
57. Lists the steps in cell signaling process.
58. Defines the neurotransmitters and their functions in signaling.
59. Explains the biochemical process of nervous tissue signaling and its alterations in diseases
60. Explains the carbohydrate metabolism.
61. Distinguishes various carbohydrates found in the human body.
62. Explains the use of glucose to provide energy.
63. Defines the process of carbohydrates.
64. Describes the enzymes responsible for digestion of carbohydrates.
65. Briefly describes the important enzyme deficiencies responsible for process of carbohydrate digestion and absorption.
66. Distinguishes between aerobic and anaerobic glycolysis.
67. Lists stages of aerobic and anaerobic glycolysis and explain their importance.
68. Explains the purpose of glycolysis.
69. Compares the output of glycolysis in terms of ATP molecules and NADH molecules produced.
70. Describes the use and formation of ATP during glycolysis.
71. Defines the clinical importance of glycolysis in case of an enzyme deficiency.
72. Explains the importance of regulation in glycolysis to cells.
73. Defines the major pathways of metabolism of biomolecules.
74. Describes the bioenergetics of biomolecules.
75. Defines the disruptions in regulatory mechanism of glycolysis and energetics
76. Explains the importance of gluconeogenesis to cells.
77. Defines the precursors in gluconeogenesis.
78. Describes the opposing pathways of glycolysis and gluconeogenesis.
79. Explains the stages of gluconeogenesis and their clinical importance.
80. Defines the energetics of gluconeogenesis.
81. Defines the disruptions in regulatory mechanism of gluconeogenesis.
82. Explains the importance of reciprocal regulation of glycolysis and gluconeogenesis.
83. Describes the biochemical process of the reciprocal regulation of glycolysis and gluconeogenesis and the role of allosteric enzymes in that regulation.
84. Defines the major pathways and regulation of gluconeogenesis and glycolysis in the liver.
85. Describes how irreversible enzymes of glycolysis are bypassed and how those two pathways are regulated reciprocally.
86. Explains the metabolic outcomes if glycolysis and gluconeogenesis were unregulated and their clinical importance.
87. Explains the importance of pentose phosphate pathway to cells.
88. Describes the pentose phosphate pathway and its importance in nucleotide and fat metabolism.
89. Describes the parameters regulating the pentose phosphate pathway.
90. Describes which tissues requires for an active pentose phosphate pathway.
91. Explains the metabolic outcomes if pentose phosphate pathway was unregulated and its clinical importance.
92. Defines the carbohydrates which are utilized through glycolytic pathway.
93. Describes the clinical outcomes if the precursor carbohydrates were not utilized in glycolytic pathways.
94. Describes the overall purpose of glycogenesis and glycogenolysis.
95. Defines the reactants and products, their cellular localization, and tissue distribution in glycogenesis and glycogenolysis.
96. Describes the roles of enzymes in glycogenesis and biochemical and potential clinical consequences in deficiencies of these enzymes.
97. Compares the purpose and regulation of glycogenolysis between hepatocytes and skeletal muscle.
98. Describes the process of the citric acid cycle (Krebs cycle).
99. Identifies the reactants and products in citric acid cycle.
100. Lists the important steps in citric acid cycle.
101. Briefly describes the roles of enzymes in citric acid cycle in specialized tissues and biochemical and potential clinical consequences in deficiencies of these enzymes.
102. Describes the regulation of citric acid cycle and the underlying mechanism of the allosteric modulators.
103. Describes the movement of electrons through the electron transport chain during oxidative phosphorylation.
104. Describes the process of the oxidative phosphorylation and ATP synthesis.
105. States the products of oxidative phosphorylation.
106. Describes the chemiosmotic theory of ATP production in terms of the movement of hydrogen ions through ATP synthase.
107. Defines the clinical importance of oxidative phosphorylation and ATP synthesis.
108. Briefly describes the defects in oxidative phosphorylation which may result in myopathies and neuropathies (including exercise intolerance).
109. Explains how electron transport and ATP synthase are functionally coupled
110. Explains the general principles and steps of acid hydrolysis and purification of glycogen.
111. Describes the chemical structure of glycogen.
112. Perform the purification and acid hydrolysis of glycogen from liver tissue.
113. Applies the Benedict’s test to determine the prevalence of glucose in hydrolysed and purified sample.
114. Interprets the results and discusses the color change with the Benedict’s test.
115. Describe the mechanism of action of local anesthetics.
116. Explain the relationship among tissue pH, drug pKa, and the rate of onset of local anesthetic action.
117. Describe the major toxic effects of the local anesthetics.
118. Learning how to use local anesthetics for
119. Describe the transmission process at the skeletal neuromuscular end plate and the points at which drugs can modify this process.
120. Describe the differences between depolarizing and nondepolarizing blockers.
121. Describe the method of reversal of nondepolarizing blockade.
122. Know the difference between NM blockers and the drugs for treatment of skeletal muscle spasticity
123. Describe the pathophysiology and characteristics of Clostridium botulinum.
124. What are important virulance factors for Clostridiumbotulinum.
125. Describes the food factors contribute the development of diseases.
126. Review the appropriate history, physical, and evaluation of Clostridium botulinum infections.
127. Outline the treatment and management, prevention options available for Clostridium botulinum infections.
128. Name the most important cause of gas gangrene.
129. What are important virulance factors for C. perfringes? How do thse factors contribute to the virulence of organismhis pathogen?
130. Explain why wounds are important in the pathogenesis of gas gangrene.
131. Identify the etiology and epidemiology of Clostridium-related diseases, medical conditions, and emergencies.
132. Review the appropriate history, physical, and evaluation of Clostridium infections.
133. How is Clostridium perfringes identified from gangrenous tissue and how is the disease diagnosed and treated.
134. Outline the treatment and management options available for Clostridium infections.
135. Determine the types of muscular tissue
136. Determine the supportive structures of muscular system
137. Determine the muscles according to their morphological structure
138. Determine the types of muscular contraction
139. Determine the meanings of origin and insertion
140. Identify the muscles of the back according to their general topography
141. Describe their innervation and major actions.
142. Describe the boundaries and major contents of the auscultatory, lumbar, and suboccipital triangles.
143. Identify the major features of the back in a standard surface anatomy examination.
144. Identify the muscles of the suboccipital region
145. Determine the origins, insertions, innervations and the major actions of these muscles.
146. Describe the boundaries and major contents of the suboccipital triangle.
147. Defines the fascia of shoulder region
148. Counts the muscles of posterior aspect of shoulder and arm
149. Defines the origin, insertion, innervation and function of triceps brachii muscle, deltoid muscle, supraspinatus, infraspinatus, subscapular, teres major, and teres minor mucsles
150. Says the arteries and branches suppling the posterior region of the shoulder and arm
151. Counts the nerve branches of brachial plexus of posterior region of arm
152. Says the sensory innervation of the anterior posterior of shouldera and arm
153. Describe the borders of triangles and their contents
154. Defines the fascia of brachial region
155. Arrays the compartmans of arm
156. Counts the muscles of anterior region of arm
157. Defines the origin, insertion, innervation and function of biceps brachii muscle, coracobrachialis muscle and brachialis muscle
158. Says where long head of biceps brachii passes through
159. Says the arteries and branches suppling the anterior region of the arm
160. Counts the nerve branches of brachial plexus of anterior region of arm
161. Says the sensory innervation of the anterior region of the arm
162. Counts the superficial veins of anterior region of the arm
163. Lists the location and name of the vein used for intravenous intervention in the clinic
164. Describe pectoral region
165. Describe the fascias related with pectoral region
166. Determine the coetaneous innervations of the pectoral region
167. Counts the muscles of the region, their functions and innervations
168. Describe the anatomic structures of mammary glands
169. Describe the location and borders of the axilla
170. State the structures located within the axilla
171. Describe and identify the brachial plexus including all of its branches
172. Recognize brachial plexus injuries and explain their clinical presentation.
173. Name the major nerves that have a sensory distribution to the upper limb
174. Describe the clinical significance of the axillary lymph nodes
175. Describe and identify the origin, course and function of the axillary, radial, musculocutaneous, median and ulnar nerves. Name the major muscles and muscle groups that the axillary, radial, musculocutaneous, median and ulnar nerves supply.
176. Predict the consequences of injury to these nerves
177. Descibe the parts of the axillary artery and its branches
178. Define the osseofascial compartments of the forearm
179. Identify the muscles contained in flexor compartment of the forearm
180. Describe the attachments, innervation, and major actions of each muscle of flexor aspect of the forearm
181. Describe the innervation of each compartment as a whole and the major actions governed by that innervation
182. Predict the functional consequences of loss of action of each muscle and each compartment
183. Describe the mechanisms of pronation and supination. Note the muscles involved, their sites of attachment, and their innervation.
184. Describe the arrangement of synovial sheaths in the wrist and hand.
185. Explain the clinical significance of such a patterning.
186. Trace the course of motor and cutaneous innervation in the upper limb.
187. Define the boundaries of the cubital fossa and identify its contents.
188. Define the extensor compartment of the forearm
189. Identify the muscles contained in extensor compartment of the forearm
190. Describe the attachments, innervation, and major actions of each muscle of extensor aspect of the forearm
191. Describe the arrangement of synovial sheaths in the wrist and hand.
192. Define the “anatomical snuffbox” and identify its major contents.
193. Trace the course of motor and cutaneous innervation and vessels of the extensor region of forearm.
194. Defines the cutaneous innervations of hand
195. Defines palmar aponeurosis
196. Defines palmar compartments and the structures located in them
197. Counts the muscles of hand and says their functions
198. Defines the courses of the nerves in hand region
199. Defines the pathological disorders of hand based on anatomy
200. Identify the gluteal region and the defining boundaries of each.
201. Determine the muscles of the gluteal region, indicating their attachments, innervation, and major actions. Describe the roles of the gluteal muscles during locomotion.
202. Describe the topographic relationships of the neurovascular structures in the gluteal region and the consequences of intragluteal injections into specific quadrants of the region.
203. Says the functional consequences of loss of action of each muscle of gluteal region
204. Trace the course of cutaneous and motor innervation in the lower limb
205. Describe the formation of lumbosacral plexus (site, roots)
206. List the main branches of lumbosacral plexus
207. Describe the important clinical anatomy related to lumbosacral plexus
208. Defines the fascial compartments of the thigh region
209. Identify the muscles, nerves and vessels of anterior and medial regions of thigh
210. Describe the attachments, innervation, and major actions of each muscle of the anterior and medial aspect of the thigh
211. Trace the course of cutaneous and motor innervation of the thigh
212. Describe the borders and contents of femoral triangle and adductor canal
213. Defines the fascial compartments of the thigh region
214. Identify the muscles, nerves and vessels of posterior and lateral regions of thigh
215. Describe the attachments, innervation, and major actions of each muscle of the posterior and lateral aspect of the thigh
216. Trace the course of cutaneous and motor innervation of the thigh
217. Describe the borders and contents of popliteal fossa
218. Defines the fascial compartments of the leg
219. Identify the muscles, nerves and vessels contained in each compartment.
220. Describe the attachments, innervation, and major actions of each muscle of the anterior and lateral aspect of the leg.
221. Predict the functional consequences of loss of action of each muscle and each compartment.
222. Trace the course of cutaneous and motor innervation of the leg
223. Defines the fascial compartments of the leg
224. Identify the muscles, nerves and vessels of posterior compartment of leg
225. Describe the attachments, innervation, and major actions of the posterior aspect of the leg.
226. Trace the course of cutaneous and motor innervation of theposterior aspectof leg
227. Names the bones of the foot skeleton and joints between them
228. Describes the sensory innervation of the dorsal and plantar surface of the foot
229. Describes the flexor and extensor retinaculum around the ankle and lists the structures passing beneath them.
230. Describes the muscles of the foot, the origins and insertions of these muscles and the layers they are located in.
231. Describes the innervation of the foot muscles
232. Defines the longitudinal and transvers arches of the foot
233. Says the muscles and ligaments that support the arches
234. Evaluate the most common entrapment neuropathies of the upper and lower extremity
235. Says the injuries of nerves of brachial plexus and lumbosacral plexus
236. Describe the signs of the compartment syndromes of the upper and lower extremity on sectional anatomy base
237. Describe the vessel patologies of upper and lower extremity
238. Identify the muscles, nerve and vessel structures in different sections
239. Defines the components of the nervous system; Describes the structure, types and conduction properties of the neuron
240. Explains the synapse structure, defines the synaptic cleft, and chemical transduction.
241. Explains the synaptic integration mechanisms
242. Lists neurotransmitters, defines their receptors, explains their synthesis and degradation pathways.
243. Defines the sensory receptors and explains their properties
244. Defines touch and proprioception senses, explains the ways of conduction to the central nervous system
245. Defines pain and temperature senses, explains the ways of conduction to the central nervous system
246. Explains the structure and the contraction mechanism of skeletal muscle fibers; Explains the nerve muscle junction, motor end plate potential, acetyl choline production, release and inhibition
247. Defines the contraction types of skeletal muscle; Explains the mechanism of tetanus
248. Explains the structure; Defines neuronal and hormonal stimulation properties of smooth muscle, Explains similarities and differences between smooth muscle and skeletal muscle.
249. Explains the contraction-relaxation mechanism of smooth muscle fibers and the latch mechanism
250. Defines cardiac muscle, explains properties and contraction of cardiac muscle, explains similarities and differences between cardiac muscle and skeletal-smooth muscle.
251. Explains the effect of curare on neuromuscular junction, defines the mechanisms of direct and indirect stimulation responses of the muscle.
252. Defines the conduction velocity of sensory and motor nerves, defines the factors affecting the conduction velocity.
 |
| **RECOMMENDED BOOKS** 1. Basic & Clinical Pharmacology (13th Edition); Bertram G. Katzung,‎ Anthony J. Trevor; McGraw-Hill, 2015.
2. Braddom's Physical Medicine and Rehabilitation (5th Edition); David X. Cifu MD; Elsevier, Philadelphia, 2016.
3. Gray’s Anatomy for Students (3rd Edition); Richard L. Drake, A. Wayne Vogl, Adam W. M. Mitchell; Churchill Livingston Elsevier, Philadelphia, 2015.
4. Guyton and Hall Textbook of Medical Physiology (13th Edition); John E. Hall; Elsevier, Philadelphia, 2016.
5. Histology and Cell Biology: An Introduction to Pathology (4th Edition); Abraham L. Kierszenbaum, Laura L. Tres; Elsevier Saunders, Philadelphia, 2015.
6. Molecular and Cellular Biophysics; Meyer B. Jackson; Cambridge University Press, Cambridge, 2006.
7. Rheumatology Textbook (5th Edition); Marc Hochberg, Alan J. Silman, Joseph Smolen, Michael Weinblatt, Michael Weisman; Mosby Elsevier, Philadelphia, 2011.
8. Robbins Basic Pathology (10th Edition); Vinay Kumar, Abul K. Abbas, Jon C. Aster; Elsevier Saunders, Philadelphia, 2018.
9. The Developing Human: Clinically Oriented Embryology (10th Edition); Keith L. Moore, T. V. N. Persaud, Mark G. Torchia; Elsevier, Philadelphia, 2015.
10. Textbook of Biochemistry with Clinical Correlations (7th Edition); Thomas M. Devlin; John Wiley & Sons, 2010
11. Cell and molecular biology (2th edition); Nalini Chandar, PhD, Susan Viselli, PhD, Lipincot Wiliams & Wilkins, 2019.
12. Molecular cell biology (8th edition); Harvey Lodish, W.H.Freeman & Co Ltd, 2016.
13. Molecular biology of the cell (6th edition); Bruce Alberts, W. W. Norton & Company,2015.
14. Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e, 2019, McGraw-Hill Education
15. Medical Microbiology 9th Edition . Murray . Rosenthal, . Pfaller, ,2021
16. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, 9th Edition, Bennett, JE, Dolin R, Blaser MJ. Elsevier, 2019
17. Basic Immunology: Functions and Disorders of the Immune System, 5e, Abbas, Lichmann, Pillai, Elsevier, 2016
18. Gray’s Anatomy. Editor: Susan Standring, 41st Edition, 2015, Elsevier
19. Moore Clinically Oriented Anatomy. Authors: Keith L. Moore, Anne M. R. Agur, Arthur F. Dalley. 7th Edition, 2013, Lippincott Williams Wilkins
20. Sobotta Atlas of Human Anatomy. English: Musculoskeletal system, internal organs, head, neck, neuroanatomy by Friedrich Paulsen (Author), Jens Waschke (Author), Sabine Hombach-Klonisch (Translator), Thomas Klonisch (Translator). 15th Edition, 2013, Urban and Fischer, Elsevier
21. Atlas of Human Anatomy (Netter Basic Science). Author: Frank H. Netter. 7th Edition, 2019, Elsevier
22. Medical Physiology 3rd Edition by Boron MD PhD, Walter F, Boulpaep MD, Emile L. (2017)
23. Physiology 6th Edition by Costanzo PhD, Linda S. (2017)
24. Principles of Neural Science, Fifth Edition (Principles of Neural Science (Kandel)) 5th Edition by Eric R. Kandel, James H. Schwartz, Thomas M. Jessell, Steven A. Siegelbaum, A. J. Hudspeth. (2013)
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| **MED 104 COMMITTEE EXAM WEEK** |
| **DATE** | **EXAM NAME** | **EXAM HOUR** |
| 28.04.2022 | Anatomy Practical Exam | 09:30-11:20 |
| 29.04.2022 | MED 104 Committee Exam | 10:30-12:20 |
| **Teaching Methods and Techniques** |

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| [x]  Lecture | [x]  Case based learning | [x] Case discussion | [ ] Student presentation |
| [ ]  Role playing | [ ]  Problem based learning | [ ] Project | [ ] Homework |
| [x] Laboratory practice | [x]  Team based learning | [x]  Free Study |  |

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| **Evaluation Method** | Theoretical Exam (80%), Anatomy Practical Exam (15%), TBL (5%) |
| **Language of lectures, practicals and all other applications** | English |