

Course Title	<b>Neuroscience</b>				
Course Code	MD230				
Course Type	Compulsory				
Level	1 <sup>st</sup> Cycle (MD)				
Year / Semester	2 <sup>nd</sup> Year / 4 <sup>th</sup> Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	4 Hrs / 14 weeks	Laboratories / week	4 Hrs / 14 weeks
Course Purpose and Objectives	<p>Neuroscience is an integrated course that aims to familiarize students with the basic concepts about the organization, structure and function of the human central nervous system and the sensory organs, which emphasizes the multidisciplinary study of the central nervous system through the study of <b>Gross and Radiological Anatomy, Histology, Embryology and Neurophysiology</b>. Detailed <b>Gross Anatomy</b> of the human body, including sectional anatomy, anatomical basis of clinical conditions, and radiologic anatomy will be presented. Students will address <b>Clinical Correlations</b> of structure and functions of human body and the anatomical and developmental basis for clinical presentations. <b>Radiological Anatomy</b> will include identification of normal anatomical features in commonly used radiographs (plain &amp; contrast), computerized tomography (CT) scans and MRI. The aim is to enable students to apply these fundamental principles toward understanding nervous system function and dysfunction, toward clinical problem-solving in relation to disorders that affect the nervous system and to provide the necessary foundation in neuroscience upon which students can build for the rest of the training.</p> <p>The course is designed to integrate a 3-dimensional visualization of structures (anatomy) with function (physiology) and microstructure (histology) and development (embryology), and enable students to use that knowledge to solve clinical problems. All lectures, laboratories, group discussions, and clinical problems emphasize the integration of basic science concepts with clinical significance and applications.</p>				
Learning Outcomes	<p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> <li>• Demonstrate a broad foundation in the concepts and methodologies of the interdisciplinary field of neuroscience at the cellular, molecular, gross, cognitive, systems and behavioural levels.</li> <li>• Explain the cellular and molecular basis for excitability, conductivity, synaptic function and plasticity of the nervous system</li> </ul>				

	<ul style="list-style-type: none"> <li>• Identify and describe the major features of the brain that are identifiable on gross inspection and in coronal, axial and sagittal section</li> <li>• Identify the organization of the major blood vessels of the brain and describe the regulation of blood flow and the transit of nutrients to the brain, including the blood brain barrier</li> <li>• Describe the general concepts in the development of the nervous system and consequences of disruption of these processes</li> <li>• Explain the formation and flow of cerebrospinal fluid</li> <li>• Describe the major tracts of the brain and identify the functions and consequences of damage to the tracts</li> <li>• Describe the major components of the sensory systems and predict the consequences of damage to these systems</li> <li>• Describe the major components of the motors systems and predict the consequences of damage to these systems</li> <li>• Describe the substrates for the major behavioural and cognitive functions of the brain and predict consequences of damage to these systems</li> </ul> <p><b>Laboratory skills</b></p> <ul style="list-style-type: none"> <li>• Recognize surface and deep structures of the brain and spinal cord.</li> <li>• Recognize sensory and motor pathways and functional manifestations</li> <li>• Recognize microstructure and developmental stages of the nervous system</li> <li>• Identify normal anatomical structures of the central nervous system on computerized tomography (CT) scan, MRI etc. and correlate with cross sections of the body</li> <li>• Apply virtual lab methods and recognize normal neuroanatomy, neural signaling, neural development, sensory function, motor function and cognition.</li> <li>• Recognize and perform neurologic assessment of normal functions of cranial nerves</li> </ul>		
Prerequisites	None	Co-requisites	None
Course Content	<ul style="list-style-type: none"> <li>• Cellular / Molecular Units (Neurons, Glia &amp; Synapses)</li> <li>• Cerebrum</li> <li>• Deep Cerebral Structures</li> <li>• Brainstem and Cerebellum</li> <li>• Spinal Cord</li> <li>• Motor Pathways</li> <li>• Sensory Pathways</li> <li>• Cranial Nerves</li> <li>• Sensory Organs</li> <li>• Autonomic System</li> <li>• Structures of Support</li> <li>• Brain Vascularization</li> </ul>		

Teaching Methodology	Face- to- Face						
Bibliography	<p>Clinical Neuroanatomy; Snell Richard; 978-0781794275; Lippincott Williams and Wilkins;</p> <p>Neuroanatomy: An Illustrated Colour Text; Alan R. Crossman / David Neary ; 4th; 978-0702030864; Churchill Livingstone; Blumenfeld, Neuroanatomy Through Clinical Cases (Paperback), Sinauer Associates;</p> <p>Junqueira’s Basic Histology: Text &amp; Atlas; Antony L. Mesher, Phd, Mc Graw Hill Education Lange,</p> <p>The Developing Human: Clinically Oriented Embryology, By: Keith L. Moore, Elsevier Carpenter R, Reddi B, Neurophysiology: A conceptual approach, Hodder, Arnold,</p> <p>Haines, Neuroanatomy: An Atlas of Structures, Sections and Systems, Lippincott William and Wilkins</p> <p>Nolte, The Human Brain: An Introduction to its Functional Anatomy,</p> <p>Ten Donkelaar H, Lammens M, Hori A. Clinical Neuroembryology: Development and developmental disorders of the human central nervous system. Spinger</p>						
Assessment	<table> <tr> <td>Examinations:</td> <td>70%</td> </tr> <tr> <td>Assignment/Lab</td> <td>20%</td> </tr> <tr> <td>Class Participation:</td> <td>10%</td> </tr> </table>	Examinations:	70%	Assignment/Lab	20%	Class Participation:	10%
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Language	English						