

Course Code : MED2109

Course title: Neuroanatomy, Head and Neck

No. of Credits: 05

Detailed Objective Document

Topic/ Concept	Objectives	Time	T/L activity (hrs/per student)
<b>Introduction to Nervous system and Head and Neck region</b>	<p><b>Student should be able to,</b></p> <ol style="list-style-type: none"><li>1. <b>List</b> the major divisions of the Nervous System (NS); the Central (CNS) and Peripheral (PNS) nervous systems.</li><li>2. <b>Describe</b> that the CNS is composed of grey matter containing nerve cell bodies and the white matter containing axons. Also briefly describe how grey and white matter are distributed or arranged to form the complex structure of brain and spinal cord.</li><li>3. <b>Describe</b> the arrangement of PNS that consists of spinal and cranial nerves and ganglia.</li><li>4. <b>Describe</b> the overall arrangement of structures in the head and neck region</li></ol>	1 hr	1 hr Lecture
<b>Neurons, Nerve tissue and functions</b>	<ol style="list-style-type: none"><li>1. List components of the nerve tissue</li><li>2. Distinguish between neurons and neuroglial cells and</li><li>3. state the types and functions of neurons and neuroglia</li><li>4. Describe the general structure of a neuron and explain</li><li>5. the functions of its parts</li><li>6. Classify neurons on the basis of their structure and</li><li>7. function</li><li>8. Distinguish between myelinated and non-myelinated nerve fibers</li><li>9. Name the types of sensory receptors and state their functions.</li><li>10. Describe a ganglion</li><li>11. Describe the motor end plate</li></ol>	3 hrs	1hr Lecture  2 hrs of Histology practical session

<p><b>Osteology of head and neck region and the vertebral column</b></p>	<ol style="list-style-type: none"> <li>1. Identify, orientate and articulate the bones of the skull, cervical vertebrae and hyoid bone including the joints</li> <li>2. Identify the different regions of the vertebral column and relate them to the regions of the spinal cord</li> <li>3. Describe the structure and the function of the intervertebral disc</li> <li>4. Identify the skull bones and the mandible including the structures passing through the foramina</li> <li>5. Identify important anatomical landmarks</li> <li>6. Identify the cranial fossae</li> <li>7. Describe the changes that occur in the skull and the mandible with growth</li> <li>8. Describe and identify the bones that contribute to form the neck and thoracic inlet</li> </ol>	<p>3hrs</p>	<p>3hrs of Practical</p>
<p><b>Face and Scalp</b></p>	<ol style="list-style-type: none"> <li>1. Identify and describe the surface anatomy of the face, parts of the eye, external nose and external ear</li> <li>2. Describe the arrangement of the tissues in the scalp and its clinical importance</li> <li>3. Describe the muscles of expression and muscles of mastication</li> <li>4. State the blood supply and the lymphatic drainage of the face and scalp.</li> <li>5. Describe the attachments, actions and nerve supply of the muscles of the face.</li> <li>6. Describe the structure, blood supply, lymphatic drainage and the nerve supply of the scalp.</li> </ol>	<p>3hrs</p>	<p>Practical using prosections and dissections</p>
<p><b>Development of the face</b></p>	<ol style="list-style-type: none"> <li>1. Recall pharyngeal arches.</li> <li>2. Describe the development of the face including the abnormalities</li> </ol>	<p>1hr</p>	<p>lecture</p>

<b>Brain, Spinal Cord and Nerves</b>	<b>Structure of the brain</b>	<ol style="list-style-type: none"> <li>1. Describe the development of the brain and relate it to the adult brain</li> <li>2. Describe the coverings of the brain, their blood supply, dural venous sinuses, choroid plexuses and CSF circulation.</li> <li>3. Identify and list the major parts of the brain and describe their locations and surface topography.</li> <li>4. Describe the arrangement of gray &amp; white matter in the brain; surface and deep gray matter (i.e. diencephalic structures, corpus striatum basal ganglia etc), white matter fiber bundles and their distribution.</li> <li>5. Describe the functional areas of the brain.</li> <li>6. Describe the microscopic structure of the cerebral cortex.</li> <li>9. Describe and identify the ventricular system of the brain and their relations and revise the CSF circulation.</li> <li>12. Describe the external &amp; internal morphology of the brain stem</li> <li>13. Explain briefly the structure &amp; function of the cerebellum and its major connections.</li> </ol>	16hrs	<p>5 hrs of lectures</p> <p>9 hrs of Practical of brain, spinal cord and blood supply</p>
		<ol style="list-style-type: none"> <li>14. Identify major structures in cross sections of the brain</li> </ol>		<b>2 hrs of practical</b>
	<b>Cranial Nerves</b>	<ol style="list-style-type: none"> <li>11. Name the cranial nerves</li> <li>12. Describe the location of cranial nerve nuclei in the brain stem</li> <li>13. Describe the distribution of the cranial nerves</li> <li>14. List the functional components of cranial nerves indicating the structures supplied by them.</li> </ol> <p>Explain the anatomical basis of cranial nerve lesions</p>	4hrs	<p>2hr lectures</p> <p><b>2hrs of Practical using prosections, and dissections</b></p>

<b>Brain, Spinal Cord and Nerves</b>	<b>Spinal cord and Peripheral nerves</b>	<ol style="list-style-type: none"> <li>1.State the extent of the spinal cord in a neonate and an adult</li> <li>2.State the relationship between vertebral segments and spinal segments.</li> <li>3. Describe the structure of the spinal cord</li> <li>6. Define the nerve plexus and locate the major plexuses of the spinal nerves</li> </ol>	2hrs	2 hr lecture  <i>demonstration with brain practice</i>
		<ol style="list-style-type: none"> <li>Describe the arrangement of main ascending and descending nerve tracts of the spinal cord.</li> <li>10. Describe with reasons the clinical presentation of spinal cord lesions</li> <li>15. Localize the spinal cord lesions</li> </ol>	3 hrs	1 hr Lecture  2 hr SGD
	<b>Blood supply of the brain and spinal cord &amp; intra cranial hemorrhages</b>	<ol style="list-style-type: none"> <li>1.Name the major arteries and their important branches that supply the brain and spinal cord</li> <li>2.Describe the venous drainage of the brain and spinal cord</li> <li>4.List the types of intra cranial hemorrhages (ICHs)</li> <li>5.Explain the anatomical basis of ICHs and their consequences</li> </ol>	2hrs	2 hr lecture  <i>demonstration with brain practice</i>
<b>Orbit &amp; Eye and Ear</b>		<ol style="list-style-type: none"> <li>1.Describe the arrangement of bones of the orbit</li> <li>2.Describe the structure, movements blood supply and nerve supply of the eye lids</li> <li>3. Describe the lacrimal apparatus</li> <li>4.Describe the attachments and nerve supply of the muscles of the orbit and the movements of the eye</li> <li>6.Describe the course and relations of nerves and blood vessels of the orbit</li> <li>7.Describe the component parts of the eye</li> <li>8.Describe the microscopic and macroscopic structure of the eye</li> <li>9. Describe the development of the eye</li> <li>10. Identify the component parts of the visual pathway</li> </ol>	5 hrs	1 hr lecture  2 hrs practical dissections  <i>2 hr practical on histology &amp; models combined with Ear practical</i>
		<ol style="list-style-type: none"> <li>11. Discuss the clinical anatomy of the eye and the orbit</li> </ol>	1hr	lecture by Eye Surgeon
		<ol style="list-style-type: none"> <li>1. Describe the component parts of the ear</li> <li>2.Describe the microscopic and macroscopic structure of the ear</li> <li>3. Describe the development of the ear</li> </ol>	1 hrs	1hr lecture by ENT surgeon  <i>histology practical and</i>

		4. Describe the course of the facial nerve and the relations in the ear 5. Discuss the clinical anatomy of the ear		<i>practical on models combined with eye practical above</i>
	<b>Suboccipital region</b>	Identify and describe the anatomy of suboccipital triangle i.e. boundaries, composition and contents.	3 hrs	3 hrs Practical Dissections
<b>Neck</b>	<b>Fascial structure and contents</b>	<ol style="list-style-type: none"> <li>Describe the osteology, surface marking and structure of the neck Describe the arrangement of fasciae, soft tissue and spaces in the neck</li> <li>Describe the boundaries, contents, relations and muscles of the triangles of the neck</li> <li>Describe the anatomy of neck viscera: <ul style="list-style-type: none"> <li>Salivary glands</li> <li>Thyroid and parathyroid</li> <li>Trachea</li> <li>Esophagus.</li> <li>Great vessels and their branches</li> <li>Cervical sympathetic trunk</li> </ul> </li> </ol>	8 hrs	2hr lecture  6 hrs Practical dissections
	<b>Root of the neck</b>	<ol style="list-style-type: none"> <li>Describe the boundaries and the muscles of the root of the neck</li> <li>Describe the relations of the structures in the root of the neck</li> </ol>	3 hrs	3 hrs Practical Dissections
	<b>Clinical correlations of the neck</b>	<ol style="list-style-type: none"> <li>Discuss the clinical correlations of the neck that includes fascia, soft tissues and viscera</li> </ol>	1 hr	Lecture
	<b>Temporal fossa and Parotid region</b>	<ol style="list-style-type: none"> <li>Identify the anatomical land marks and define the boundaries of the temporal fossa</li> <li>Describe the arrangement of structures in the temporal fossa</li> <li>Identify the anatomical landmarks and define the parotid region</li> <li>Describe the anatomy explain the clinical correlation of parotid gland and parotid bed</li> </ol>	3 hr	3hrs Practical dissections & body side tutorials

<b>Infra temporal region and Pterygopalatine fossa</b>	1. Identify the bony landmarks and define the boundaries of the infra temporal fossa 2. Describe the contents and their relations including the muscles, maxillary artery, mandibular nerve, otic ganglion, carotid sheath and its contents and the cranial nerves related to carotid sheath and styloid apparatus 3. Define the boundaries of the Pterygopalatine fossa 4. Describe the contents and their relations (including the maxillary nerve and pterygopalatine ganglion,)	3 hrs	3hrs Prosections and dissections  &  body side tutorials
	5. Clinical anatomy/correlation of oral/maxillary/facial region	1 hr	Lecture
<b>Pharynx &amp; Larynx</b>	1. Describe the structure of the pharynx including the arrangement of the muscles, fascia and relations of the pharynx 2. Describe the blood supply, lymph drainage and nerve supply of the pharynx 3. Describe the muscles involved in swallowing 4. Describe the anatomy of the larynx including muscles, nerve supply and their actions 5. Explain how the structure is adapted to perform the functions of the larynx	5 hrs	2 hr Lecture  3 hrs Practical using prosections and models Pharynx/ larynx
<b>Nose and Para nasal sinuses</b>	1. Describe the parts of the nose, their structure, relations, blood supply and lymph drainage and nerve supply 2. Describe the bony boundaries of paranasal sinuses 3. Describe the structure, relations and the locations of paranasal sinuses and their blood supply, lymphatic drainage and nerve supply 4. Discuss the clinical importance of paranasal sinuses and their relations	2hrs	2 hrs Practical using prosections and models  &  body side tutorials
<b>Oral Cavity, Soft palate and hard palate</b>	1. Describe the structure of soft palate and the hard palate 2. Describe the nerve supply of the palate 3. Describe the development of the palate, nose and paranasal sinuses 5. Define the extent and describe the parts of the oral cavity	4 hrs	2 hr lecture  2 hrs Practical using prosections and models  &

	Describe the anatomy of the tongue and its movements. Describe the anatomy of the submandibular and sublingual glands. Discuss the clinical correlation of the oral cavity		body side tutorials
Round up session - 1		4 hrs	4 hrs of mock spot and SGL
<b>Lymph nodes and lymph drainage &amp; Joints of H/N region</b>	1. Describe the arrangement of lymph nodes and lymph drainage of the head and neck including the clinical correlations. 2. Describe the structure, movements, muscles involved and nerve supply of the TM joint and joints of the cervical spine	1 hr	Lecture
<b>Dermatomes</b>	1. Identify the dermatomes of the head and neck region 2. Describe the sensory supply of the head and neck region	1hr	SGL
Round up session - 2		4 hrs	4 hrs of SGL
	Discuss the neuroanatomical basis of a neurological case scenario	2 hrs	Tutorial or SGL
<b>Appearance of the brain and spinal cord on imaging</b>	List the structures that could be identified in the brain spinal cord, CSF pathway, and the vasculature by radiological imaging.	1 hrs	1 hr lecture by a radiologist