

## Neurosciences-2 module

TOTAL WEEKS-5



### List of themes

Sr. No	Themes	Duration in weeks
1	Facial palsy (face, 5 <sup>th</sup> and 7 <sup>th</sup> cranial nerves)	1
2	Neck swelling (thyroid, larynx, neck, muscles etc.)	1
3& 4	Cleft palate (palate, tongue, pharynx) Anosmia	1
5	Diplopia / blindness (2 <sup>nd</sup> , 3 <sup>rd</sup> , 4 <sup>th</sup> , 6 <sup>th</sup> cranial nerve / eye ball / orbit)	1
6	Deafness (ear / 8 <sup>th</sup> nerve)	1

## General learning outcomes

At the end of this module, the 2<sup>nd</sup> year students will be able to:

- 1) Describe the structure of vertebrae, skull bones palate, pharynx, larynx, facial bones and base of the skull
- 2) Describe the contents walls and boundaries of anterior and posterior triangles of the neck
- 3) Describe the structure, relation, blood supply and venous drainage of thyroid
- 4) Describe the arteries, veins and nerves of the neck including cervical plexuses
- 5) Describe the anatomy of all the muscles of facial expression and head and neck
- 6) Describe the structure and functions of eye, ears, nose and paranasal sinuses
- 7) Describe the development of different structures of organs of the head and neck
- 8) Identify the microscopic structure of salivary glands and tongue

<b>Theme 1: Fascial Palsy</b>					
Subject	Competency	Topic	Learning objectives	Teaching Format	Assessment Plan
Gross anatomy	K N O W L E D G E	Osteology of mandible	Describe the gross features of adult mandible.	SGD	MCQs OSPE
		OSTEOLOGY of Skull	Describe the bony features of skull.	LGF. SDL	MCQs OSPE
			Identify the different foramina and name the structures passing through these foramina		
Norma lateralis	Name the boundaries, contents, and relations of temporal fossa Describe the relations of Infratemporal fossa	LGF. SDL			

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		Scalp	Name the layers of scalp and the neurovascular supply of scalp. Describe the lymphatic drainage of scalp	Lectures LGF	MCQs OSPE
		Muscles of facial expression	Name the fascial muscles along with attachments, nerve supply and actions	LGF Lecture	MCQs SEQ OSPE.
		Muscles of mastication	Enumerate the muscles of mastication along with their attachments, nerve supply and actions	Lecture	MCQ SEQ OSPE
Gross Anatomy.		Blood supply and lymphatic drainage of face	Describe the blood supply and lymphatic drainage of face portion	LGF SGD	MCQs
		Temporomandibular joint (TMJ)	Name the type, associated ligaments and relations of TMJ. Name the muscles causing movements of TMJ. And Neurovascular supply.		SEQs OSPE MCQs
		Extra cranial course of CN VII	Describe the extra cranial course of CN VII along with its clinical importance		
Embryology		Face development	Discuss the five facial primordial & inter-maxillary segments	Lecture LGD	MCQ SEQ OSPE
			Describe the embryological defects of face		
Histology		Parotid Gland	Explaining the histology of Parotid gland. Differentiate between the intercalated and striated ducts in intralobular parts of gland.		MCQ SEQ OSPE

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	skills		Discuss clinical conditions related with parotid gland		
Histology Practicle		Parotid Gland	Identify the microscopic tissue of Parotid gland.	Small Groups Discussion	OSPE

**Theme-2 (neck swelling)**

Subject	COMPE TENCY	Topic	Learning objectives	Teaching Format	Assessment
Gross Anatomy	K N O W L E D G E	Typical and Atypical cervical vertebra	Describe the bony features and the joints formed of typical cervical vertebrae	LGF Lecture	MCQs SEQs OSPE.
			Describe the bony features & the joints formed by atypical cervical vertebrae	Lecture SGD	
			Describe the bony features of hyoid bone	LGF	
			Describe the attachments of muscles and ligaments with hyoid bone	LGF Lecture	
		Pterygopala tine fossa	Name the boundaries, contents and Relations of pterygopalatine fossa	LGF Lecture	
		Deep fascia of neck	Enumerate the layers of deep cervical fascia Describe the layers of deep cervical fascia along with its clinical importance	SGD Lecture	
		Larynx	Name the paired and unpaired cartilages of larynx. Enumerate the ligaments and membrane of larynx Describe the sensory and blood supply of larynx . Enumerate the intrinsic and extrinsic muscle of larynx along with its actions and nerve supply	LGF Lecture	MCQs. SEQs OSPE
			Describe the pyriform fossa		MCQs OSPE
		Ant. triangle of neck	Describe the subdivisions and boundaries of anterior triangle of neck	Lecture	MCQs SEQs
			Describe the boundaries and contents of	SGD	OSPE

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			submental and carotid triangles	LGF	
			Describe the boundaries and contents of muscular and digastric triangles	SGD LGF	
		Post triangle of neck	Enlist the subdivisions of posterior triangle of neck	SGD LGF	MCQs SEQs OSPE
			Describe the boundaries and contents of supraclavicular & occipital triangles		
		Arteries and veins of neck	Describe the course, Distribution and branches of main arteries and Veins of neck		
		cervical plexus and nerves of neck	Describe the cervical plexus along with its branches and distribution		
Embryology		Pharyngeal apparatus	Describe the components and Development of pharyngeal apparatus.	Lecture SGD	MCQs SEQs OSPE
			Define the terms pharyngeal arch, pouch, cleft and membrane	LGF	OSPE
			Enlist the derivatives of the first, 2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> pharyngeal arches	Lecture	MCQs SEQs OSPE
			Enlist the derivatives of 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> and 4 <sup>th</sup> pharyngeal pouches	Lecture	OSPE
			Describe the derivatives of pharyngeal, grooves, and membranes	Lecture	
			Discuss the arterial supply and innervation of the pharyngeal arches	Lecture LGF	
			Describe the pharyngeal membranes		
			Discuss the branchial cyst, sinuses, and fistula		
			Describe the 1 <sup>st</sup> arch developmental defects	Lecture	
Histology		Thyroid gland	Discuss the structural unit of thyroid gland	Lecture	MCQs SEQ, OSPE
Practical	Skills	Thyroid Gland	Identify the lining epithelium of follicular cells		OSPE

### Theme-3 (Anosmia)

Subject	Competency.	Topic	Learning objectives	Teaching Format	Assessment	
Anatomy	KNOWLEDGE	Nose and paranasal sinuses	Describe the Gross Anatomy of Nose, Its relations, Neuro-vascular supply and the anatomy of Olfactory nerve.	LGF Lecture	MCQ SEQ OSPE	
			Describe the paranasal sinuses along with its clinical importance			
Embryology		Development of nose	Describe the development of nasal cavities and paranasal air sinuses.	Lecture	MCQ SEQ OSPE	
			Describe the development of nasolacrimal groove, duct, and sac Enlist developmental defects of nose			
Gross anatomy		Tongue	Describe the mucosa and muscles of tongue along with its attachments, nerve supply and actions	LGF	MCQ SEQ OSPE	
		Salivary glands	Name the salivary glands Explain the gross anatomy of each gland. Name the nerve supply. Describe the drainage of salivary glands along with its importance	LGF Lecture		
		Palate	Name the bones forming the hard palate	Lecture		
			Describe the soft palate along with its muscles, attachments and nerve supply	SGD		
				Describe the relations of palate Name the neurovascular supply of palate		
			Pharynx	Enumerate the division of pharynx Enlist the muscles of pharynx with its nerve supply and actions	Lecture SGD	MCQs SEQs OSPE
			Describe the nasopharynx ,oropharynx and the laryngopharynx with its clinical significance			
		Extra-cranial course of CN IX, X, XI and XII	Describe the extra cranial course of CN IX, X, XI and XII	Lecture	MCQs SEQs OSPE	

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Embryology		Tongue	Describe the development of anterior 2/3 of the tongue	lecture	
			Discuss the role of the third pharyngeal arch in tongue development Discuss the innervation, blood vessels, and muscles of tongue. Describe the development of papillae, taste buds and salivary glands. Describe the developmental anomalies of tongue.	Lecture SGD	MCQs SEQs OSPE
		Palate	Describe the development of primary and secondary palate Discuss the developmental defects of lip and primary secondary palate	Lecture LGF	MCQs SEQs OSPE
Histology		Submandibular glands	Identify the variety of gland according to nature of its acinus.	SGD Lecture	MCQ SEQ OSPE
			Discuss the capsular structure and its extensions in the gland		
			Differentiate between the stroma and parenchyma of submandibular gland. Describe the ductal system of the gland and its differences with parotid gland. Describe the detailed structure of serous and mucous acinus. Discuss the formation of serous demilune.	LGF	
			Discuss different pathological conditions of the gland	Lecture	MCQ
		Sublingual glands	Identify the variety of gland according to its nature of acinus Differentiate between the stroma and parenchyma of sublingual gland. Describe the detailed structure of its acinus. Discuss the opening of Bartholin ducts. Discuss different pathological conditions of the gland	Lecture	MCQS SEQ OSPE
Histology	<b>Skills</b>	Tongue	Identify the slide of tongue under the microscope	SGD	OSPE

Theme-4 (Diplopia)					
Subject	Competency	Topic	Learning objectives	Teaching Format	Assessment
Gross anatomy	KNOWL EDGE	Bony orbit	Name the bones forming the bony orbit. Identify the foramina, fissures, and fossae associated with the orbit and what are the structures transmitted through these openings. Name the contents of orbit	Lecture LGF	MCQ SEQ OSPE
		Eye ball	Name the layers of eyeball Describe the fibrous layer of eyeball .Describe the pigmented layers of eyeball Describe the inner nervous layer of eyeball .Describe the chambers and of eyeball Describe the neurovascular supply of eye. Describe the intra and extraocculr muscles with their attachment, actions and nerve supply		
		Extra cranial course of CN III, IV, VI	Describe the course of optic, oculomotor, trochlear and abducent nerve with clinical importance	SGD	OSPE
Embryology		Developm ent of eye	Define lens placode and formation of retina Describe the development of ciliary body, iris, lens and choroid Discuss the formation of sclera, cornea, sphincter and dilator pupillae Discuss the development of virtreous body and optic nerve.	Lecture LGF SGD	
			Describe developmental anomalies of eye	SGD	
Histology		Eye	Enlist different histological layers of the eye Discuss retinal pigment epithelium (RPE) in detail. Describe the structural details of rods and cones and the supporting cells Discuss structure of macula densa Describe the histological layers of cornea and retina		MCQ SEQ OSPE
			Discuss the functional parts of the Rods and Cones.	Lecture	MCQs
			Describe blood supply of the retina—the central retinal artery and the choroid	LGF	MCQs OSPE
<b>Affective domain</b>					
Histology	<b>Skills</b>	Parotid Gland	Identify the histological layers of parotid gland under the microscope	SGD	OSPE

Theme-6 (Deafness)					
Subject	Competency	Topic	Learning objectives	Format	Assessment
Gross anatomy	KNOWLEDGE	External and middle ear	Describe the auricle Describe the external auditory meatus with clinical importance Name the neurovascular supply of external ear Name the boundaries of middle ear Describe the contents of middle ear Describe the auditory tube along with its clinical importance	Lecture LGF SGD	MCQ SEQ OSPE
		Inner ear	Describe the bony labyrinth Describe the membranous labyrinth Describe the course of CN VIII along with its clinical importance		
Embryology		Development of ears	Describe the development of external and middle ear Explain the origin of internal ear along the relationship of saccule, utricle, semi-circular canals. Describe the development of cochlear duct and organ of corti	LGF SGD	MCQ SEQ OSPE
			Enlist the developmental anomalies of external middle and internal ear		
Histology		Inner Ear	Describe the histological structure of inner ear and understanding the importance of external and internal hair cells.	SGD	OSPE MCQs