AYUB MEDICAL COLLEGE ABBOTTABAD

DEPARTMENT OF MEDICAL EDUCATION

NEUROSCIENCE 1B

2ND YEAR MBBS

BLOCK D. (NEUROSCIENCES 1 B)

DURATION: 5 WEEKS

SESSION: 2024

STUDENT NAME

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Contents

1. Module Committee:

s.no	Name	Department	Role
1.	Prof. Dr. Umar Farooq	CEO & Dean	
2.	Prof. Dr. Irfan U. Khattak	DME	Director
	Module Team		
3.	Prof. Dr. Robina Shaheen	Anatomy	Block co-ordinator
4.	Dr. Sara Jadoon	Anatomy	Module Co-ordinator
5.	Dr Nadia Haleem	Biochemistry	Member
6.	Dr. Maria shafique	Physiology	Member

2. What Is A Study Guide?

It is an aid to Inform students how student learning program of the module has been organized, to help students organize and manage their studies throughout the module and guide students on assessment methods, rules and regulations.

5.1: The study guide:

- Communicates information on organization and management of the module.
- This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as lectures, small group teachings.

5.2: Module objectives.

- Provides a list of learning resources such as books, computer-assisted learning programs, weblinks, and journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's performance.

5.3: Achievement of objectives.

- Focuses on information pertaining to examination policy, rules and regulations.

5.3: CURRICULUM FRAMEWORK:

STUDENTS WILL EXPERIENCE INTEGRATED CURRICULUM.

It comprises of blocks further subdivided into modules based on various systems of body such as nervous system. The integrated system thrives on not only learning of structural and functional aspects of a topic at the same time but also introduction of its clinical aspects.It provides a deeper understanding of subject by focusing on contents ,basic skills and higher level thinking. Integrated curriculum provides good perception of a system where students are actively involved in learning process .In medical education it is likely a move towards reduction in fragmentation of the medical course with aim is to improve medical education education by bridging the traditional barrier between basic and clinical sciences

3. Recommended List Of Icons

Introduction To Case

For Objectives

Critical Questions

Assessment

Resource Material

4. Table Of Specification

S.No	Disciplines	Lectures/ LGD (No. of Hrs)	SGD/Demonstration /Dissection (No. of Hrs)	Practical (No. of Hrs)	% distribution (subjectwise)	No. of MCQ	No. of OSPE station
1	Gross Anatomy	6	50		40	16	5
2	Histology	5		2×5	9	5	
3	Embryology	5			3	5	
4	Physiology	27		2×5	23	20	3
5	Biochemistry	9		2×5	12	3	1
6	G. Medicine	2			1.2	1	
7	ENT	3			2	-	
8	Eye	1			0.6	-	
9	Pediatric surgery	1			0.6	-	
10	Prime	2			1.2	2	
11	Community Medicine	1			0.6	-	
12	PRIME	2			1.2		
13	SDL/Library	2×5					
	Islamiat & Pak.sttudies	2×5					
	Total	84	50	30	100	54	9

5. Organization of Module

Introduction:

Head and neck and special senses module provides the basic knowledge about the structures present in Head and neck region, their function and clinical co-relation.This module explains the development, gross and microscopic anatomy of all the structures present in head and neck region along with their relations integrated with their associated physiology, biochemistry,pathology and relevant clinical for early diagnosis and effective management of the abnormalities affecting these regions. Research, preventive and epidemiological aspects of community medicine will be coveed in Prime section of head and neck and special senses module.

Students will have lectures (LGD), Dissections, small group discussion (SGD), Demonstrations, Practicals, Museum and Laboratory visits.

1.1 Rationale:

Injury/ Trauma to Head and neck and special senses results in high mortality and morbidity both in adults and children. The life threatening conditions can occur due to damage to great vessels, air way, proximal alimentary tractor to other structures lying in close proximity in head and neck region. The essestial role of this region in physical and mental well being stresses the need of basic understanding and knowledge at undergraduate level to enable them to promptly manage the complex issues in later years.

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

6. Learning Objectives

General Learning Outcomes

By the end of this module the students would be able to;

a. Knowledge

- Describe the structure of vertebrae, skull bones palate, pharynx, larynx, facial bones and base of the skull
- Describe the contents walls and boundaries of anterior and posterior triangles of the neck
- Describe the structure, relation, blood supply and venous drainage of thyroid
- Describe the arteries, veins and nerves of the neck including cervical plexuses
- Describe the nuclei, course, relations, and structures supplies by all cranial nerves
- Describe the origin, course, relations and structures supplies by the arteries, veins and lymphatics of head and neck
- Describe the anatomy of all the muscles of facial expression and head and neck
- Describe the structure and functions of eye, ears, nose and paranasal sinuses
- Describe the development of different structures of organs of the head and neck
- Describe the types of research, components of a research article, data collection, sampling and variables in research

b. Skills

- Identify the microscopic structure of salivary glands and tongue
- Examine a standardized patient`s cranial nerves
- Demonstrate Perimetry and Audiometry

c. Attitude

While not necessarily taught explicity, students are expected to develiop following attitudes throughout the course:

- Demonstrate respect and care for the cadaver and prosected parts.
- Demonstrate humbleness and use socially acceptable language during academic and social interactions with colleagues and teachers.
- Make ethically competent decisions when confronted with an ethical, social or moral problem related to head and neck and special senses in professional or personal life.
- Discuss and create awareness about ethical issues, social and preventive aspects of health care in context of head and neck and special senses.

specific learning objectives

Theme-1 (Facial palsy)

Subject	Topic	Learning objectives	MITs	No. of Hrs
Gross anatomy	Osteology of mandible	Describe the gross features of adult mandible.	SGD/Dissection	02
		Describe the bony features of mandible		
		Name the joints formed by mandible		
		Name the attachment of muscles and ligaments on mandible		
	Norma frontalis	Describe the bony features of frontal view of skull	SGD/Dissection	02
	Norma Basalis	Name the bones forming the base of skull	SGD/Dissection	04
		Name the bony features		
		Identify the different foramina and name the structures passing through these foramina		
		Describe the attachment and relation of base of skull		
		Describe the clinical importance		
	Norma lateralis	Name the boundaries of temporal fossa	SGD/Dissection	04
		Enumerate the contents of temporal fossa		
		Describe the relations of temporal fossa		
		Name the boundaries of infratemporal fossa		
		Enlist the contents of fossa		
		Describe the relations of Infratemporal fossa		
		Name the layers of scalp		
	Scalp and muscles of facial expression	Describe the muscles of scalp	LGD	01
		Name the neurovascular supply of scalp		

		Describe the lymphatic drainage of scalp		
		Name the fascial muscles along with attachments, nerve supply and actions		
	Muscles of mastication	Enumerate the muscles od mastication along with their attachments, nerve supply and actions	SGD/Dissection	02
	Blood supply and lymphatic drainage of face	Describe the blood supply and lymphatic drainage of face portion	SGD/Dissection	02
	Temporomandibular joint (TMJ)	Name the type of TMJ	LGD	01
		Name the ligaments related with TMJ		
		Describe the relations of TMJ		
		Name the muscles causing movements of TMJ		
		Name the neurovascular supply of TMJ		
	Extra cranial course of CN VII	Describe the extra cranial course of CN VII along with its clinical importance	LGD	01
Embryology	Face development	Discuss the five facial primordia	LGD	01
		Describe the inter-maxillary segment		
		Describe the embryological defects of face		
Histology	Parotid glands	Identify the variety of gland according to nature of its acinus	LGD	01
		Discuss the capsular structure and its extensions in the gland		
		Differentiate between the stroma and parenchyma of parotid gland		
		Describe the ductal system of the gland and its lining epithelium		
		Differentiate between the intercalated and striated ducts in intralobular parts of gland		
		Describe the detailed structure of serous acinus		
		Discuss the location of stenson,s duct and its structure		

		Discuss clinical conditions related with parotid gland		
Biochemistry	Biotechnology	Describe the indications and procedure of Polymerase Chain Reaction (PCR), Cloning and Restriction fragment length polymorphism (RFLP)	LGD	01
	Purine Nucleotide synthesis and degradation	Describe the process of nucleotide synthesis and degradation	LGD	01
	Hyperuricemia-Gout	Describe the normal levels of serum Uric acid in the blood	LGD	01
		Describe the mechanism of synthesis of Uric acid from Purines		
		Describe the etiology, pathogenesis and clinical features of Gout		
	Pyrimidine Nucleotide synthesis and degradation	Describe the mechanisms of Pyrimidines synthesis and degradation	LGD	01
	Salvage pathway of nucleotide synthesis	Explain the salvage pathway of Nucleotide synthesis		
	The structural basis of cellular information	Explain the structural basis of cellular information	LGD	01
	DNA, chromosomes, discovery and organization in genome	Explain the structure, organization and functions of Chromosomes, DNA and genes		
	DNA replication	Describe the process of DNA replication	LGD	01
	Transcription	Describe the mechanism of transcription	LGD	01
	Protein synthesis	Explain the mechanisms of protein synthesis	LGD	01
	Mutation	Define mutation	LGD	01
	DNA, damage and repairs	Explain the mechanisms of DNA damage and repair		
Medicine	Bell`s palsy	Describe the clinical features and management of Bell`s palsy	LGD	01
Skills and affective domain				

Histology	Submandibular and Sublingual Salivary Gland	Identify the slide of submandibular and sublingual salivary glands under the microscope	Practical	02
Physiology	Examination of Cranial nerves, V, VII	Examine the cranial nerves V & VII on a standardized patient	Practical	02

Theme-2 (neck swelling)

Subject	Topic	Learning objectives	MIT's	No. of Hrs
Gross Anatomy	Typical cervical vertebra	Describe the bony features of typical cervical vertebrae	SGD/Dissection	02
		Name the joints formed by typical vertebrae		
		Describe the attachments		
	Atypical cervical vertebra	Describe the bony features of atypical cervical vertebrae	SGD/Dissection	01
		Name the joints formed by atypical vertebrae		
		Describe the attachments		
	Hyoid bone	Describe the bony features of hyoid bone	SGD/Dissection	01
		Describe the attachments of muscles and ligaments with hyoid bone		
	Pterygopalatine fossa	Name the boundaries of pterygopalatine fossa	SGD/Dissection	02
		Enumerate the contents of pterygopalatine fossa		
		Describe the relations of pterygopalatine fossa		
	Deep fascia of neck	Enumerate the layers of deep cervical fascia	SGD/Dissection	02
		Draw and labelled diagram of transverse section of neck showing deep cervical fascia		
		Describe the layers of deep cervical fascia along with its clinical importance		
	Larynx	Name the paired and unpaired cartilages of larynx	SGD/Dissection	02
		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		
		Describe the pyriform fossa		
	Ant. triangle of neck	Enlist the subdivisions of anterior triangle of neck	SGD/Dissection	02
		Describe the boundaries and contents of submental triangle		
		Describe the boundaries and contents of carotid triangle Describe the boundaries and contents of digastric triangle Describe the boundaries and contents of muscular triangle		
	Post triangle of neck	Enlist the subdivisions of posterior triangle of neck	SGD/Dissection	02
		Describe the boundaries and contents of occipital triangle		
		Describe the boundaries and contents of supraclavicular triangle		
	Arteries of neck	Describe the course, Distribution and branches of main arteries of neck	SGD/Dissection	02
	veins of neck	Describe the course, Draining and tributaries of main veins of neck		
	cervical plexus and nerves of neck	Describe the cervical plexus along with its branches and distribution	SGD/Dissection	01
Embryology	Pharyngeal apparatus	Describe the components of pharyngeal apparatus.	LGD	02
		Describe the development of pharyngeal apparatus		
		Enlist the derivatives of the first pharyngeal arch		
		Define the terms pharyngeal arch, pouch, cleft and membrane		
		Enumerate the derivatives of the second pharyngeal arch		
		Enumerate the derivatives of the 3rd pharyngeal arch		
		Enumerate the derivatives of the 4th pharyngeal arch		

		Enlist the derivatives of 1st ,2nd, 3rd and 4th pharyngeal pouches		
		Describe the derivatives of pharyngeal, grooves, and membranes		
		Discuss the arterial supply and innervation of the pharyngeal arches		
		Describe the pharyngeal membranes		
		Discuss the branchial cyst, sinuses, and fistula		
		Describe the 1st arch developmental defects		
Histology	Thyroid gland	Discuss the structural unit of thyroid gland	LGD	01
		Identify the lining epithelium of follicular cells		
		Discuss the formation and storage of colloid in the lumen of follicular cells		
		Describe the location and structure of parafollicular cells		
		Discuss the interfollicular connective tissue		
ENT	Lump in neck	Approach to a patient with lump in the neck	LGD	01
Skills and affective domain				
Histology	Thyroid gland	Identify the slide of thyroid	Practical	02
Physiology	Examination of CN XI,XII	Examine a standard patient of CN XI,XII	Practical	02

Theme-3 (Anosmia)

Subject	Topic	Learning objectives	MIT's	No. of Hrs
Anatomy	Nose and paranasal sinuses	Describe the external features of nose	SGD/Dissection	04
		Describe the relations of nose with other structures		
		Describe the nasal septum		
		Describe the lateral wall of nose		
		Name the neurovascular supply of nose		
		Describe the olfactory nerve		
		Describe the paranasal sinuses along with its clinical importance		
Embryology	Development of nose	Describe the development of nasal cavities and paranasal air sinuses.	LGD	01
		Describe the development of nasolacrimal groove, duct, and sac		
		Enlist developmental defects of nose		
Physiology	Sense of Smell	Describe olfactory membrane	LGD	01
		Explain mechanism of excitation of the olfactory cells.		
		Discuss Rapid Adaptation of Olfactory Sensations.		
		Define threshold for smell		
		Describe transmission of smell signals into the central nervous system		
		Describe primitive and newer olfactory pathways into the central nervous system		
		Describe centrifugal control of activity in the olfactory bulb by the central nervous system.		
ENT	Sinusitis	Describe the causes and clinical features of acute and chronic sinusitis	LGD	01
Gross anatomy	Tongue	Describe the mucosa and muscles of tongue along with its attachments, nerve supply and actions	SGD/Dissection	02
	Salivary glands	Name the salivary glands	SGD/Dissection	02

		Describe the location of each gland		
		Describe the relations of each gland		
		Name the nerve supply		
		Describe the drainage of salivary glands along with its importance		
	Palate	Name the bones forming the hard palate	SGD/Dissection	02
		Describe the soft palate along with its muscles, attachments and nerve supply		
		Describe the relations of palate		
		Name the neurovascular supply of palate		
	Pharynx	Enumerate the division of pharynx	SGD/Dissection	04
		Describe the nasopharynx with its clinical significance		
		Describe the oropharynx with its clinical significance		
		Describe the laryngopharynx with its clinical significance		
		Enlist the muscles of pharynx with its nerve supply and actions		
	Extra-cranial course of CN IX, XXi, XII	Describe the extra cranial course of CN IX, X, XI and XII	LGD	01
Embryology	Tongue	Describe the development of anterior 2/3 of the tongue	LGD	01
		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.		
	Palate	Describe the development of primary and secondary palate.	LGD	01
		Discuss the developmental defects of lip and primary, secondary palate		
Histology	Submandibular glands	Identify the variety of gland according to nature of its acinus.	LGD	01
		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		
		Discuss the opening of Wharton,s duct		
		Discuss different pathological conditions of the gland		
	Sublingual glands	Identify the variety of gland according to its nature of acinus		
		Differentiate between the stroma and parenchyma of sublingual gland		
		Describe the ductal system of the gland and its lining epithelium		
		Describe the detailed structure of its acinus		
		Discuss the opening of Bartholin ducts		
		Discuss different pathological conditions of the gland		
Physiology	Sense of Taste	Discuss primary sensations of taste	LGD	01
		Explain threshold for taste		
		Describe the taste bud and its function		
		Describe mechanism of stimulation of taste buds		
		Describe transmission of taste signals into the central nervous system		
Pediatric surgery	Cleft palate	Describe the pathogenesis, clinical features and management of a patient with cleft palate	LGD	01
Skills and affective domain				
Histology	Tongue	Identify the slide of tongue under the microscope	Practical	02
Physiology	Examination of Cranial nerves I, IX, X	Examine a standardized patient for cranial nerve I, IX, X examination (sense of smell, taste, gag reflex)	Practical	02

Theme-4 (Diplopia)

Subject	Topic	Learning objectives	MIT's	No. of Hrs
Gross anatomy	Bony orbit	Name the bones forming the bony orbit	LGD	01
		Identify the foramina, fissures, and fossae associated with the orbit and what are the structures transmitted through these openings.		
		Name the contents of orbit		
	Eye ball	Name the layers of eyeball	LGD	03
		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 secretion and drainage of aqueous humor and vitrous humor		
		Describe the neurovascular supply of eye		
		Describe the intra and extraoccualr 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	LGD	01
Embryology	Development of eye	Define lens placode and formation of retina.	LGD	01
		Describe the development of ciliary body, iris, lens and choroid.		
		Discuss the formation of sclera, cornea, sphincter and dilator papillae		
		Discuss the development of virtreous body and optic nerve		

		Describe developmental anomalies of eye		
Histology	Eye	Enlist different histological layers of the eye	LGD	01
		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		
Physiology	Physical Principles of Optics	Describe refraction at interface between two media.	LGD	01
		Describe the physical principles of optics.		
		Apply refractive principles to lenses		
		Describe Focal Length of a Lens		
		Explain formation of image by convex lenses		
		Explain how to measure refractive power of a lens		
	Optics of The Eye	Explain lens system of the eye.	LGD	01
		Describe the concept of “Reduced” Eye.		
		Explain accommodation reflex.		
		Explain presbyopia		
		Describe that “depth of focus” of the lens system increases with decreasing pupillary diameter		
		Define visual acuity.		
		Explain the determination of distance of an object from the eye- —“DEPTH PERCEPTION”		
		Describe errors of refraction		
	Fluid System of The Eye— Intraocular Fluid	Describe the formation of aqueous humor by the ciliary body	LGD	01

		Describe the outflow of aqueous humor from the eye		
		Describe Regulation of Intraocular Pressure and Glaucoma		
	Anatomy and Function of The Structural Elements of The Retina	Describe foveal region of the retina and its importance in acute vision.	LGD	01
		Discuss the functional parts of the Rods and Cones.		
		Describe blood supply of the retina—the central retinal artery and the choroid		
	Photochemistry of Vision	Explain rhodopsin-retinal visual cycle and excitation of the rods	LGD	01
		Explain the role of vitamin A for formation of rhodopsin.		
		Describe excitation of the rod when rhodopsin is activated by light		
		Describe receptor potential, and logarithmic relation of the receptor potential to light intensity		
		Describe mechanism by which rhodopsin decomposition decreases membrane sodium conductance—the excitation “cascade.”		
		Explain dark and light adaptation.		
	Color Vision	Describe photochemistry of color vision by the cones	LGD	01
		Explain tricolor mechanism of color detection		
		Explain Young-Helmholtz theory of color vision.		
		Explain color blindness.		
	Neural Function of The Retina	Describe different neuronal cell types and their functions	LGD	01
		Describe the visual pathway from the cones to the ganglion cells		

		Discuss the retinal neurotransmitters.		
		Discuss retinal ganglion cells and their respective fields		
		Describe lateral inhibition.		
		Explain excitation of ganglion cells.		
		Discuss on and off response of ganglion cells.		
	Visual Pathways	Discuss the function of the dorsal lateral geniculate nucleus of the thalamus.	LGD	01
		Describe organization and function of the visual cortex		
		Describe primary visual cortex.		
		Describe secondary visual areas of the cortex.		
		Describe two major pathways for analysis of visual information: (1) the fast “position” and “motion” pathway and (2) the accurate color pathway		
		Describe neuronal patterns of stimulation during analysis of the visual image		
		Discuss detection of color		
	Eye Movements and Their Control	Describe muscular control of eye movements.	LGD	01
		Describe neural pathways for control of eye movements.		
		Describe fixation movements of the eyes		
		Explain mechanism of involuntary locking fixation—role of the superior colliculi.		
		Explain “Fusion” of the visual images from the two eyes		
		Describe neural mechanism of stereopsis for judging distances of visual objects		

	Autonomic control of Accommodation and pupillary aperture	Describe autonomic nerves to the eyes	LGD	01
		Describe control of accommodation		
		Describe control of pupillary diameter		
		Discuss Pupillary reflexes or reactions in central nervous system disease.		
Community medicine	Prevention of blindness	Describe the causative agents and prevention of community blindness	LGD	01
Medicine	Ocular nerves palsies	Describe the clinical features and etiology of 3, 4 and 6th nerve palsies	LGD	01
Ophthalmology	Blindness	Approach a patient with unilateral and bilateral blindness	LGD	01
Skills and affective domain				
Histology	Parotid Gland	Identify the histological layers of parotid gland under the microscope	Practical	02
Physiology	Visual Acuity	Examine a standardized patient for visual acuity and errors of refraction	Practical	02
	Perimetry	Examine a standardized patient for visual field function	Practical	02

Theme-6 (Deafness)

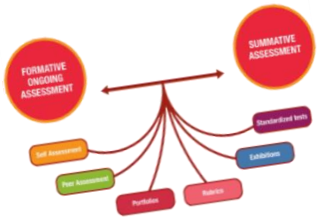
Subject	Topic	Learning objectives	MIT's	No. of Hrs
Gross anatomy	External and middle ear	Describe the auricle	SGD/Dissection	04
		Describe the external auditory meatus with clinical importance		
		Name the neurovascular supply of external ear		
		Name the boundaries of middle ear		

		Describe the contents of middle ear		
		Describe the auditory tube along with its clinical importance		
	Inner ear	Describe the bony labyrinth	SGD/Dissection	02
		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	LGD	01
		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		
		Enlist the developmental anomalies of external middle and internal ear		
Physiology	Tympanic Membrane and The Ossicular system	Explain conduction of sound from the tympanic membrane to the cochlea.	LGD	01
		Describe “Impedance Matching” by the Ossicular System.		
		Describe attenuation of sound by contraction of the tensor tympani and stapedius muscles.		
		Describe transmission of sound through bone.		
	Cochlea	Describe functional anatomy of the cochlea	LGD	02
		Describe basilar membrane and resonance in the cochlea.		
		Describe transmission of sound waves in the cochlea— “traveling wave”		
		Describe pattern of vibration of the basilar membrane for different sound frequencies.		
		Describe amplitude pattern of vibration of the basilar		

		membrane.		
		Describe function of the organ of corti		
		Describe Excitation of the Hair Cells		
		Discuss the “place” principle		
		Describe detection of changes in loudness—the power law.		
		Describe threshold for hearing sound at different frequencies.		
	Auditory Nervous Pathways	Describe auditory pathway.	LGD	01
		Explain the function of the cerebral cortex in hearing.		
		Describe how to determine the direction from which sounds come.		
		Describe transmission of centrifugal signals from CNS to lower auditory centres		
		Describe different types of deafness.		
	Vestibular Sensations and Maintenance of Equilibrium	Describe the physiologic anatomy of vestibular apparatus	LGD	01
		Describe function of the utricle and saccule in the maintenance of static equilibrium		
		Describe function of semi-circular ducts		
		Describe Neuronal Connections of the Vestibular Apparatus		
		Describe Vestibular mechanism for stabilizing the eyes		
ENT	Hearing loss	Describe different clinical tests for hearing loss	LGD	01
Skills and affective domain		Describe the etiology and management of conduction and sensorineural hearing loss		
Physiology				
Physiology	Examination of	Examine a standardized patient	Practical	02

	Cranial Nerves III, IV and VI	for oculomotor, Abducens and Trochlear nerves with an ophthalmoscope		
Physiology	Tuning fork test	Examine a standardized patient for hearing loss with tuning fork (Weber and Rinne`s test)	Practical	02
	Audiometry	Examine a standardized patient for functions of inner ear	Practical	02

MIT:mode of information transfer. E.g. lecture, SGD, DSL, Practical, skill lab etc etc



7. Examination and Methods of Assessment:

a. Instructions:

- Students should display college ID cards and follow the prescribed dress code during academic hours.
- No student is allowed to leave the class without permission of the teacher or until the teaching session ends.
- It is mandatory for the students to have 75% attendance to become eligible to sit in professional examination.
- Ragging is strictly prohibited and anybody involved will be reported to 'Anti-ragging committee' for necessary action.
- Any student breaking or damaging the college property shall be required to pay the cost.
- It is mandatory for the students to appear in class and block tests.
- Strict compliance with the given examination time is required.
- Students should read and observe rules and regulations of college as given in prospectus.

b. INTERNAL ASSESSMENT:

Internal assessment is done using both formative and summative methods.

Formative assessment:

During the teaching session of module students are given assignments, quizzes, both MCQ and Essay type questions test, oral vivas and class presentations. All these activites are marked and given weightage in their internal assessment along with their attendance and disciplinary conduct.

Summative assessment:

- It is taken at the end of module in the form of combined Block D MCQ Test conducted on university exam pattern.It comprises 120 mcqs from all disciplines.

- OSPEof combined Block D is conducted at the completion of module on university ospe pattern.

Weightage of internal assessment in university exam:

Theory: 14 marks (Block D: Neuroscience 1A + 1B)

OSPE: 10 marks (Block D: Neuroscience 1A+ 1B

c. UNIVERSITY EXAM:

Head and Neck and special senses module(Neurosciences 1B) is assessed along with Neuroanatomy(Neurosciences 1A) in BLOCK D of 2nd Professional Examination

FINAL DISTRUBUTION OF MCQs FOR YEAR-2 NUEROSCIENCES 1B MODULE

Subject	NS-1B
Gross Anatomy	17
Histology	5
Embryology	5
Physiology	18
Biochemistry	3
PRIME including Research	2
Medicine	1
Pharmacology	0
Pathology	0
Forensic medicine	0
EYE	1
ENT	1
Pediatric surgery	1
Total	**54**

Block D OSPE Blueprint

Specialty	Practical's	# stations	Total
Neuroscience 1B Anatomy	Osteology Nerve and Muscles Surface anatomy Radiology	2	4
	Histology	1	
	Viva stations	1	
Neuroscience 1B Physiology	Ophthalmoscopy Visual acuity/ Perimetry Perimetry Tuning fork test Audiometry	3	4
	Viva stations	1	
Neuroscience 1B Biochemistry	Viva stations	1	1
Total		9	09

8. Learning Opportunities and Resources

a. Instruction (if any)

b. Books:

Gross Anatomy

- Snell's Clinical Anatomy by regions; 10th Edition
- Last's Anatomy by RJ Last; 12th Edition
- Clinically Oriented Anatomy by Keith. L . Moore; 9th edition
- Gray's Anatomy; 42nd Edition
- Netter's Atlas of Human Anatomy; 7th Edition
- Gray's Anatomy for students; 4th edition

Embryology

- Langman's Medical Embryology by T.W.Sadler; 14th Edition
- The developing Human by Moore & Persaud; 11th Edition

Histology

- Basic Histology by Luiz Carlos Junqueira, Jose Carneiro; 16th Edition
- Di Fiore's Atlas of Histology; 14th Edition
- B. Young J.W.health Wheater's Functional histology; 6th Edition
- Medical Histology by Laiq Hussain Siddiqui; 6th Edition

Physiology

- Guyton's Textbook of medical Physiology; 13th Edition
- Ganong's Review of Medical Physiology; 25th Edition
- Human Physiology – From cell to system by Lauralee Sherwood- 8th Edition

Biochemistry

- Harper's Biocheistry – 31st Edition

- Lippincot's biochemistry- 6th edition
- Principles of Medical biochemistry – 3rd Edition

Prime (Psychiatry)

- https://www.euromedinfo.eu/how-culture-influences-health-beliefs.html/
- https://www.ahrq.gov/health-literacy/improve/precautions/tool10.html
- https://courses.lumenlearning.com/diseaseprevention/chapter/culture-beliefs-attitudes-and-stigmatized-illnesses/
- https://www.goodtherapy.org/learn-about-therapy/issues/power
- https://www.apa.org/pubs/journals/releases/amp-a0038929.pdf

Pharmacology

- Katzung's Basic and Clinical Pharmacology; 12th Edition

Pathology

- Robbin's Basic and Clinical Pathology; 9th Edition

E.N.T

- Diseases of Ear, Nose and Throat by Logan Turner, 11th Edition
- Diseases of Ear, Nose and Throat by P.L. Dhingra, 6th Edition

Eye

- **http://www.who.int/news-room/fact-sheets/details/blindness-and-visual-impairment**

Community Medicine

- Public Health & Community Medicine by Shah Ilyas Ansari; 8th Edition
- Parks Text book of Prevention & social edicine by K. Park; 25th Edition

Forensic Medicine:

- Priciples and Practice of Forensic medicine by Naseeb R Awan

- Parikh's Text book of Medical Jurisprudence and Toxicology

General Medicine

- Davidson's Principles and Practice of Medicine
- Kumar and Clarks Clinical Medicine

Surgery

- Bailey and Love's short practice of surgery, 27th Edition

c. Website:

https://www.kenhub.com

https://teachmeanatomy.info

http://booksinn.com.pk/product-category/medicalsciences

https://www.freebookcentre.net/medical_text_journals/books.html

d. Museum:

To assist learning students will utilize the models and transverse sections available in Anatomy museum.

9.Timetables

AYUB MEDICAL COLLEGE ABBOTTABAD
TIME TABLE OF 2nd YEAR MBBS CLASS FOR THE SESSION 2024
NEURO SCIENCE 1B MODULE (1st WEEK)

D A Y S	Histology practical (8.00 - 10.00AM)	10.00-11.00AM LH: 02	11.00AM-12.00PM LH: 02	12.00 -12.45PM LH: 02	12.45-1.15PM	1.15-3.00PM
MONDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry - Dr. Fizza Batch D. SDL/Lib	Medicine Bell's palsy Dr. Fakhar Zaman	Physiology Optics of vision Dr. Maria	PRIME C. Medicine Dr. Zanaib	PRAYER BREAK	SGDs(Dissection) Muscles of mastication Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
TUESDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry - Dr. Fizza Batch D. SDL/Lib	Biochemistry Purine metabolism Dr. Hina	Physiology Accommodation Dr. Maria	Gross Anatomy TMJ Dr. Humaira Imtiaz		SGDs(Dissection) Blood supply + L. drainage + Extracranial course of CN VII Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
WEDNESDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry – Dr Maria Batch D. SDL/Lib	Biochemistry Hyper uricemia Dr. Hina	Physiology Fluid system of eye Dr. Maria	Histology Eye- I Dr Fatima Sherin		SGDs(Dissection) Parotid gland Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
THURSDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry – Dr. Asma Batch D. SDL/Lib	Islamiat	Physiology Structure of retina Dr. Maria	Physiology Seminar		SGDs(Dissection) gopalatine fossa + ganglion Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
FRIDAY	**SGDs(Dissection)** **Topic: Typical cervical vertebrae** Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan	Embryology Pharyngeal pouches & clefts Dr. M. Ashfaq	Physiology Optics of vision Dr. Maria	Pak studies		H A L F D A Y

Batches for SGD (Dissection)

Batch A: (Roll No.20-01 to 20-094)
Batch B: (Roll No.20-095 to 20-188)
Batch C: (Roll No.20-189 to 20-280)

AYUB MEDICAL COLLEGE ABBOTTABAD
TIME TABLE OF 2nd YEAR MBBS CLASS FOR THE SESSION 2024
NEURO SCIENCE 1B MODULE (2nd WEEK)

D A Y S	Histology practical (8.00 - 10.00AM)	10.00-11.00AM LH: 02	11.00AM-12.00PM LH: 02	12.00 -12.45PM LH: 02	12.45-1.15PM	1.15-3.00PM
MONDAY	Batch A. Histo-Dr. Rizwana Batch B. Physiology - Dr. Asfand Batch C. Biochemistry – Dr. Fizza Batch D. SDL/Lib	Gross Anatomy Adnexa of eye Dr. Humaira Imtiaz	Physiology Photochemistry of vision Dr. Maria	PRIME (Psychiatry) Dr. Zainab Khalid	PRAYER BREAK	SGDs(Dissection) Atypical vertebrae + Hyoid Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
TUESDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology Dr. Asfand Batch C. Biochemistry – Dr. Fizza Batch D. SDL/Lib	Biochemistry Primidine Metabolism Dr. Hina	Physiology Color vision Dr. Maria	Gross Anatomy Eye Ball -I Dr. Humaira Imtiaz		SGDs(Dissection) Deep fascia of neck Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
WEDNESDAY	Public Holiday (23rd March)					
THURSDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr Asfand Batch C. Biochemistry – Dr. Asma Batch D. SDL/Lib	Biochemistry Structural basis of cellular info Dr. Barrira	Physiology Light & dark adaptation Dr. Maria	Physiology Seminar		SGDs(Dissection) **Ant triangle of neck** Batch A Dr. Awais Ali Shah Batch B. Dr. Sarah Khan Batch C. Dr Mohammad
FRIDAY	SGDs(Dissection) Post triangle of neck + cervical plexus + nerves of neck Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan	Embryology Birth defects in pharyngeal region Dr. M. Ashfaq	Physiology Neural functions of retina Dr. Maria	Pak studies		**H A L F D A Y**

AYUB MEDICAL COLLEGE ABBOTTABAD
TIME TABLE OF 2nd YEAR MBBS CLASS FOR THE SESSION 2024
NEUROSCIENCE 1B MODULE (3rd WEEK)

D A Y S	Histology practical (8.00 - 10.00AM)	10.00-11.00AM LH: 02	11.00AM-12.00PM LH: 02	12.00 -12.45PM LH: 02	12.45-1.15PM	1.15-3.00PM
MONDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Sajjad Batch C. Biochemistry – Dr. Fizza Batch D. SDL/Lib	ENT Lump in neck Dr. Imran	Physiology Visual pathway Dr. Maria	PRIME (F. Medicine) Ethics Dr.Salma Shaia	PRAYER BREAK	SGDs(Dissection) Larynx Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
TUESDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Sajjad Batch C. Biochemistry – Dr. Fizza Batch D. SDL/Lib	Biochemistry DNA organization Dr. Barrira	Physiology Visual cortex Dr. Maria	Gross Anatomy Eye Ball- II Dr. Humaira Imtiaz.		SGDs(Dissection) Larynx Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
WEDNESDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Sajjad Batch C. Biochemistry – Dr. Maria Batch D. SDL/Lib	Biochemistry DNA replication Dr. Barrira	Physiology Eye movement Dr. Maria	Histology Eye II Dr. Fatima Sherin.		SGDs(Dissection) Thyroid gland + Arteries of neck + veins Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
THURSDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Sajjad Batch C. Biochemistry - Dr. Asma Batch D. SDL/Lib	Islamiat	Physiology Pupillary light reflex Dr. Maria	PRIME (Psychiatry) Dr.Aisha Saleem		SGDs(Dissection) Nose + Paranasal sinuses Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
FRIDAY	SGDs(Dissection): Nose + Paranasal sinuses Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan	Embryology Development, of face and nose Dr. M.Ashfaq	Physiology Accomodation Dr. Maria	Pak Studies		**H A L F D A Y**

AYUB MEDICAL COLLEGE ABBOTTABAD
TIME TABLE OF 2nd YEAR MBBS CLASS FOR THE SESSION 2024
NEURO SCIENCE 1B MODULE (4th WEEK)

D A Y S	Histology practical (8.00 - 10.00AM)	10.00-11.00AM LH: 02	11.00AM-12.00PM LH: 02	12.00 -12.45PM LH: 02	12.45-1.15PM	1.15-3.00PM
MONDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry - Dr. Fizza Batch D. SDL/Lib	Medicine Ocular nerves palsies Dr. Tauqeer	Physiology Sense of taste Dr. Maria	PRIME (Forensic Medicine) Ethics Dr.Salma Shaia	PRAYER BREAK	SGDs(Dissection) Tongue Batch A Dr.M.Orakzai Batch B.Dr Awais Ali Shah Batch C. Dr Sarah Khan
TUESDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry – Dr. Fizza Batch D. SDL/Lib	ENT Sinusitis Dr. Imran	Physiology Transmission of taste in CNS Dr. Maria	Gross Anatomy Extra ocular muscles Dr. Humaira Imtiaz		SGDs(Dissection) Salivary gland, S/M&S/L Batch A Dr.M.Orakzai Batch B.Dr.Awais Ali Shah Batch C. Dr Sarah Khan
WEDNESDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry – Dr. Maria Batch D. SDL/Lib	Biochemistry Transcription Dr. Barrira	Physiology Sense of smell Dr. Maria	Histology Lip Dr. Fatima Sherin		SGDs(Dissection) Palate(Soft/Hard,)Oralcavity Batch A Dr.M.Orakzai Batch B.Dr.Awais Ali Shah Batch C. Dr Sarah Khan
THURSDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry – Dr. Asma Batch D. SDL/Lib	Islamiat	Physiology Transmission of smell in CNS Dr. Maria	Paed. Surgery Cleft Palate		SGDs(Dissection) Topic: Pharynx Batch A Dr.M.Orakzai Batch BDr. Awais Ali Shah Batch C. Dr Sarah Khan
FRIDAY	SGDs(Dissection) Topic: Pharynx Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan	Embryology Facial defects Dr. M. Ashfaq	Physiology Abnormalities of smell Dr. Maria	Pak Studies		**H A L F D A Y**

AYUB MEDICAL COLLEGE ABBOTTABAD
TIME TABLE OF 2nd YEAR MBBS CLASS FOR THE SESSION 2024
NEURO SCIENCE 1B MODULE (5th WEEK)

D A Y S	Histology practical (8.00 - 10.00AM)	10.00-11.00AM LH: 02	11.00AM-12.00PM LH: 02	12.00 -12.45PM LH: 02	12.45-1.15PM	1.15-3.00PM
MONDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry - Dr. Fizza Batch D. SDL/Lib	ENT Deafness Dr. Imran	Physiology Structure of ear Dr. Maria	C. Medicine Prevention of blindness Dr. Zainab Naznin	PRAYER BREAK	SGDs(Dissection) Ear (External + Middle) Batch A Dr.M.Orakzai Batch B.Dr. Awais Ali Shah Batch C. Dr Sarah Khan
TUESDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry – Dr. Fizza Batch D. SDL/Lib	Biochemistry Protein synthesis Dr. Barrira	Physiology Cochlea Dr. Maria	Gross Anatomy Cranial nerve IX,X, XI, XII Dr. Humaira Imtiaz		SGDs(Dissection) Ear (Middle) Batch A Dr.M.Orakzai Batch B.Dr.AwaisAliShah Batch C. Dr Sarah Khan
WEDNESDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry – Dr. Maria Batch D. SDL/Lib	Biochemistry DNA Mutation Dr. Hina	Physiology Central auditory mechanism Dr. Maria	Histology Tongue Dr. Fatima Sherin		SGDs(Dissection) Inner ear Batch A : Dr.M.Orakzai BatchBDr. AwaisAli Shah Batch C. Dr Sarah Khan
THURSDAY	Batch A. Histo - Dr. Rizwana Batch B. Physiology - Dr. Faisal Batch C. Biochemistry – Dr. Asma Batch D. SDL/Lib	Islamiat	Physiology Function of cerebral cortex in hearing Dr. Maria	Eye Blindness Dr. Bushra Aqil		SGDs(Dissection) Topic: Radiology Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan
FRIDAY	SGDs(Dissection) Model of eye Batch A Dr.M.Orakzai Batch B. Dr. Awais Ali Shah Batch C. Dr Sarah Khan	Embryology Eye development & defects Dr. M. Ashfaq	Physiology Hearing abnormalities Dr. Maria	Pak Studies		**H A L F D A Y**

Tentative date for **Block "D"** examination Tuesday 19.04.2022

10. For inquiry and troubleshooting

Please contact

- Prof. Dr. Robina Shaheen, Anatomy Deptt, rad407@gmail.com
- Dr. Sara Jadoon, Anatomy deptt , sarashafqat@hotmail.com

11. Course Feedback Form

Course Title: _____

Semester/Module _____ Dates:_____

Please fill the short questionnaire to make the course better.

Please respond below with 1, 2, 3, 4 or 5, where 1 and 5 are explained.

THE DESIGN OF THE MODLUE

A. Were objectives of the course clear to you? Y ☐ N ☐

B. The course contents met with your expectations
1. Strongly disagree 5. Strongly agree ☐

C. The lecture sequence was well-planned
1. Strongly disagree 5. Strongly agree ☐

D. The contents were illustrated with
1. Too few examples 5. Adequate examples ☐

E. The level of the course was
1. Too low 5. Too high ☐

F. The course contents compared with your expectations
1. Too theoretical 5. Too empirical ☐

G. The course exposed you to new knowledge and practices
1. Strongly disagree 5. Strongly agree ☐

H. Will you recommend this course to your colleagues?
1. Not at all 5. Very strongly ☐

THE CONDUCT OF THE MODLUE

A. The lectures were clear and easy to understand
1. Strongly disagree 5. Strongly agree ☐

B. The teaching aids were effectively used
1. Strongly disagree 5. Strongly agree ☐

C. The course material handed out was adequate
1. Strongly disagree 5. Strongly agree ☐

D. The instructors encouraged interaction and were helpful
1. Strongly disagree 5. Strongly agree ☐

E. Were objectives of the course realized? Y N ☐ ☐

F. Please give overall rating of the course

90% - l00%	( )	60% - 70%	( )
80% - 90%	( )	50% - 60%	( )
70% - 80%	( )	below 50%	( )

Please comment on the strengths of the course and the way it was conducted.

Please comment on the weaknesses of the course and the way it was conducted.

Please give suggestions for the improvement of the course.

Optional – Your name and contact address:

Thank you!!