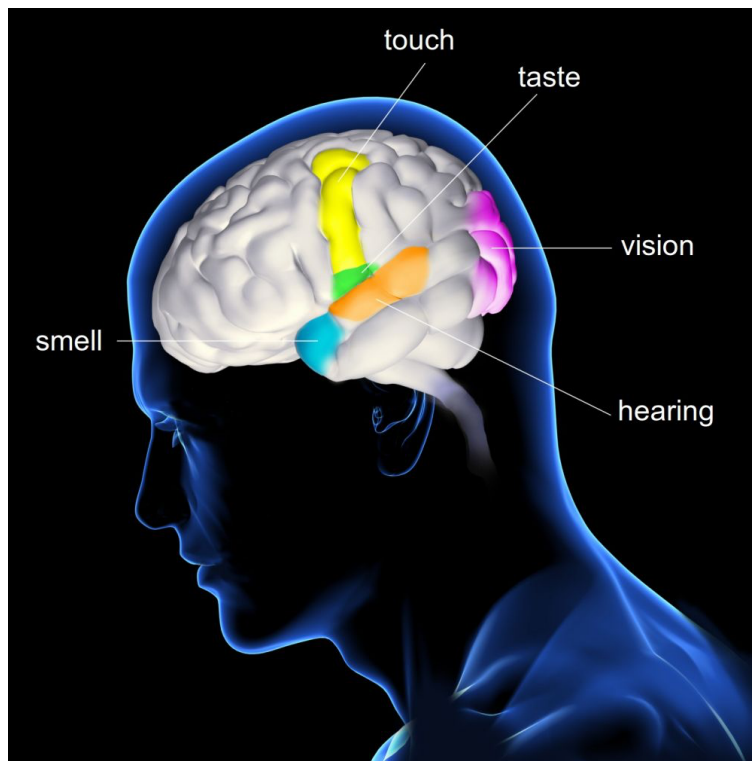




RIHS MEDICAL & DENTAL COLLEGE INTEGRATED CURRICULUM



**MAXILLOFACIAL & SPECIAL
SENSES MODULE 20302
CLASS OF 2021
SECOND YEAR MBBS
STUDY GUIDE
PREPARED BY: PROF. SABIHA M HAQ**

RIHS Medical & Dental College, 2023 yearly grid

Second year MBBS Batch 2022-23

Block IV 12 weeks		Block V 13 weeks including Eidul Fitr Holidays		Holidays & Eidul Adha	Block VI 12 weeks		Resit & University Assessments			
9 th Jan. to 19 th Feb	20 th Feb. to 26 th March	27 th March to 2 nd April	3 rd April to 14 th May Eidul Fitr 21-25 April	15 th May to 22 nd June	23 rd June to 27 th June	28 th June to 30 th July EidulAdha 28 June-2 nd July	31 st July to 17 th September	16 th October to 22 nd October	23 rd October to 19 th November	December 2023
GIT & Nutrition Module 20101	Renal Module 20102	Block I Revision & Assess- ment	Endocrine & Maxillo facial Module 20203	Repro- duction Module 20204	Block II Revision & Assessment	Summer break	Neuro- sciences Module 20305	Block III Revision & Assessment	Resits and Pre- Assessment leave	Written & Practical Assessments
06 weeks	05 weeks	01week	05+1 weeks	06 weeks	01 week	04 weeks	07 weeks	01 week	04 weeks	03 weeks

*Each Module consists of integrated teaching of normal structure and function of the human body and their clinical context. In order to help the students, acquire knowledge, skills and professional behavior, special focus is placed on involving multiple teaching and learning strategies and Assessment modalities.

**Islamic studies is taught as one LGIS per week throughout all Modules

***Communication skills, Medical Ethics, Professionalism & Behavioral Sciences are taught in the relevant modules as parallel subjects

****There is continuous Formative & Summative Assessment throughout the Modules by relevant disciplines, in addition to end Block Assessment

PROF. DR. SABIHA M HAQ
HOD ANATOMY
RIHS MEDICAL & DENTAL COLLEGE

PROF. DR. SHAKAIB ANWAR
PRINCIPAL
RIHS MEDICAL & DENTAL COLLEGE

MAXILLOFACIAL AND SPECIAL SENSES MODULE 20302

Class of 2021

**Placement in curriculum: Module code: 20302
(Year 2, block 03, module 02)**

**Pre-requisite: First year modules, block I & II
modules, Neurosciences module**

	Disciplines	Name of Faculty
1.	Principal & HOD Ophthalmology	Prof. Dr. Shakaib Anwar
2.	Anatomy	Prof. Dr. Sabiha M. Haq
3.	Physiology	Prof. Dr. Jan Alam
4.	Biochemistry	Prof. Dr. Rehan Khwaja
5.	Pathology	Prof. Dr. Bushra
6.	Pharmacology	Prof. Dr. Azam Zia
7.	Community Medicine	Prof. Dr. Mirza Inamul Haq
8.	Behavioural Sciences	Dr. Sabika Husain
9.	Medicine	Ms. Nargis Munir
10.	Surgery	Prof. Dr. Nadia Shams
Module duration		06 Weeks
Module planner		Prof. Dr. Sabiha M Haq

Module co-planner	Prof. Dr. Mirza Inamul Haq
Module Coordinator	Dr. Nurain Baig
Integrated Curriculum	<p>The Integrated Curriculum is becoming an increasingly popular concept internationally in the field of Medicine. The goal of integration is to break down barriers between the basic and clinical sciences, currently in practice as a result of traditional curricular models.</p> <p>Integration should promote retention of knowledge and acquisition of skills through repetitive and progressive development of concepts and their applications.</p> <p>There are three areas in need of improvement and clarification for successful integration:</p> <ol style="list-style-type: none"> 1. Ensuring synchronous presentation of material 2. Avoiding the tendency to diminish the importance of the basic sciences, and 3. Using unified definitions <p>(MEDICAL TEACHER)</p> <p>The model adapted in this institution is an Integrated, modular, system based, spiral curriculum.</p> <p>First spiral is for two years & second spiral is spread over three years.</p>
Students as a curriculum Co-ordinator and class representative	<p>Student involvement in an integrated curriculum is the key to the process of making him a self-directed, competent and ethical learner who can adjust and compete with the latest trends in medical education in today's and tomorrow's world. In order to achieve this:</p> <ol style="list-style-type: none"> 1. Students will help the Module coordinators in accomplishing all tasks assigned to him/her. 2. They will be a part of curriculum planning and implementing team. 3. They will inform/discuss the ongoing activities /problems in teaching and learning with module coordinators and curriculum chairperson.
Module Rationale	<p>Head and neck anatomy focuses on the structures of the head and neck of the human body, including the bones, muscles, blood vessels, nerves, glands, nose, mouth, teeth, tongue, and throat. It is an area frequently studied in depth by surgeons, dentists, dental technicians, and speech language pathologists.</p> <p>Head injuries from blunt trauma and penetrating missiles are associated with high mortality and severe disability.</p> <p>Headaches are usually caused by non-serious conditions such as sinusitis or neuralgia; however, they can represent the earliest manifestations of a life-threatening disease.</p> <p>Facial, scalp, and mouth injuries are commonly encountered in practice and vary in seriousness from a small skin laceration to major maxillofacial trauma. Even an untreated boil on the side of the nose can be life-threatening. Many vital structures are present in the neck. Injuries or pressure on the</p>

	<p>larynx or trachea can compromise the airway. Obviously, many signs and symptoms related to the region of the head and neck are determined by the anatomic arrangement of the various structures. The section of head neck discusses the basic anatomy of this complicated region and highlights the clinical relevance of the structures considered. It specifically excludes consideration of the detailed structure of the brain which will be considered in the CNS module. Identifying the anatomy of the head, face, and neck in normal, healthy tissues enables the doctors to recognize the abnormal</p> <p>Skin is the largest organ of the body. Being an exposed organ, it is prone to many mechanical, chemical, thermal, radiological and microbial insults. It performs very important functions like protection of body, temperature regulation, Vit. D synthesis and, above all, cosmetic function with lot of psychosocial impact. It is also affected in many systemic disorders and, hence, acts as window to diagnosis of systemic disorders. Skin diseases form a substantial part (about 20%) of everyday general practice the elements of dermatology should form part of the basic training of all doctors.</p> <p>Eye section of this module has been designed to study the basic structure and functions of EYE along with its embryological development and anomalies. EYE is a complex structure. Therefore it has to be broken into different anatomical, physiological and biochemical aspects</p> <p>Orbital region. This term is used to describe the structures which are present in the orbital cavity (orbital walls, eyelids, Lacrimal gland, lacrimal drainage system)</p> <p>Eye ball: Three layers (cornea, sclera and retina) of the eye ball including their anatomy, embryology, histology and physiology.</p> <p>Vision: Recording of visual acuity using Snellen's chart, different states of refraction, and dynamics of intraocular fluids and photochemistry of visual cycle.</p> <p>The section of ear nose and throat is designed to study the basic structure and functions of ear, nose and throat along with its embryological development and anomalies and pathophysiology of common clinical problems.</p> <p>Topics in Biochemistry are taught as a parallel subject.</p>
<p>Module Outcomes</p>	<p>At the end of this module the students should be able to:</p> <p>KNOWLEDGE:</p> <ul style="list-style-type: none"> • Identify the structures in head and neck and face region • Identify the five special senses in humans and their importance • Explain the Physiology, Anatomy and pathogenesis of E.N.T and Eye problems • Apply basic sciences to understand the causes of common E.N.T and Eye problems

	<ul style="list-style-type: none"> • Comprehend different clinical presentations to formulate provisional diagnosis and consider relevant differential diagnosis • Formulate the plan of investigations in partnership with patient. • Identify the risk factors for preventable E.N.T and eye diseases. <p>SKILL:</p> <ul style="list-style-type: none"> • Examine the ear and Perform audiological tests • Examine the oral cavity and oropharynx • Perform posterior rhinoscopy & indirect laryngoscopy • Assess the nasal obstruction & to perform anterior and posterior rhinoscopy & transillumination tests. • Perform Physiological tests for Eye problems • Perform tests for taste and smell • Perform Cranial nerve examination <p>ATTITUDE:</p> <ul style="list-style-type: none"> • Demonstrate effective communication skill strategies while history taking and examining the patients with oropharyngeal, ophthalmic and ear, nose and throat problems
<p>Teaching and Learning methodology</p>	<p>Large Group Interactive Sessions (LGIS): The goal of LGIS is to engage the students’ attention, through ways to interact with the content, the instructor, and their classmates. Accordingly, LGISs include segments of knowledge transfer combined with segments where students interact. One of the things that makes the lecture interactive is the ability of the instructor to select the content of the lecture segments based on the students' needs. This demands a prior search for the baseline knowledge of the students at the start of the lecture. If students have difficulty answering a question, or an activity fails to develop the concept in most student groups, it's time to find a new and better way to deal with the material. LGIS clearly gives a better concept of the content and keeps students’ attention captured throughout, as compared to yester years’ didactic lectures.</p> <p>Small Group Discussion (SGD): ‘The purpose and technique of small group teaching is to keep it learner-centered, with all students joining in free discussion on a particular topic. A typical ‘small group’ is around eight to 12 learners facilitated by a teacher. The steps of SGD are Forming, Storming, Norming & Performing. The teacher acts only as a facilitator. Students are allowed to use their books or other search material during the discussion. SGD is a good method to clear the concepts and develop communication and conflict solving skills in the students.</p> <p>Departmental lab. Teaching: This is a teaching & learning methodology where students learn handling of laboratory equipment, machines, their practical uses and safety rules.</p>

	<p>Skill lab. Teaching: This is performance based teaching & learning methodology where students learn to physically examine the patients and get hands on training on various clinical skills.</p> <p>Dissection and demonstration: Teaching of gross Anatomy is aided by cadaver dissection and demonstration on plastic models.</p> <p>Assignments and Presentations: Both of these methodologies are meant to make the students self-directed learners and good communicators by seeking knowledge from multiple sources and presenting it in front of facilitators and peers.</p>
Assessment methodology	<p>Multiple Choice Questions, MCQ:</p> <p>Structured Viva:</p> <p>Objective Structured Practical/Clinical Examination (OSPE/OSCE):</p>

	Core contents	Discipline	Learning objectives At the end of the module the student should be able to:	Learning Strategy	Assessment methodology
1.	Skull Revision Anterior, posterior, and lateral view	Anatomy	<ul style="list-style-type: none"> Revise the features seen on all the norms of skull Except norma basalis 	1 SGD	OSPE/VIVA
2.	Base of skull	Anatomy	<ul style="list-style-type: none"> Describe the bones forming inferior view of skull on the given bone. Mark the foramina at the base of skull and enumerate the contents of clinically relevant foramina. 	2 SGDs	OSPE/VIVA
3.	Gross anatomy of scalp	Anatomy	<ul style="list-style-type: none"> Enumerate layers of scalp Describe gross features of each layer Describe the course of the arteries, veins and nerves supplying the scalp with the help of model Describe the danger area of the scalp Describe the role of occipitofrontalis in preventing spread of scalp Infections towards neck 	1SGD	OSPE/VIVA
4.	Gross anatomy of face	Anatomy	<ul style="list-style-type: none"> Describe the muscles of face along with their nerve supply with the help of models. Describe the actions of muscles of face. Describe the course of arteries, veins and nerves supplying the face with the help of model Describe the features of Facial Infections and Cavernous Sinus Thrombosis 	1 SGD	MCQ
5.	Branches of trigeminal nerve (mandibular maxillary)	Anatomy	<ul style="list-style-type: none"> Describe the pathway of mandibular nerve from nucleus to target organs Describe the pathway of maxillary nerve from nucleus to target organs 	1 SGD	MCQ

			<ul style="list-style-type: none"> Describe the lesions of nerves with special reference to infections of molar teeth 		
6.	Gross anatomy of facial nerve	Anatomy	<ul style="list-style-type: none"> Describe the course of facial nerve in face Enumerate its branches Discuss the involvement of nuclei of facial nerve in Bell Palsy 	1 SGD	MCQ
7.	Deep cervical fascia	Anatomy	<ul style="list-style-type: none"> Enumerate the layers of deep cervical fascia. Describe the attachments of investing, pretracheal, and prevertebral layers of fascia Describe the modification of prevertebral layer into axillary sheath. Describe the spaces within fascia Describe the clinical significance of retropharyngeal space Describe the relation of layers of fascia and spread of infection 	1 LGIS	MCQ
8.	Denovo purine synthesis	Biochemistry	<ul style="list-style-type: none"> Describe Denovo Purine Synthesis encompassing: <ul style="list-style-type: none"> Steps of Synthesis Regulation Inhibitors Degradation Disorder 	1 LGIS	MCQ
9.	Muscles of neck	Anatomy	<ul style="list-style-type: none"> Describe the muscles of neck along with their nerve supply with the help of models Describe the features of Torticollis 	1 SGD	MCQ
10.	Triangles of neck	Anatomy	<ul style="list-style-type: none"> Enumerate triangles of neck. Describe the muscles forming the boundaries of triangles Describe the contents of triangles. Describe the Lesions of the Spinal Accessory Nerve in posterior triangle 	1 SGD	MCQ
11.	Vessels of neck	Anatomy	<ul style="list-style-type: none"> Enumerate the main vessels in neck. 	1 LGIS	MCQ

			<ul style="list-style-type: none"> • Describe the course and branches of • External carotid artery • third part of the subclavian artery • external jugular vein • Internal jugular vein • Describe the importance of monitoring jugular venous pulse the heart diseases. • Enumerate causes of Prominence of External Jugular Vein 		
12.	Nerves of neck	Anatomy	<ul style="list-style-type: none"> • Enumerate the main nerves in neck • Trace the course of Glossopharyngeal Nerve, Vagus Nerve, Accessory nerve and Hypoglossal nerve on the given model • Enumerate branches of each of the above nerve 	2 SGDs	MCQ, OSPE/VIVA
13.	Lymphatic drainage of head and neck	Anatomy	<ul style="list-style-type: none"> • Enumerate the groups of lymph nodes supplying the neck • Describe their location and areas of drainage • Describe the formation of jugular lymph trunk • Describe the clinical importance of lymphatic drainage of head and neck 	1 LGIS	MCQ
14.	Denovo pyrimidine synthesis	Biochemistry	<ul style="list-style-type: none"> • Describe Denovo Pyrimidine Synthesis encompassing : <ul style="list-style-type: none"> ○ Steps of Synthesis ○ Regulation ○ Inhibitors ○ Degradation • Disorder 	1 LGIS	MCQ
15.	Genetic counselling	Biochemistry	<ul style="list-style-type: none"> • Define Genetic counselling • Identify the disorders which need Genetic counselling • Play the role of a Genetic counselor for one of the above disorders 	1 Skill lab	OSPE/VIVA
16.	PBL Cervical Lymphadenitis				
17.	Surface marking of neck	Anatomy	<ul style="list-style-type: none"> • Mark the the main vessels of the neck on the given subject 	1 SGD	OSPE/VIVA

			<ul style="list-style-type: none"> ○ Facial Artery ○ External Carotid artery ○ External Jugular Vein ○ Subclavian artery ● Palpate the following muscles <ul style="list-style-type: none"> ○ Trapezius ○ Sternocleidomastoid ● Mark the anterior and posterior triangles of the neck 		
18.	Submandibular region	Anatomy	<ul style="list-style-type: none"> ● Describe the muscles present in the submandibular region and sublingual region with the help of model ● Enumerate the nerves vessels and ganglion in submandibular and sublingual region ● Describe their distribution on a given model 	1 SGD	MCQ
19.	Gross anatomy of palate	Anatomy	<ul style="list-style-type: none"> ● Identify the main features of hard palate and soft palate. ● Enumerate muscles of soft palate on the model ● Enumerate blood supply and nerve supply of soft palate ● Identify the main muscles forming the palatoglossal and palatopharyngeal arches 	1 SGD	MCQ
20.	Development of Pharyngeal Arches	Anatomy	<ul style="list-style-type: none"> ● Describe the development of pharyngeal arches ● Describe the components of pharyngeal arches ● Enumerate the components developing from all three layers of each arch ● Describe the anomalies associated with them. 	1 LGIS	MCQ
21.	Development of Palate and Face	Anatomy	<ul style="list-style-type: none"> ● Describe the stages of development of primary palate ● Describe the stages of development of secondary palate ● Describe the process of development of Cleft Lip and Cleft Palate 	1 LGIS	MCQ

			<ul style="list-style-type: none"> Describe the role of frontonasal prominence maxillary prominences mandibular prominences in development of face. Describe the formation of Oblique facial clefts Describe features of Congenital microstomia 		
22.	EYE				
23.	Gross Anatomy of Orbital Region	Anatomy	<ul style="list-style-type: none"> Enlist the structures present in the orbit Describe the gross features of eyelashes Describe gross features of eye lids Describe the attachment of muscles of eyelid Describe the attachment of orbital septum Describe the distribution of Blood Vessels and Lymph Vessels of the Orbit Describe the anatomical structures involved Inflammation of the Palpebral Glands 	1 SGD	MCQ
24.	Gross anatomy of orbital region	Anatomy	<ul style="list-style-type: none"> Describe the distribution of nerves of the Orbit Describe the clinical manifestations of lesion of visual pathway at various anatomical sites Describe the anatomical structures involved in lesion of oculomotor nerve 	1 SGD	MCQ
25.	Gross anatomy of eyeball	Anatomy	<ul style="list-style-type: none"> Describe the coats and parts of eye ball on a given model <ul style="list-style-type: none"> Fibrous coat Vascular pigmented coat Nervous coat Describe the blood supply and nerve supply of eyeball Describe the action of muscles of pupil Describe the appearance of optic disc and macula lutea on ophthalmoscope. 	1 SGD	MCQ

26.	Optic Nerve	Anatomy	<ul style="list-style-type: none"> Trace the pathway of Optic nerve from nucleus to target organs Describe the formation of olfactory bulb and optic tract. Corelate the anatomical lesions in visual pathway with clinical conditions like <ul style="list-style-type: none"> a. hemianopia, b. homonymous hemianopia and c. Bitemporal hemianopia. 	1 SGD	MCQ, OSPE/VIVA
27.	Oculomotor, Trochlear and abducent Nerve	Anatomy	<ul style="list-style-type: none"> Trace the pathway of Oculomotor nerve from nucleus to target organs Corelate the anatomical lesions in nuclei of oculomotor nerve with clinical conditions like <ul style="list-style-type: none"> o external strabismus, o ptosis and diplopia Trace the pathway of Trochlear nerve from nucleus to target organs Discuss the effect of lesion of trochlear nerve 	1 SGD	OSPE/VIVA
28.	Salvage pathways	Biochemistry	<ul style="list-style-type: none"> Define salvage pathway Describe recycling of Purines and Pyrimidine 	1 LGIS	MCQ
29.	Clinical Examination of the Cranial Nerves	Physiology	<ul style="list-style-type: none"> Perform clinical examination of all cranial nerves 	1 Skill lab	OSPE/VIVA
30.	Formation of image	Physiology	<ul style="list-style-type: none"> Describe the basic principles of optics, including the physics of light refraction, focusing and the depth of focus. Describe the Measurement of the Refractive Power of a Lens 	1 LGIS	MCQ
31.	Light Reflex	Physiology	<ul style="list-style-type: none"> To demonstrate the effect of light on eyes 	1 Skill lab	OSPE/VIVA
32.	Accommodation	Physiology	<ul style="list-style-type: none"> Describe the four refractive surfaces of eye and their role in the formation of “reduced eye” 	1 LGIS	MCQ

			<ul style="list-style-type: none"> • Describe the role of the following structures in the mechanism of accommodation: <ol style="list-style-type: none"> a. Suspensory ligaments b. Lens c. Papillary diameter 		
33.	PBL Squint				
34.	Uric Acid formation	Biochemistry	<ul style="list-style-type: none"> • Describe Degradation of Purine 	1 LGIS	MCQ
35.	Development of Eye-I	Anatomy	<ul style="list-style-type: none"> • Describe the development of optic cup • Relate the differentiation of wall of optic cup with the formation of Sclera and Cornea • Enlist developmental anomalies of Sclera and Cornea 	1 LGIS	MCQ
36.	Accommodation	Physiology	Describe the neural pathway of accommodation reflex	1 SGD	MCQ
37.	Accommodation Reflex	Physiology	Demonstrate accommodation reflex for near vision)	1 Skill lab	OSPE/VIVA
38.	Extraocular muscles	Anatomy	<ul style="list-style-type: none"> • Describe the extraocular muscles of eye • Describe the movements of eyeball • Co relates the anatomical lesions in nuclei of nerves supplying the extra ocular muscles with the loss of function in muscles. 	1 SGD	MCQ
39.	Errors of refraction	Physiology	<ul style="list-style-type: none"> • Define emmetropia • Describe the following errors of refraction: <ul style="list-style-type: none"> ○ Myopia ○ Hyperopia ○ Presbyopia ○ Astigmatism 	1 LGIS	MCQ
40.	Nucleotides Metabolism	Biochemistry	<ul style="list-style-type: none"> • Describe disorder of purine Nucleotides Metabolism including: <ul style="list-style-type: none"> ○ Gout ○ Lesch-Nyhan ○ Syndrome 	1 LGIS	MCQ
41.	Prenatal diagnosis		<ul style="list-style-type: none"> • Define prenatal diagnosis • Identify the conditions which can be diagnosed prenatally 	1 Skill lab	OSPE/VIVA

			<ul style="list-style-type: none"> Identify the methods involved in prenatal diagnosis 		
42.	Histology of Eye	Anatomy	<ul style="list-style-type: none"> Identify these structures under microscope Draw a labeled diagram of the identified structure on histology notebook List two points of identification Describe the histological features of lens, cornea & retina Describe the histological changes on retinal detachment 	1 LGIS	MCQ
43.	Pyrimidine Nucleotides Metabolism	Biochemistry	<ul style="list-style-type: none"> Describe disorder of Pyrimidine Nucleotides Metabolism including: <ul style="list-style-type: none"> Orotic acid urea Reyes syndrome 	1 LGIS	MCQ
44.	Gross anatomy of lacrimal apparatus	Anatomy	<ul style="list-style-type: none"> Enumerate the structures forming lacrimal apparatus Describe the gross features of each part of lacrimal apparatus Describe the nerve supply of lacrimal apparatus Co-relate the anatomical structures of lacrimal apparatus with the features of blocked Lacrimal duct 	1 SGD	MCQ
45.	Development of eye-ii	Anatomy	<ul style="list-style-type: none"> Describe the development of ciliary body, ciliary muscles and Retina. Describe the differentiation of mesenchyme into chambers of eye. Describe the transformation of optic stalk into optic nerve Enlist related common anomalies Describe the anatomical structures involved in Congenital Retinal Detachment. 	1 LGIS	MCQ
46.	Visual acuity	Physiology	<ul style="list-style-type: none"> Define visual acuity Describe the mechanism of visual acuity in 	1 SGD	MCQ

			determination of distance by the following: a. Sizes of retinal images b. Moving parallax c. Binocular vision		
47.	Visual Acuity	Physiology	<ul style="list-style-type: none"> • Demonstrate visual acuity 	1 Skill lab	OSPE/VIVA
48.	Fluid systems of the eye	Physiology	<ul style="list-style-type: none"> • Describe two fluid system of eye (aqueous humor and vitreous humor) • Describe formation and outflow of aqueous humor 	1 LGIS	MCQ
49.	Intraocular pressure	Physiology	<ul style="list-style-type: none"> • Define glaucoma • Describe the regulation of intraocular pressure • Describe the mechanism of blindness caused by increased intraocular pressure 	1 SGD	MCQ
50.	Gene replication	Biochemistry	<ul style="list-style-type: none"> • Define replication • Describe DNA structure • Comment on central dogma of life • Explain the process of replication in: <ul style="list-style-type: none"> a. Prokaryotes b. Eukaryotes • Comment on Inhibitors of Replication 	1 LGIS	MCQ
51.	Structural elements of the retina	Physiology	<ul style="list-style-type: none"> • Describe the function of the following structural elements of retina: <ul style="list-style-type: none"> a. Layers of retina b. Foveal region of retina c. Rods and cones d. Pigment layer of retina e. Blood supply of retina with reference to retinal detachment 	1 LGIS	MCQ
52.	Rhodopsin – retinal visual cycle	Physiology	<ul style="list-style-type: none"> • Describe Rhodopsin in reference to its decomposition by light energy • Reformation and role of vitamin – A in its formation 	1 LGIS	MCQ

			<ul style="list-style-type: none"> Describe the mechanism of excitation of rods on rhodopsin activation 		
53.	Rhodopsin – retinal visual cycle	Physiology	<ul style="list-style-type: none"> Describe the mechanism of light and dark adaptation and their value in vision Role of vit –A in maintenance of visual cycle Define night blindness 	1 SGD	MCQ
54.	Nutrition of lens	Biochemistry	<ul style="list-style-type: none"> Describe the role of glycolysis, TCA and HMP shunt in lens. Describe the function of NADPH / glutathione in the protective mechanism of eye. 	1 LGIS	MCQ
55.	Color vision	Physiology	<ul style="list-style-type: none"> Explain the tricolor mechanism of color detection in relation to color blindness. Define: <ul style="list-style-type: none"> Red-Green color blindness Blue weakness 	1 SGD	MCQ
56.	Color Vision	Physiology	<ul style="list-style-type: none"> Demonstrate how to assess color vision with the help of Ishihara chart 	Skill lab	OSPE/VIVA
57.	58. DNA damage and repair	Biochemistry	<ul style="list-style-type: none"> Describe DNA damage and repair taking care of: <ol style="list-style-type: none"> Types of DNA damages DNA repair mechanism Defect in DNA repair and cancer 	1 LGIS	MCQ
59.	Nutrition of lens	Biochemistry	<ul style="list-style-type: none"> Describe the biochemical basis for the symptoms seen in aldolase B deficiency (hereditary fructose intolerance) Describe the role of sorbitol in complication of diabetes mellitus Describe the role of galactitol in the development of cataract. Describe the role of vitamin A in vision. 	1 LGIS	MCQ
60.	Neural circuitry of the retina – 1	physiology	<ul style="list-style-type: none"> Enumerate the neuronal cells of retina Relate the visual pathway from cones to ganglionic 	1 LGIS	MCQ

			<p>cells with the neurotransmitters released along the way</p> <ul style="list-style-type: none"> • Explain the functions of horizontal cell in lateral inhibition to enhance visual contrast • Explain the mechanism of depolarization and hyperpolarization of the bipolar cells • Describe the three types of amacrine cells along with their function 		
61.	Neural circuitry of the retina – 2	Physiology	<ul style="list-style-type: none"> • Explain differences between central and peripheral portions of retina • Enumerate the three types of retinal ganglionic cells • Explain the function of W, X, Y cells in the transmission of visual image • Explain excitation of ganglionic cells • Explain on – off response of ganglionic cells in lateral inhibition • Explain the transmission of color signals from ganglionic cells 	1 LGIS	MCQ
62.	Visual cortex	Physiology	<ul style="list-style-type: none"> • Describe the structure of primary visual cortex • Describe the function of <ul style="list-style-type: none"> ○ Primary visual cortex ○ Secondary visual area of cortex 	1 SGD	MCQ
63.	Genetic mutations	Biochemistry	<ul style="list-style-type: none"> • Define mutation • Explain types of mutations with the help of diagrams • Comment on the consequence of point mutation 	1 LGIS	MCQ
64.	Analysis of visual information	Physiology	<ul style="list-style-type: none"> • Describe two major pathways for analysis of visual information: <ol style="list-style-type: none"> a. Fast position and motion pathway b. Accurate color pathway 	1 SGD	MCQ

			<ul style="list-style-type: none"> Describe the function of simple and complex cells in the analysis of visual image and color detection 		
65.	Determination of field of Vision	Physiology	<ul style="list-style-type: none"> to determine the field of vision using perimetry and to find blind spot 	1 Skill lab	OSPE/VIVA
66.	Process of transcription	Biochemistry	<ul style="list-style-type: none"> Define transcription Describe: <ul style="list-style-type: none"> Structure of RNA Transcription in prokaryotes Transcription in Eukaryotes Post transcription process Modification Inhibitors of transcriptions Reverse transcription 	1 LGIS	MCQ
67.	Antenatal screening	Biochemistry	<ul style="list-style-type: none"> Define Antenatal screening Identify the tests performed for Antenatal screening Identify the importance of each of these tests used for Antenatal screening 	1 Skill lab	OSPE/VIVA
68.	EAR NOSE & THROAT				
69.	Gross Anatomy External Ear	Anatomy	<ul style="list-style-type: none"> Describe the gross anatomical features of external ear Auricle External auditory meatus Describe the blood supply, nerve supply and lymphatic drainage of external ear. Corelate the significance of straightening the auditory canal during clinical examination with the anatomical structure of canal. 	1 SGD	MCQ
70.	Functions of external and middle ear	Physiology	<ul style="list-style-type: none"> Describe the following three functions of the external ear: <ol style="list-style-type: none"> Transmission of sound to tympanic membrane Amplification of sound Prevention of dust and dirt from reaching ear drum 	1 LGIS	MCQ

			<ul style="list-style-type: none"> Describe the function of ossicles of the middle ear in conduction of sound from tympanic membrane to cochlea 		
71.	Functions of external and middle ear	Physiology	<ul style="list-style-type: none"> Describe the phenomenon of impedance matching provided by the tympanic membrane and Ossicular system of the ear Describe attenuation reflex along with its two functions of: <ul style="list-style-type: none"> Protecting cochlea Masking low frequency sound waves 	1 SGD	MCQ
72.	Gross anatomy middle ear	Anatomy	<ul style="list-style-type: none"> Identify the parts of ear ossicles on the given model Describe the muscles present in middle ear cavity Describe the gross features of auditory tube Describe the nerve supply of auditory tube Describe the anatomical structures involved in Paralysis of the Stapedius Blockage of Pharyngotympanic Tube 	1 SGD	OSPE/VIVA
73.	Conduction of Sound	Physiology	<ul style="list-style-type: none"> Describe the role of the following in conduction of sound vibrations: <ul style="list-style-type: none"> Scala vestibule Scala media Scala tympanum 	1 LGIS	MCQ
74.	Process of translation	Biochemistry	<p>Regarding Translation discuss the following aspects:</p> <ul style="list-style-type: none"> Definition Genetic anti-codon recognition Components require for translation Steps in protein synthesis Prokaryotes translation Eukaryotes 	1 LGIS	MCQ

			<ul style="list-style-type: none"> • Co and post translation modification of polypeptide chain • Inhibitors of translation 		
75.	Hearing Tests	Physiology	<ul style="list-style-type: none"> • to perform different types of hearing tests and to differentiate between conductive and perceptive deafness 	1 Skill lab	OSPE/VIVA
76.	Gross anatomy inner ear	Anatomy	<ul style="list-style-type: none"> • Identify the parts of bony labyrinth on the given model • Identify the parts of membranous labyrinth on the given model • Identify parts of cochlea of semicircular canal on the given model • Describe the gross features of bony labyrinth. • Describe the gross features of membranous labyrinth • Describe the orientation of semicircular canals and ducts within the inner ear • Describe the gross features of internal acoustic meatus 	1 SGD	OSPE/VIVA
77.	PBL Otitis media				
78.	Vestibular apparatus	Physiology	<ul style="list-style-type: none"> • Describe the functions of utricle and saccule in maintenance of equilibrium 	1 LGIS	MCQ
79.	Vestibular apparatus	Physiology	Explain the role of semicircular canals in detecting head rotation	1 SGD	MCQ
80.	Mechanism of Hearing	Physiology	<ul style="list-style-type: none"> • Describe the place-principle in determination of sound frequency • Describe three ways by which auditory system determines loudness of sound • Describe power law in detecting the changes in loudness 	1 LGIS	MCQ
81.	Gene expression	Biochemistry	Regarding Gene expression discuss the following aspects: <ul style="list-style-type: none"> • Definition 	1 LGIS	MCQ

			<ul style="list-style-type: none"> • Regulatory sequence and molecule • Operon concept • Regulation of gene expression in prokaryotes • gene expression in Eukaryotes • gene regulation in prokaryotes 		
82.	Pregnancy Ultrasound	Biochemistry	<ul style="list-style-type: none"> • Identify different stages of pregnancy where an US examination is performed • Identify the requirements for pregnancy US examination • Comment on the importance of these ultrasounds in relation to fetal growth, development and fetal anomalies 	1 Skill lab	OSPE/VIVA
83.	Organ of corti	Anatomy	<ul style="list-style-type: none"> • Identify the histological features of organ of corti under microscope • Identify the cells and spaces present in the cochlea on the given slide • List two points of identification • Draw a labeled diagram of identified tissue in histology note books 	Skill lab	OSPE/VIVA
84.	Auditory pathway	Physiology	<ul style="list-style-type: none"> • Describe the auditory pathway in transmission of signals from the spiral ganglion of corti to auditory cortex 	1 SGD	MCQ
85.	Auditory pathway	Physiology	<ul style="list-style-type: none"> • Describe the function of cerebral cortex in hearing in reference to: <ul style="list-style-type: none"> ○ Perception of sound frequency in primary auditory cortex ○ Discrimination of sound pattern by auditory cortex ○ Determination of direction of sound ways 	1 LGIS	MCQ

			<ul style="list-style-type: none"> ○ Centrifugal signals to lower auditory centers 		
86.	Vestibulocochlear nerve	Anatomy	<ul style="list-style-type: none"> ● Trace the course of vestibulocochlear nerve in the inner ear on the given model ● Identify the area of supply of vestibular nerve on the given model ● Identify the area of supply of cochlear nerve ● Identify the gross features of vestibulocochlear ganglion on model 	1 Skill lab	OSPE/VIVA
87.	Development of external ear	Anatomy	<ul style="list-style-type: none"> ● Describe the embryological development of external & middle ear. ● Describe the associated developmental anomalies 	1 LGIS	MCQ
88.	Development of inner ear	Anatomy	<ul style="list-style-type: none"> ● Describe the embryological development of inner ear. ● Describe the differentiation of otic vesicle into different parts of inner ear ● Describe the anomalies related to the development of and inner ear 	1 LGIS	MCQ
89.	Pharynx	Anatomy	<ul style="list-style-type: none"> ● Describe the following parts of pharynx on the given model <ul style="list-style-type: none"> ○ Oropharynx ○ Nasopharynx ○ laryngopharynx ● Enumerate muscles of pharynx ● Describe lymphoid tissue in the pharynx ● Describe the importance of structures passing through the spaces between muscles of pharynx while performing tonsillectomy ● Describe spread of infections from nasopharynx to middle ear 	1 LGIS	MCQ
90.	Techniques used in molecular biology	Biochemistry	<ul style="list-style-type: none"> ● Explain the following techniques used in molecular biology and gene therapy for Genetic Disorder: <ul style="list-style-type: none"> ○ RFLP ○ DNA cloning 	1 LGIS	MCQ

			<ul style="list-style-type: none"> ○ PCR ○ Blotting techniques ○ Clinical application 		
91.	CVB and Amniocentesis	Biochemistry	<ul style="list-style-type: none"> ● Define Chorionic Villus Biopsy and Amniocentesis ● Identify the conditions which require chorionic sampling and biopsy 	1 Skill lab	OSPE/VIVA
92.	Taste sensation	Physiology	<ul style="list-style-type: none"> ● Describe the mechanism of stimulation of taste buds 	1 LGIS	MCQ
93.	Taste sensation	Physiology	<ul style="list-style-type: none"> ● Describe the pathway of taste sensation from the tongue to the CNS 	1 SGD	MCQ
94.	Sense of Taste	Physiology	<ul style="list-style-type: none"> ● Demonstrate effect of different chemicals on sense of taste 	1 Skill lab	OSPE/VIVA
95.	Gross anatomy nose	Anatomy	<ul style="list-style-type: none"> ● Describe the structure of External nose and nasal cavity ● Describe the concha and meatus in the lateral wall ● Enumerate the sinuses opening in them ● Discuss anatomical structures involved in nasal fractures ● Correlate the anatomical structure of nasal mucosa with clinical manifestations of rhinitis 	1 SGD	MCQ
96.	Functions of nose	Physiology	<ul style="list-style-type: none"> ● Describe the following functions of nose: ● Breathing ● Smell ● Voice ● Cleansing ● taste ● Describe the mechanism of stimulation of olfactory cells in reference to: <ul style="list-style-type: none"> ○ Mechanism of excitation of olfactory cells ○ Membrane potential and action potential of olfactory cells 	1 LGIS	MCQ

			<ul style="list-style-type: none"> ○ Describe the pathway of transmission of smell signals to the CNS 		
97.	Paranasal Sinuses	Anatomy	<ul style="list-style-type: none"> ● Describe the gross features of paranasal sinuses ● Describe infections of sinuses ● Describe the Drainage of Mucus in relation to sinusitis ● Describe the Function of Paranasal Sinuses ● Discuss the anatomical structures involved in sinusitis with special reference to clinical consequences of infections of the ethmoidal cells of the ethmoidal sinuses 	1 SGD	MCQ
98.	Sense of Smell	Physiology	<ul style="list-style-type: none"> ● Demonstrate effect of different chemicals on sense of smell 	Skill lab	OSPE/VIVA
99.	Olfactory Nerve	Anatomy	<ul style="list-style-type: none"> ● Trace the pathway of Olfactory nerve from nucleus to target organs on a model ● Describe the formation of olfactory bulb and olfactory tract. ● Correlate the effects of lesion of olfactory nerve with special reference to clinical conditions causing anosmia 	1 SGD	OSPE/VIVA
100.	Development of nose	Anatomy	<ul style="list-style-type: none"> ● Describe the development of nose ● Describe the development of Median Nasal Furrow and Lateral Proboscis 	1 LGIS	MCQ
101.	Imaging of nose and nasal cavity	Anatomy	<ul style="list-style-type: none"> ● Identify the bones forming skeleton of nose on radiograph ● Identify boundaries of paranasal sinuses on radiograph 	Skill lab	OSPE/VIVA
102.	Gross anatomy larynx	Anatomy	<ul style="list-style-type: none"> ● Explain the gross features of Inlet of larynx Pyriform fossa Laryngeal folds Cavity of larynx ● Corelate the Laryngeal anatomy to foreign bodies aspiration 	1 SGD	MCQ

			<ul style="list-style-type: none"> • Identify the gross features of Intrinsic Muscles of larynx Extrinsic muscles of larynx Movements of vocal folds • Describe the cartilage involvement in Fractures of the Laryngeal Skeleton 		
103.	Gross anatomy larynx	Anatomy	<ul style="list-style-type: none"> • Identify the gross features of <ul style="list-style-type: none"> ○ Cartilages of larynx ○ Membranes of larynx • Identify the course of following nerves of larynx <ul style="list-style-type: none"> ○ internal laryngeal nerve ○ external laryngeal nerve ○ inferior laryngeal nerve 	Skill lab	OSPE/VIVA

Learning Resources:

Anatomy

Text Books

1. Regional Anatomy by Snell
2. Embryology by Langman's
3. Snell's Neuro Anatomy
4. Histology by Janquira
5. General Anatomy by Laique Hussain
6. General Anatomy by Laique Hussain

Reference Books:

7. Clinical Anatomy by Keith L. Moore
8. Histology by Laique Hussain
9. Histology by Difiore
10. Student Gray's
11. Embryology by Keith L. Moore

Physiology

10. Text Book of Medical Physiology by Guyton & Hall
11. Physiology by Lippincott

Biochemistry

12. Lippincott Biochemistry.
113. Harper's Biochemistry

Pathology

14. Pathologic Basis of Disease by Robbins and Cotran.

Pharmacology

15. Lippincott pharmacology.
16. Katzung Pharmacology. Biochemistry

Behavioral Sciences

17. Introduction to Psychology by Edward. E Smith.
18. Behavioral Science by Lippincott Williams.

Community Medicine

19. Text book of Preventive and Social Medicine by JE. Park

Medicine

20. Davidson's Text book of Medicine

Surgery

21. Text book of Surgery by Bailey & Love
22. Text book of Radiology by Christson



**FOR ENQUIRIES CONTACT:
DEPARTMENT OF MEDICAL EDUCATION
RIHS MEDICAL AND DENTAL COLLEGE
sabihamhaq@gmail.com**

STUDY GUIDE, MAXILLOFACIAL & SPECIAL SENSES MODULE FOR 2ND YEAR MBBS, RAWAL
INSTITUTE OF HEALTH SCIENCES ISLAMABAD