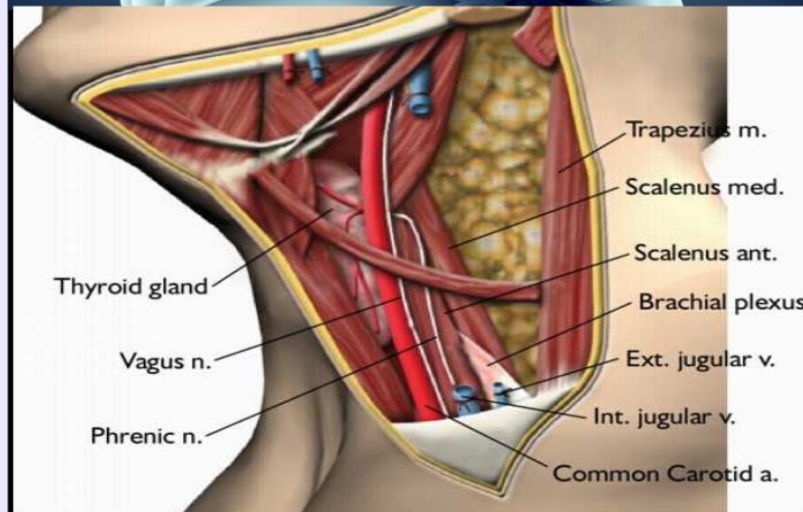


STUDY GUIDE- SECOND YEAR MBBS

- 31st May- 22nd July 2022
- Duration: 7 Weeks

HEAD & NECK & SPECIAL SENSES MODULE



STUDY GUIDE FOR HEAD & NECK & SPECIAL SENSES-1 MODULE

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Module name: Head & Neck & Special Senses

Year: Two

Duration: 7 weeks (May-July 2022)

Timetable hours: Lectures, Case-Based Learning (CBL), Flipped Classroom, Self-Directed Learning, Practical, Skills, Demonstrations

MODULE INTEGRATED COMMITTEE

MODULE COORDINATOR:	<ul style="list-style-type: none"> Dr Saima Athar (Anatomy)
CO-COORDINATORS:	<ul style="list-style-type: none"> Dr. Naila Parveen (Physiology)

DEPARTMENTS' & RESOURCE PERSONS' FACILITATING LEARNING

BASIC HEALTH SCIENCES	CLINICAL AND ANCILLARY DEPARTMENTS
ANATOMY Professor Zia-ul-Islam	FAMILY MEDICINE Dr. Rabeeya Saeed
BIOCHEMISTRY Professor Kashif Nisar	NEUROLOGY Dr. Ahmed Asif
COMMUNITY MEDICINE Dr. Saima Zainab	
PHYSIOLOGY Professor Syed Hafeezul Hassan	
DEPARTMENT OF HEALTH PROFESSIONS EDUCATION	
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LNH&MC MANAGEMENT	
<ul style="list-style-type: none"> Professor KU Makki, Principal LNH&MC Dr. Shaheena Akbani, Director A.A & R.T LNH&MC 	
STUDY GUIDE COMPILED BY: Department of Health Professions Education	

INTRODUCTION

WHAT IS A STUDY GUIDE?

It is an aid to:

- Inform students how student learning program of the module has been organized
- Help students organize and manage their studies throughout the module
- Guide students on assessment methods, rules and regulations

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, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
- Provides a list of learning resources such as books, computer assisted learning programs, web- links, journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous and semester examinations on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's achievement of objectives.
- Focuses on information pertaining to examination policy, rules and regulations.

CURRICULUM FRAMEWORK

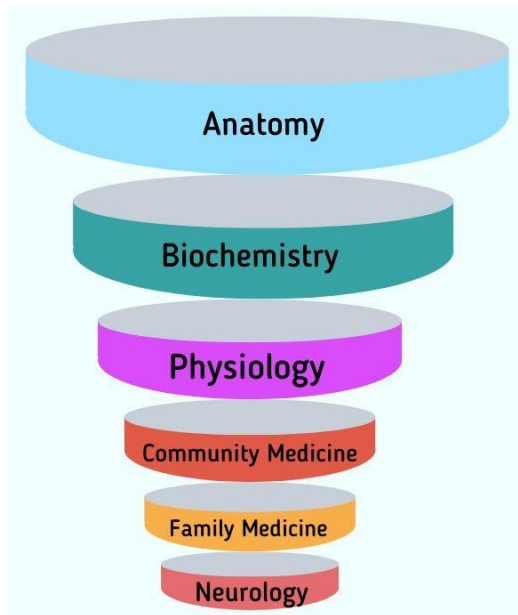
Students will experience integrated curriculum similar to previous modules.

INTEGRATED CURRICULUM comprises of system-based modules such as Head and Neck & Special senses, Neurosciences and Endocrinology which links basic science knowledge to clinical problems.

Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples.

Case-based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab and physiotherapy department are characteristics of integrated teaching program.

INTEGRATING DISCIPLINES OF HEAD AND NECK & SPECIAL SENSES MODULE



LEARNING METHODOLOGIES

The following teaching / learning methods are used to promote better understanding:

- Interactive Lectures
- Small Group Discussion
- Case- Based Learning
- Practicals
- Skills session
- Flipped Classroom
- Self-Directed Learning

INTERACTIVE LECTURES

In large group, the lecturer introduces a topic or common clinical conditions and explains the underlying phenomena through questions, pictures, videos of patients' interviews, exercises, etc. Students are actively involved in the learning process.

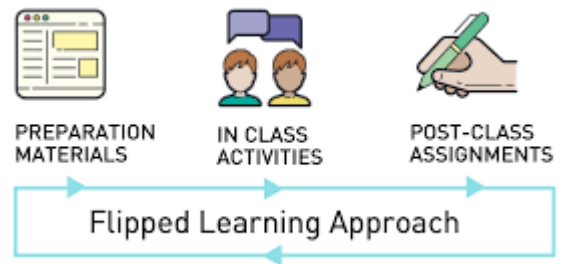
SMALL GROUP DISCUSSION (SGD): This format helps students to clarify concepts acquire skills or attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics. Students exchange opinions and apply knowledge gained from lectures, tutorials and self-directed learning. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

CASE- BASED LEARNING: A small group discussion format where learning is focused around a series of questions based on a clinical scenario. Students' discuss and answer the questions applying relevant knowledge gained in clinical and basic health sciences during the module.

PRACTICAL: Basic science practicals related to anatomy, biochemistry, pathology, pharmacology and physiology are scheduled for student learning.

SKILLS SESSION: Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Department of Physiotherapy.

FLIPPED CLASSROOM: A flipped classroom is a **type of blended learning** where students are introduced to content at home and practice working through it at classroom. This is the reverse of the more common practice of introducing new content classrooms, then assigning homework and projects to completed by the students independently at home.



The concept behind the flipped classroom is to rethink when students have access to the resources they need most. If the problem is that students need help doing the work rather than being introduced to the new thinking behind the work, then the solution the flipped classroom takes is to reverse that pattern.

SELF DIRECTED LEARNING: Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Center, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

MODULE 3: HEAD & NECK & SPECIAL SENSES

INTRODUCTION

The head and neck and special senses is an introductory module that provides knowledge about the vital structures present in the head and neck region, their functions, and clinical co-relations. These include the head and skull, organs for special senses (eyes, ears, nose, and tongue), cranial nerves, great vessels, and the thyroid gland. This module will give the students basic knowledge about the structures present in the head and neck region along with their important functions and abnormalities which can lead to various diseases.



COURSE OBJECTIVES AND STRATEGIES

At the end of the module the students will be able to:

ANATOMY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Bones of skull	Small Group Discussion
• List the parts of skeleton (axial and appendicular)	
• Describe different bones and sutures of skull	
2. Norma Frontalis, verticalis, fontanelles with their clinical correlation	
• Identify the views/normas of skull.	
• List the bones contributing to norma Frontalis & Verticalis	
• Describe features related to bones of both normas	
• Relate the contents with the respective foramina	
• Identify the sutures and fontanelles on Norma verticalis	Interactive Lecture/ Case-Based Discussion
• Discuss the clinical importance of fontanelles	
3. Pharyngeal apparatus & its anomalies	
• Define pharyngeal arches, pouches, clefts and membranes	
• Describe the derivatives of each arch (Muscle, bones, cartilage)	Interactive Lecture
• Describe the fate of pouches, clefts and membranes	
• Describe the common anomalies of pharyngeal apparatus	Practical
4. Scalp & its layers	
• Describe the extent/boundaries and five layers of scalp	Interactive Lecture
• Describe the nerves and vessels of scalp and their clinical correlates	
5. Norma Lateralis & occipitalis	
• Identify the bones contributing to Norma Lateralis and Occipitalis	
• Recognize different bony landmarks of norma lateralis & occipitalis	
• Identify the sutures	
• Relate the foramina with their respective contents	
6. Development of face & its anomalies	
• Describe the formation of facial prominences	
• Discuss the formation of different parts of face from the prominences	
• Define nasal placode and nasal pit & nasolacrimal groove	Interactive Lecture
• Discuss most common anomalies of face (cleft lip)	
7. Face (Muscles, Nerves: Extra Cranial Part of V & VII)	
• Describe the boundaries of face	
• Enumerate the muscles and innervation of face	
• Discuss the action of muscles of face	
• Discuss the course and distribution of CN-V and extra cranial part of CN- VII	
• Describe the applied anatomy of face (Bell's palsy)	

8. Norma Basalis (anterior and middle part)	Practical
• List the bones forming the base of skull	
• Describe anterior and middle part of base of skull	
• Identify different foramina present at the base of skull	
• Name the structures passing through these foramina	Interactive Lecture
9. Arteries, veins & lymphatic of face	
• Describe the arterial supply of face, the major veins of face and formation and fate of retromandibular vein	
• Explain the lymphatic drainage of face	
• Discuss the clinical correlation (Danger area of face)	Interactive Lecture/Tutorial
10. Norma Occipitalis & posterior part of Basalis (Demonstration)	
• List the bones forming the posterior aspect & base of skull	
• State the details of posterior part of base of skull	
• Describe different foramina & structures passing through them	Interactive Lecture
11. Orbital cavity and its contents	
• Describe the boundaries& content of orbital cavity	
• Enumerate the relations of orbital cavity	
• Describe location, relations and connections of ciliary ganglion	Interactive Lecture
• Define the disorders associated with ciliary ganglion	
12. Eyelid & Lacrimal Apparatus	
• Describe Eyelid and its parts	
• Explain the Innervation and blood supply of eyelids	Interactive Lecture/Hands on small group session
• Describe parts of lacrimal apparatus	
• Define the diseases of lacrimal apparatus	
13. Eyeball and Extraocular Muscles	
• Explain the gross anatomical features of eyeball	Interactive Lecture/Hands on small group session
• Discuss different coats and compartment of the eyeball	
• Explain the neurovascular supply and lymphatic drainage of the eyeball	
• Enumerate the extra-ocular muscles	
• Discuss the attachments and nerve supply of these muscles	
• Explain the actions of Extraocular muscles along with related clinical anatomy	
14. Development of eye	
• Describe the development of eye from neural and non-neural components	
• Tabulate the structures which develop from optic cup, neural crest cells and surface ectoderm	
• Explain the development of iris, ciliary bodies, lens, cornea, eyelid and lacrimal gland	
• Discuss the common congenital anomalies of eye	Interactive Lecture
• Dissect layers of eyeball.	
• Explain the anatomical organization of tunics of eyeball	
15. Cranial Nerves I - VI & their clinical correlation	
• Explain the functional component and nuclei of these nerves	
• Describe the intra and extra cranial pathway	
• Describe the innervation by these nerves	
• Explain the cranial nerve lesions with their presentation	
• Discuss cranial nerve testing	

16. Gross anatomy of mandible and hyoid bone	Tutorial
• Describe parts of mandible	
• List attachments on each part of the mandible	
• Describe the foramen on the mandible and the structures passing through these foramina	
• Enumerate the joints formed by mandible	
• Describe the ossification of mandible	
• Discuss the applied anatomy of mandible	
• Describe the location and vertebral level of hyoid bone	
• Describe the parts of hyoid bone	Interactive Lecture/ Case - Based Discussion
• Explain the attachments on the hyoid bone	
17. Temporal Fossa & Temporomandibular Joint	
• Describe the boundaries of temporal fossa	
• List the contents of temporal fossa	
• Describe the temporalis muscle, its innervation and action	
• Describe the Temporomandibular joint, its type and its articular surfaces	
• Describe the ligaments attached and movements performed at Temporomandibular joint	Interactive Lecture
18. Infratemporal Fossa & Pterygopalatine Fossa	
• Describe the boundaries of Infratemporal fossa	
• List the contents of Infratemporal fossa	
• List the communications of Infratemporal fossa	
• Describe the contents and boundaries of Pterygopalatine fossa	
• Discuss Pterygopalatine ganglion and its connections	Case - Based Discussion
• List the communications of Pterygopalatine fossa	
19. Cranial Nerves VII to XII & its clinical correlation	
• List the functional components of these nerves	
• Describe their intra and extra cranial course	
• Discuss their innervation	Interactive Lecture/ Practical
• Discuss the common lesions and their clinical presentation	
• Demonstrate the clinical testing of these nerves	
20. Gross anatomy & histology of oral cavity	
• Discuss the boundaries and divisions of the oral cavity	
• Describe the vestibule and oral cavity proper with their contents	
• Discuss the oropharyngeal isthmus	
• Describe the general features, classification, organization of oral mucosa	Interactive Lecture
• Discuss the type and components of oral epithelium	
• Discuss the histology of lips, cheek , gums and palate	
21. Gross anatomy of tongue	
• Identify the gross anatomical features of the tongue	
• Describe the intrinsic muscles and extrinsic musculature of tongue and their movements	
• Discuss the blood supply, innervation and lymphatic drainage of tongue and the clinical conditions associated with it	

22. Hard and Soft Palate	
• Discuss the boundaries, muscle attachments and mucosal coverings of hard and soft palate	
• Discuss the function of hard and soft palate during process of mastication and deglutition	
• Discuss the blood supply and nerve supply of hard and soft palate	
• Discuss gag reflex and its complications after stroke	
23. Parotid Gland and Parotid Region	
• Describe the boundaries and contents of the parotid region	
• Describe the borders, surfaces and relations of parotid gland	
• List the structures passing through it	
• Describe the facial nerve and its branches in the mass of parotid gland	
• Describe the origin, course and size of parotid duct.	
• Discuss the clinical conditions (stone formation and parotitis) related to gland and duct	
24. Development of Tongue & salivary glands	
• Describe the development of the tongue	
• Discuss the congenital anomalies associated with the development of tongue	
• Explain the beginning of development of the 3 salivary glands	
• Discuss the embryonic development of secretory part, duct system and stroma	
25. Development of palate	
• Describe palatal development during the seventh to ninth weeks of gestation	
• Explain the embryonic basis of cleft palate	
• Discuss the types of cleft lip and palate	
26. Gross Anatomy of external nose, boundaries, blood & nerve supply	
• Describe the features of external nose	Interactive Lecture/ Small Group Discussion
• Describe the boundaries of nasal cavity	
• Describe the blood & nerve supply of nose	
• Discuss the formation of anastomoses at little's area and its clinical importance	
27. Histology of Nasal Cavity, respiratory & olfactory epithelia	
• Enumerate the epithelia of nasal cavity	Interactive Lecture/ Small Group Discussion/ Practical
• Discuss the features of olfactory and respiratory mucosa	
• Describe the cells of olfactory and respiratory epithelium	
28. Gross anatomy of Para nasal air sinuses	
• List the para nasal air sinuses	
• Describe their location, important relations ,drainage and nerve supply	
• Discuss the clinical significance of para nasal air sinuses	
29. Development of nose & para nasal sinuses	
• Describe development of different parts of nose and of para nasal sinuses	
• Describe congenital anomalies associated with their development	
30. Gross & Histology: External and Middle Ear	
• Discuss the division of ear into external, middle and internal ear	Interactive Lecture
• Describe the parts of external ear, and the boundaries & content of middle ear cavity	
• Explain the histological features of parts of external and middle ear	
• Discuss the functions of external and middle ear as an organ for hearing	
• List the vascular supply and innervation of external and middle ear.	
• Define the clinical conditions associated with external and middle ear	

31. Neck, Deep Cervical Fascia, carotid sheath and Platysma Muscle	Tutorial
• Define the layers of neck; skin superficial fascia and deep fascia	
• Describe the cutaneous supply of skin of neck	
• List the different modifications of deep fascia	
• Describe prevertebral and pre-tracheal, investing layers of deep fascia	
• Describe the carotid sheath	
• List the contents of carotid sheath at different levels & its important relations	
32. Anterior Triangle of Neck	Interactive Lecture
• Discuss the division of triangles of neck	
• List the subdivisions of anterior triangle	
• Describe the boundaries and contents of sub divisions of anterior triangle i.e. Sub mental, Sub-mandibular, Muscular & Carotid	Interactive Lecture
33. Submandibular region & Submandibular gland	
• Describe the boundaries of Sub-mandibular triangle	
• List the contents of Sub-mandibular triangle	
• Describe the anatomy of Sub-mandibular salivary gland	
• Describe emergence and course of Wharton's duct and its relation with lingual nerve.	
• Describe the location & connections of Sub-mandibular ganglion	Interactive Lecture/ Small Group Discussion
• Describe the location and area of drainage of Sub-mandibular lymph nodes	
34. Posterior triangle of neck, Cervical Plexus & Cranial Nerve XI	
• Discuss briefly the division of neck into anterior and posterior triangles	
• Describe the boundaries of posterior triangle of neck	
• List the contents of posterior triangle of neck	
• Discuss the formation, branches and functions of cervical plexus	Interactive Lecture/ Small Group Discussion
• Discuss the origin, course, branches and functions of cranial nerve XI	
• Discuss the clinical conditions associated with posterior triangle of neck, cervical plexus and cranial nerve XI	
35. Pharynx & Tonsils	
• Discuss the morphology, location and extent of pharynx	
• Explain the division of pharynx into Nasopharynx, Oropharynx & Laryngopharynx	
• Describe the pharyngeal and palatine tonsils	Interactive Lecture/ Small Group Discussion
• Discuss the origin, insertion and actions of pharyngeal muscles	
• Discuss the significance of Pharyngeal and Oropharyngeal isthmus.	
• Discuss the innervation and blood supply of pharynx along with the associated clinical conditions	
36. Gross anatomy of thyroid & parathyroid gland	
• Explain the gross anatomy of the thyroid & parathyroid gland	
• Discuss the blood supply and nerve supply of thyroid and parathyroid gland	Interactive Lecture/ Small Group Discussion
• Relate the clinical anatomy of thyroid and parathyroid gland with the relevant conditions	
37. Gross & histology of larynx	
• Explain the gross anatomy of larynx	
• Discuss the blood supply, nerve supply, and clinical anatomy of larynx	
• Describe the histological features of larynx	

38. Development of Thyroid, Parathyroid, Larynx and Thymus	Interactive Lecture
<ul style="list-style-type: none"> Describe the developmental anatomy of thyroid, parathyroid, larynx and thymus Discuss congenital anomalies associated with their development 	
39. Blood vessels and Lymphatics drainage of head and neck	
<ul style="list-style-type: none"> Describe the major vessels of head & neck Describe the Superficial and deep cervical lymph nodes Explain their relation with jugular veins Summarize their area of drainage Discuss their clinical significance 	
40. Gross & Histology: Internal Ear	
<ul style="list-style-type: none"> Describe the parts of internal ear Describe the histological features of the parts of internal ear Discuss the functions of internal ear as an organ for hearing and balance Discuss the clinical conditions associated with internal ear 	
41. Development of Ear	Interactive Lecture
<ul style="list-style-type: none"> Explain the development of external, middle and internal ear Discuss congenital deafness and other anomalies of the ear 	
42. Integrated lecture on auditory pathway	
<ul style="list-style-type: none"> Discuss the components of auditory pathway Describe the function of different parts of auditory pathway Describe the clinical conditions associated with auditory pathway 	
43. Surface anatomy of head and neck (Facial Artery and Parotid Gland)	Tutorial
<ul style="list-style-type: none"> Trace the course of facial artery in the face Palpate the facial artery Identify the landmarks of borders and surfaces of parotid gland Palpate the Parotid gland Trace the course and opening of parotid duct 	
44. Histology of Tongue	
<ul style="list-style-type: none"> Identify the microscopic slide of tongue based on histology Describe the different layers of tongue Describe different types of lingual papillae Describe different glands of tongue 	
45. Histology of salivary gland	Practical
<ul style="list-style-type: none"> Identify the histological slide of salivary gland Describe the histological appearance of salivary gland Describe the different types of acini 	
46. Histology of Eye Ball	
<ul style="list-style-type: none"> Identify the histological features of eyeball Describe the histological feature of each coat of eye ball Describe the histology of cornea and lens Discuss the arrangement and composition of the layers of retina 	
47. Histology of Nasal Cavity, respiratory & olfactory epithelia	
<ul style="list-style-type: none"> Identify various parts on slides Describe histological characteristics of each part 	

BIOCHEMISTRY

TOPICS & OBJECTIVES	LEARNING STRATEGIES		
1. Introduction to nutrition <ul style="list-style-type: none"> • Discuss nutrition, nutrients, BMI, RDA and RMR • Discuss the biochemical importance of Balanced diet • Discuss the basic food groups • List the essential nutrients and their importance in the diet • Discuss the dietary sources and recommendations of micronutrients • Describe the importance and benefits of water • Discuss the importance of dietary fibers • Discuss the daily caloric requirements • Discuss the Dietary Reference Intakes (EAR, RDA, AI, UL) • Discuss the clinical disorders of nutrition 	Interactive Lecture/ Small Group Discussion		
2. Nutritional importance of dietary carbohydrates <ul style="list-style-type: none"> • Explain the biochemical importance of dietary carbohydrate • Discuss Balanced diet • Classify the types of dietary carbohydrates • Discuss the significance of simple and complex dietary carbohydrates • Explain the Glycemic index and Glycemic load • Describe the biochemical complications of Obesity • Discuss metabolic syndrome and its complications 			
3. Nutritional importance of dietary proteins <ul style="list-style-type: none"> • Classify Proteins according to their nutritional importance and give examples • List the biochemical functions of proteins in the body • Explain recommended dietary requirements of protein in different age groups • Describe the Amino acid pool & Nitrogen balance • Describe Protein energy malnutrition (Marasmus & Kwashiorkor) • List the common causes of protein energy malnutrition • Explain clinical presentation of patient having PEM. 		Interactive Lecture/ Case- Based Learning	
4. Nutritional importance of dietary lipids <ul style="list-style-type: none"> • Classify Lipids according to their nutritional importance and give examples • Explain the biochemical functions of dietary lipids • Discuss the sources and recommended daily allowance of dietary lipids • Discuss the biochemical mechanism of development of atherosclerosis • Discuss the clinical significance of dietary lipids (Metabolic syndrome, Atherosclerosis) • List the common causes of steatorrhea • Explain clinical presentation and treatment of patient with lipid malabsorption 			Interactive Lecture/ Small Group Discussion/ Case-Based Learning

5. Vitamin A	Interactive Lecture/ Small Group Discussion
• Explain the chemical structure of Vitamin A	
• Classify the different types of Vitamin A	
• Explain the biochemical functions of Vitamin A	
• Discuss the role of vitamin A in visual cycle	
• List the sources and daily requirement of Vitamin A	
• Discuss the clinical significance of Vitamin A deficiency and toxicity	
• Correlate the interpretation of laboratory investigations with relevant clinical conditions	
6. Overview of Dietary Minerals	
• List and classify the dietary minerals with their biochemical importance	
• Describe their sources and daily recommended allowances	
• Explain their biochemical functions	
• Discuss the clinical significance of mineral deficiency and toxicity	
7. Balanced diet	
• Discuss the clinical importance of balanced diet	
• Correlate the interpretation of laboratory investigations with relevant clinical conditions	
8. Deficiencies of minerals	Interactive Lecture
• Discuss the clinical importance of minerals(e.g. Iron, Calcium)	
• Correlate the interpretation of laboratory investigations with relevant clinical conditions	
9. Obesity	
• Discuss the clinical importance of Obesity	
• Correlate the interpretation of laboratory investigations with relevant clinical conditions	
10. Protein Calorie Malnutrition (PCM), Marasmus and Kwashiorkor	Case -Based Learning
• Discuss the clinical importance of PCM, Marasmus and Kwashiorkor	
• Correlate the interpretation of laboratory investigations with relevant clinical conditions	
11. Metabolic syndrome, Atherosclerosis	
• Discuss the clinical importance of Metabolic syndrome & Atherosclerosis	
• Correlate the interpretation of laboratory investigations with relevant clinical conditions	
12. Calculation of Body Mass Index (BMI)	Practical
• Explain the significance of calculation of Body Mass Index	
• Explain the method to calculate BMI	
• Calculate the BMI	
• Interpret the significance of the calculated BMI	
• Correlate the interpretation of laboratory investigations with relevant clinical conditions	
13. Interpretation of glycemic index	
• Define Glycemic Index and Glycemic Load	
• Compare the Glycemic index of different carbohydrates	
• Interpret the significance of GI & GL	
• Outline the method for calculation of GI of various food items	
• Correlate the interpretation of laboratory investigations with relevant clinical conditions	

COMMUNITY MEDICINE

TOPICS & OBJECTIVES	LEARNING STRATEGIES
Air pollution, Noise pollution & its control	Interactive Lecture
Describe the sources of air pollution and its control.	
Discuss noise pollution & its control	

FAMILY MEDICINE

TOPICS & OBJECTIVES	LEARNING STRATEGIES
Clinical presentation of common nasal diseases	Interactive lecture/ Simulation based learning
• list the common diseases of the nasal cavity (rhinitis, nasal obstruction ,epistaxis)	
• Describe the clinical presentation of common diseasesof nasal cavity Discuss the nasal manifestations of covid 19	
• Describe the clinical presentation of common diseases of oral cavity(oral thrush/ulcers,oral cancers)	
• Describe the clinical presentation of common diseases of throat (Tonsilitis and Pharyngitis).	
• Discuss the reason of loss of taste in covid 19.	

NEUROLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
Facial Nerve Palsy	Case -Based Learning
• Explain the signs and symptoms of Facial nerve Palsy	
• Examine Facial nerve on a simulated patient	

PHYSIOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Optics of eye	Interactive Lecture/ Small Group Discussion
• Explain the basic physiology of eye & its refractive surfaces	
• Discuss the physical principles of optics	
• Describe the mechanism of accommodation & its control	

2. Formation & circulation of aqueous humor	Interactive Lecture/ Case -Based Learning
• Describe the formation and circulation of aqueous humor	
• Explain the mechanism of regulation of intraocular pressure	
• Define glaucoma & its types	
• Explain pathophysiology of glaucoma.	
• List different types of glaucoma	
• Discuss the treatment plan of glaucoma	
3. Visual acuity & errors of refraction	Interactive Lecture/ Small Group Discussion
• Define visual acuity	
• Describe the errors of refraction (Myopia, hyperopia, astigmatism & their correction by using different lens systems)	
4. Photo-transduction	Interactive Lecture/ Small Group Discussion/ Self Directed Learning
• Describe the physiology of retinal layers	
• Explain photochemistry of vision (rhodopsin - retinal)	
• Describe the mechanism of activation of Rods	
5. Visual pathway & its lesions	
• Explain the neural circuitry of the Retina	
• Describe the physiology of visual pathway	
• Name the optic lesion associated with visual pathway	
6. Eye movements & its control	
• Explain the muscular control of eye movement	
• Describe the fixation movements of eye	
• Define accommodation reflex & pupillary light reflex	
7. Sense of hearing, mechanism of hearing	Interactive Lecture/ Small Group Discussion
• Describe the physiology of hearing & function of tympanic membrane & ossicular system	
• Define impedance matching & attenuation reflex	
• Explain the conduction of sound waves in the cochlea	
• Describe the function of the organ of Corti	
8. Auditory pathway	Interactive Lecture/ Small Group Discussion/ Practical
• Explain the auditory nervous pathway & abnormalities associated with it	
• Describe the function of cerebral cortex in hearing	
9. Sense of taste & smell	
• List the primary sensations of taste	
• Explain the mechanism of taste perception and its transmission into central nervous system	
• List the primary sensations of smell	
• Describe the stimulation of olfactory cells & its transmission into central nervous system	
10. Visual acuity & color vision	Interactive Lecture/ Small Group Discussion
• Define visual acuity	
• Determine the near and far visual acuity	
• List the refractive errors and their correction	
• Examine the color vision of a subject using Ishihara eye chart	
• Discuss the errors in color vision	

11. Perimetry	
• Describe various parts of Perimeter and their uses	Practical
• Define physiological blind spot	
• Interpret perimeter chart of a patient and tell if any abnormality is present	
• Identify lesions of the visual pathway by performing Perimetry	
12. Hearing test	
• Elaborate bone conduction and air conduction	Interactive Lecture /Case -Based Learning/ Practical
• Describe the principle of various tuning fork tests	
• Identify conductive and sensorineural deafness based on interpretation of tuning fork tests	
• List the three common types of deafness	
• Explain the signs & symptoms, of deafness	
• Discuss the diagnosis and treatment of deafness	
13. Smell and taste	
• List the basic sensation of smell	Practical
• Identify the abnormalities associated with perception of smell	
• Map the pathway of sense of smell	
• List the basic modalities of taste	
• Identify the abnormalities associated with sense of taste	
14. Mechanism of Phonation	
• Discuss the mechanism of Phonation	Interactive Lecture
15. Malnutrition	
• Explain the types of malnutrition	
• List 5 most common causes of malnutrition.	
• Discuss treatment plan of malnutrition	
16. Sense of Olfaction & Olfactory Pathway	
• List different types of olfactory sensation	Flipped classroom
• Explain the olfactory pathway	

RESEARCH METHODOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Non-probability sampling	Interactive Lecture/ Small Group Discussion
• Define Non-Probability Sampling	
2. Sampling technique of research synopsis	
• Explain Sampling technique of research synopsis	
3. Types of data & variables	
• Describe the types of data and variables	
4. Types of bias & confounding variables	
• Discuss the types of bias & confounding variables	
5. Sample size calculation	
• Calculate sample size on statistical software	
6. Data collection tool, Questionnaire development of research synopsis	
• Define research, its types and its importance	
• Discuss research questions	
• List characteristics of a good research question	
• Phrase a research question correctly	
• Develop Data collection tool (questionnaire development)	
• Discuss the ethical consideration in data collection	
7. Plan of analysis for synopsis	
• List the tools of data analysis	
• Discuss the types of data analysis & Statistical test used in data analysis	
8. Ethical consideration in data collection	
• Discuss the ethical consideration in data collection	
9. Informed consent form and budget gantt chart	
• Explain Informed consent form	
• Develop gantt chart for your synopsis	

LEARNING RESOURCES

SUBJECT	RESOURCES
ANATOMY	<p>A. <u>GROSS ANATOMY</u></p> <ol style="list-style-type: none"> 1. K.L. Moore, Clinically Oriented Anatomy 2. Neuro Anatomy by Richard Snell 3. https://www.kenhub.com/en/dashboard <p>B. <u>HISTOLOGY</u></p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather’s Functional Histology <p>C. <u>EMBRYOLOGY</u></p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 2. Langman’s Medical Embryology
BIOCHEMISTRY	<p><u>TEXTBOOKS</u></p> <ol style="list-style-type: none"> 1. Harper’s Illustrated Biochemistry 2. Lippincott’s Illustrated reviews of Biochemistry 3. Lehninger Principle of Biochemistry 4. Biochemistry by Devlin 5. Essentials of Medical Biochemistry by Mushtaq Ahmed (2 Volumes)
PHYSIOLOGY	<p>A. <u>TEXTBOOKS</u></p> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 2. Ganong ‘ S Review of Medical Physiology 3. Human Physiology by Lauralee Sherwood 4. Berne & Levy Physiology 5. Best & Taylor Physiological Basis of Medical Practice <p>B. <u>REFERENCE BOOKS</u></p> <ol style="list-style-type: none"> 1. Guyton & Hall Physiological Review 2. Essentials Of Medical Physiology by Jaypee 3. Textbook Of Medical Physiology by InduKhurana 4. Short Textbook Of Physiology by Mrthur 5. NMS Physiology



ASSESSMENT METHODS:

- **Best Choice Questions(BCQs)** also known as MCQs (Multiple Choice Questions)
- **Objective Structured Practical/Clinical Examination (OSPE or OSCE)**

Internal Evaluation

- Students will be assessed comprehensively through multiple methods.
- 20% marks of internal evaluation will be added to JSMU final exam. That 20% may include class tests, assignment, practicals and the internal exam which will all have specific marks allocation.

Formative Assessment

Individual department may hold quiz or short answer questions to help students assess their own learning. The marks obtained are not included in the internal evaluation

For JSMU Examination Policy, please consult JSMU website!

More than 75% attendance is needed to sit for the internal and final examination



LNH&MC EXAMINATION RULES & REGULATIONS

- Student must report to examination hall/venue, 30 minutes before the exam.
- **Exam will begin sharp at the given time.**
- No student will be allowed to enter the examination hall after 15 minutes of scheduled examination time.
- Students must sit according to their roll numbers mentioned on the seats.
- **Cell phones are strictly not allowed in examination hall.**
- If any student is found with cell phone in any mode (silent, switched off or on) he/she will be not be allowed to continue their exam.
- No students will be allowed to sit in exam without University Admit Card, LNMC College ID Card and Lab Coat
- Student must bring the following stationary items for the exam: Pen, Pencil, Eraser, and Sharpener.
- Indiscipline in the exam hall/venue is not acceptable. Students must not possess any written material or communicate with their fellow students.

SCHEDULE:

WEEKS	2nd YEAR	MONTH
WEEK 1	GIT & LIVER MODULE-I	28 th February 2022
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		31 st March 2022
WEEK 1	NEUROSCIENCE MODULE-I	4 th April 2022
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		
WEEK 7		26 th May 2022
WEEK 1	HEAD AND NECK & SPECIAL SENSES MODULE	31 st May 2022
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		
WEEK 7		22 nd July 2022
Mid Term Examination 30 th July 2022*		

*Final dates will be announced later