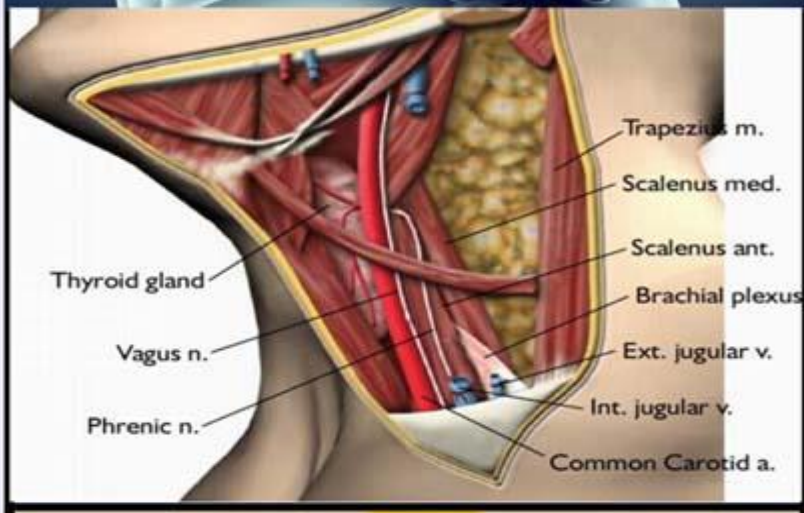
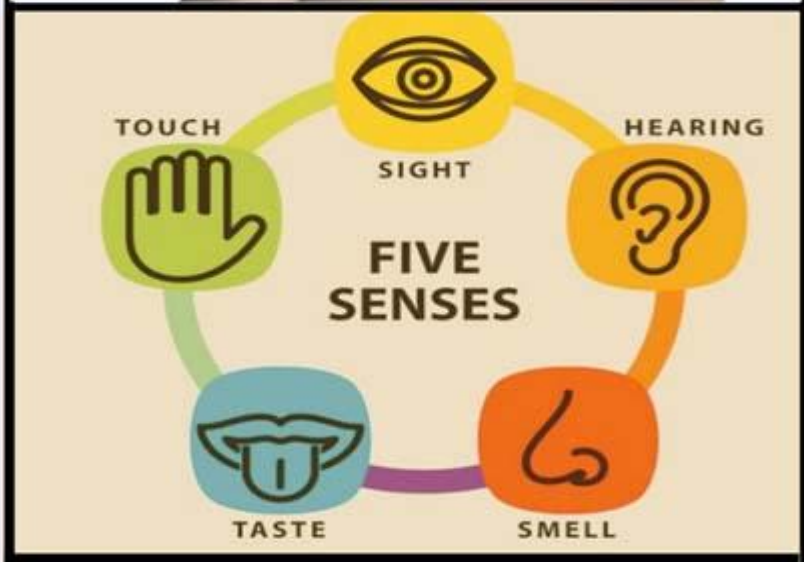
STUDY GUIDE- SECOND YEAR MBBS

- 13th March - 6th May 2023
- Duration: 7 Weeks

HEAD & NECK & SPECIAL SENSES MODULE





LIAQUAT NATIONAL HOSPITAL AND MEDICAL COLLEGE
Institute for Postgraduate Medical Studies & Health Science

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

Module name: **Head & Neck & Special Senses** *Year:* ***Two***

Duration: ***7 weeks(13th March to 6th May 2023)***

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

MODULE INTEGRATED COMMITTEE

MODULE COORDINATOR:	• Dr. Saima Athar (**Anatomy**)
CO-COORDINATORS:	• 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 • Professor Nighat Huda • Professor Sobia Ali • Dr. AfifaTabassum • Dr. Sana Shah Dr. M. Ahsan Naseer	
LNH & MC MANAGEMENT • Professor KU Makki, Principal LNH&MC • Dr. Shaheena Akbani, Director A.A & R.TLNH&MC	
STUDY GUIDE COMPILED BY: Department of Health Professions Education	

INTRODUCTION

WHAT IS A STUDY GUIDE?

Itisanaidto:

- Inform students how the student learning program of themodule 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 the 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 th 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, and journals, for students to consult 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 about examination policy, rules, and regulations.

CURRICULUM FRAME WORK:

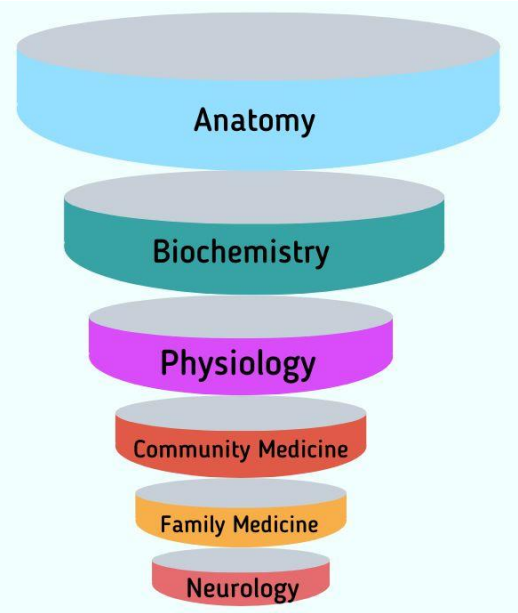
Students will experience an integrated curriculum similar to previous modules**.**

INTEGRATED CURRICULUM:

Comprises 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 beable to have a better understanding of basic sciences when they repeatedly learn about clinical examples.

Case-based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in the skills lab and physiotherapy department are characteristics of the 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 groups, 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):

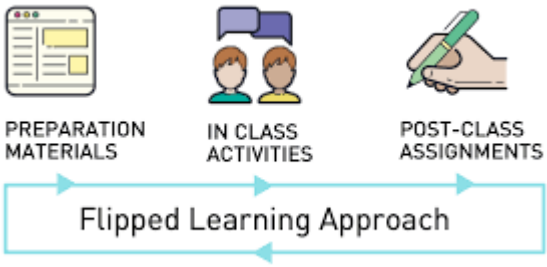
This format helps students to clarify concepts and acquire skills or attitudes. Sessions are structured with the help of specific exercises such as patient cases, interviews, or discussion topics. Students exchange opinions and apply knowledge gained from lectures, tutorials, and self-directed learning.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

CASE-BASEDLEARNING: A small group discussion format where learningis focused on a series of questions based on a clinical scenario. Students discuss and answer the questions by 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 modules are observed and practiced where applicable in the 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 the practice of introducing new content to classrooms, then assigning homework and projects to be completed by the students in dependently 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 for their learning through individual study, sharing and discussing with peers, and seeking information from Learning Resource Center, teachers, and resource persons within and outside the college. Students can utilize the time within the college's scheduled hours of self-study.

MODULE3: 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 correlations. 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 the skull	Tutorial / SGD
• List the parts of the skeleton (axial and appendicular)	
• Describe different bones and sutures of the skull	
2. Norma Frontalis, vertical, fontanelles with their clinical correlation	
• Identify the views / norms of the skull.	
• List the bones contributing to norma Frontalis & Verticals	
• Describe features related to bones of both normas	
• Relate the contents with the respective foramina	
• Identify the sutures and fontanelles on Norma verticalis	
• Discuss the clinical importance of fontanelles	
3. Pharyngeal apparatus & its anomalies	Interactive Lecture/ Case-Based Discussion
• Define pharyngeal arches, pouches, clefts, and membranes	
• Describe the derivatives of each arch (Muscle, bones, cartilage)	
• Describe the fate of pouches, clefts, and membranes	
• Describe the common anomalies of the pharyngeal apparatus	
4. Scalp & its layers	Interactive Lecture
• Describe the extent/boundaries and five layers of the scalp	
• Describe the nerves and vessels of the scalp and their clinical correlates	
5. Norma Lateralis & occipitalis	Practical
• 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	Interactive Lecture
• Describe the formation of facial prominences	
• Discuss the formation of different parts of the face from the prominences	
• Define nasal placode and nasal pit & nasolacrimal groove	
• Discuss the most common anomalies of a face (cleft lip)	
7. Face (Muscles, Nerves: Extra Cranial Part of V &VII)	
• Describe the boundaries of the face	
• Enumerate the muscles and innervation of the face	
• Discuss the action of the muscles of the face	
• Discuss the course and distribution of CN-V and extracranial part of CN- VII	
• Describe the applied anatomy of a face (Bell's palsy)	

8. Norma Basalis (anterior and middle part)	Practical
• List the bones forming the base of the skull	
• Describe an anterior and middle part of the base of the skull	
• Identify different foramina present at the base of the skull	
• Name the structures passing through these foramina	
9. Arteries, veins & lymphatic of the face	Interactive Lecture
• Describe the arterial supply of the face, the major veins ofthe face, and the formation and fate of the retromandibular vein	
• Explain the lymphatic drainage of the face	
• Discuss the clinical correlation (Danger area of the face)	
10. Norma Occipitalis & posterior part of Basalis (Demonstration)	
• List the bones forming the posterior aspect & base of the skull	
• State the details of the posterior part of the base of the skull	
• Describe different for amina & structures passing through them	
11. Orbital cavity and its contents	Interactive Lecture
• Describe the boundaries & content of orbital cavity	
• Enumerate the relations of the orbital cavity	
• Describe the location, relations, and connections of ciliary ganglion	
• Define the disorders associated with ciliary ganglion	
12. Eyelid & Lacrimal Apparatus	Interactive Lecture
• Describe the Eyelid and its parts	
• Explain the Innervation and blood supply of eyelids	
• Describe parts of the lacrimal apparatus	
• Define the diseases of lacrimal apparatus	
13. Eyeball and Muscles	Interactive Lecture/Hands-on small group session
• Explain the gross anatomical features of the eye ball	
• Discuss different coats and compartments 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 the eye from neural and non-neural components	
• Tabulate the structures which develop from the optic cup, neural crest cells, and surface ectoderm	
• Explain the development of the iris, ciliary bodies, lens, cornea, eyelid, and lacrimal gland	
• Discuss the common congenital anomalies of the eye	
• Dissect layers of the eyeball.	
• Explain the anatomical organization of tunics of the eyeball	
15. Cranial Nerves I - VI & their clinical correlation	Interactive Lecture
• 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 the mandible and hyoid bone	Interactive Lecture
• Describe parts of the 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 the mandible	
• Discuss the applied anatomy of the mandible	
• Describe the location and vertebral level of the hyoid bone	
• Describe the parts of the hyoid bone	
• Explain the attachments on the hyoid bone	
17. Temporal Fossa & Temporomandibular Joint	Interactive Lecture/Case-Based Discussion
• Describe the boundaries of the temporal fossa	
• List the contents of the 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 the Temporomandibular joint	
18. Infratemporal Fossa & Pterygopalatine Fossa	Interactive Lecture
• Describe the boundaries of the Infratemporal fossa	
• List the contents of the Infratemporal fossa	
• List the communications of Infratemporal fossa	
• Describe the contents and boundaries of Pterygopalatine fossa	
• Discuss Pterygopalatine ganglion and its connections	
• List the communications of Pterygopalatine fossa	
19. Cranial Nerves VII to XII & their clinical correlation	Case-Based Discussion
• List the functional components of these nerves	
• Describe their intra and extra-cranial course	
• Discuss their innervations	
• Discuss the common lesions and their clinical presentation	
• Demonstrate the clinical testing of these nerves	
20. Gross anatomy & histology of the oral cavity	Interactive Lecture/ Practical
• 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, and organization of oral mucosa	
• Discuss the type and components of oral epithelium	
• Discuss the histology of lips, cheek, gums, and palate	
21. Gross anatomy of the tongue	Interactive Lecture
• Identify the gross anatomical features of the tongue	
• Describe the intrinsic muscles and extrinsic musculature of the tongue and their movements	
• Discuss the blood supply, innervation, and lymphatic drainage of the tongue and the clinical conditions associated with it	

22. Hard and Soft Palate	
• Discuss the boundaries, muscle attachments, and mucosal coverings of the hard and soft palate	
• Discuss the function of the hard and soft palate during the 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 the parotid gland	
• List the structures passing through it	
• Describe the facial nerve and its branches in the mass of the parotid gland	
• Describe the origin, course, and size of the 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 the development of the 3 salivary glands	
• Discuss the embryonic development of the 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 the external nose, boundaries, blood & nerve supply	Interactive Lecture/ Small Group Discussion
• Describe the features of the external nose	
• Describe the boundaries of the 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	Interactive Lecture/ Small Group Discussion/ Practical
• Enumerate the epithelia of the nasal cavity	
• 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 the development of different parts of the nose and para-nasal sinuses	
• Describe congenital anomalies associated with their development	
30. Gross & Histology: External and Middle Ear	Interactive Lecture/ Practical
• Discuss the division of the ear into the external, middle, and internal ear	
• Describe the parts of the external ear and the boundaries & content of the middle ear cavity	
• Explain the histological features of parts of the external and middle ear	
• Discuss the functions of the external and middle ear as an organ for hearing	
• List the vascular supply and innervation of the 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 the 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 the carotid sheath at different levels & its important relations	
• Describe the platysma muscle, its innervation, and action	
32. Anterior Triangle of Neck	Interactive Lecture
• Discuss the division of triangles of the neck	
• List the subdivisions of the anterior triangle	
• Describe the boundaries and contents of sub-divisions of the anterior triangle i.e. Sub mental, Sub-mandibular, Muscular & Carotid	
33. Submandibular region &Submandibular gland	Interactive Lecture
• Describe the boundaries of the Sub-mandibular triangle	
• List the contents of the Sub-mandibular triangle	
• Describe the anatomy of the Sub-mandibular salivary gland	
• Describe the emergence and course of Wharton's duct and its relation with the lingual nerve.	
• Describe the location & connections of Sub-mandibular ganglion	
• Describe the location and area of drainage of Sub-mandibular lymph nodes	
34. Posterior triangle of the neck, Cervical Plexus & Cranial Nerve XI	CBD
• Discuss briefly the division of the neck into anterior and posterior triangles	
• Describe the boundaries of the posterior triangle of the neck	
• List the contents of the posterior triangle of the neck	
• Discuss the formation, branches, and functions of the cervical plexus	
• Discuss the origin, course, branches, and functions of cranial nerve XI	
• Discuss the clinical conditions associated with a posterior triangle of the neck, cervical plexus, and cranial nerve XI	
35. Pharynx & Tonsils	Interactive Lecture/ Small Group Discussion
• Discuss the morphology, location, and extent of the pharynx	
• Explain the division of the pharynx into Nasopharynx, Oropharynx & Laryngopharynx	
• Describe the pharyngeal and palatine tonsils	
• Discuss the origin, insertion, and actions of pharyngeal muscles	
• Discuss the significance of Pharyngeal and Oropharyngeal isthmus.	
• Discuss the innervation and blood supply of the pharynx along with the associated clinical conditions	
36. Gross anatomy of thyroid & parathyroid gland	Interactive Lecture/ Small Group Discussion
• Explain the gross anatomy of the thyroid & parathyroid gland	
• Discuss the blood supply and nerve supply of the thyroid and parathyroid gland	
• Relate the clinical anatomy of the thyroid and parathyroid gland with the relevant conditions	
37. Gross & histology of larynx	
• Explain the gross anatomy of the larynx	
• Discuss the blood supply, nerve supply, and clinical anatomy of the larynx	
• Describe the histological features of the larynx	

38. Development of Thyroid, Parathyroid, Larynx and Thymus	Interactive Lecture
• Describe the developmental anatomy of the thyroid, parathyroid, larynx, and thymus	
• Discuss congenital anomalies associated with their development	
39. Blood vessels and Lymphatics drainage of head and neck	
• Describe the major vessels of the 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	Small Group Discussion
• Describe the parts of the internal ear	
• Describe the histological features of the parts of the internal ear	
• Discuss the functions of the internal ear as an organ for hearing and balance	
• Discuss the clinical conditions associated with internal ear	
41. Development of Ear	Interactive Lecture
• Explain the development of external, middle, and internal ear	
• Discuss congenital deafness and other anomalies of the ear	
42. Integrated lecture on the auditory pathway	
• Discuss the components of the auditory pathway	
• Describe the function of different parts of the auditory pathway	
• Describe the clinical conditions associated with the auditory pathway	
43. Surface anatomy of head and neck (Facial Artery and Parotid Gland)	Tutorial
• Trace the course of the facial artery in the face	
• Palpate the facial artery	
• Identify the landmarks of borders and surfaces of the parotid gland	
• Palpate the Parotid gland	
• Trace the course and opening of the parotid duct	
44. Histology of Tongue	Practical
• Identify the microscopic slide of the tongue based on histology	
• Describe the different layers of the tongue	
• Describe different types of lingual papillae	
• Describe different glands of the tongue	
45. Histology of salivary gland	
• Identify the histological slide of the salivary gland	
• Describe the histological appearance of the salivary gland	
• Describe the different types of acini	
46. Histology of Eye Ball	
• Identify the histological features of the eyeball	
• Describe the histological feature of each coat of the eyeball	
• Describe the histology of the cornea and lens	
• Discuss the arrangement and composition of the layers of the retina	
47. Histology of Nasal Cavity, respiratory & olfactory epithelia	
• Identify various parts on slides	
• Describe the histological characteristics of each part	

BIOCHEMISTRY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Introduction to nutrition	Interactive Lecture/ Small Group Discussion
• Discuss nutrition, nutrients, BMI, RDA and RMR	
• Discuss the biochemical importance of a Balanced diet	
• Discuss the basic food groups	
• List the essential nutrients and their importance in the diet	
• Discuss the dietary sources and recommendations for 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	
2. Nutritional importance of dietary carbohydrates	Interactive Lecture
• Explain the biochemical importance of dietary carbohydrate	
• Discuss a 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	
• 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	
• Explainthe clinical presentation of the patient having PEM.	
4. Nutritional importance of dietary lipids	Interactive Lecture
• 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 the development of atherosclerosis	
• Discuss the clinical significance of dietary lipids (Metabolic syndrome, Atherosclerosis)	
•List the common causes of steatorrhea	
•Explain the clinical presentation and treatment of a patient with lipid malabsorption	

5. Vitamin A	Interactive Lecture
• 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 the visual cycle	
• List the sources and daily requirements 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 a 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 the 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	Practical / Small Group Discussions
• list the common diseases of the nasal cavity (rhinitis, nasal obstruction,epistaxis)	
• Describe the clinical presentation of common diseasesof the 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 the throat (Tonsilitis and Pharyngitis).	
• Discuss the reason for 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 the Facial nerve on a simulated patient	

PHYSIOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Optics of the eye	Small Group Discussion / Simulation/SDL
• Explain the basic physiology of the 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 the pathophysiology of glaucoma.	
•List different types of glaucoma	
•Discuss the treatment plan for 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 the 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 the visual pathway	
• Name the optic lesion associated with the visual pathway	
6. Eye movements &their control	
• Explain the muscular control of eye movement	
• Describe the fixation movements of the eye	
• Define accommodation reflex & pupillary light reflex	
7. Sense of hearing, mechanism of hearing	Tutorial
• Describe the physiology of hearing & function of tympanic membrane & ossicular system	
• Define impendence 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/
• Explain the auditory nervous pathway & abnormalities associated with it	
• Describe the function of the cerebral cortex in hearing	
9. Sense of taste & smell	

• List the primary sensations of taste	Tutorial
• Explain the mechanism of taste perception and its transmission into the central nervous system	
• List the primary sensations of smell	
• Describe the stimulation of olfactory cells & its transmission into the central nervous system	
10. Visual acuity & color vision	Practical / 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 an Ishihara eye chart	
• Discuss the errors in color vision	
11. Perimetry	Practical / Small Group Discussion
• Describe various parts of the Perimeter and their uses	
• Define physiological blind spot	
• Interpret the perimeter chart of a patient and tell if any abnormality is present	
• Identify lesions of the visual pathway by performing Perimetry	
12. Hearing test	Interactive Lecture /Case-Based Learning/ Practical
• Elaborate bone conduction and air conduction	
• Describe the principle of various tuning fork tests	
• Identify conductive and sensor neural deafness based on the 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	Lecture
• List the basic sensation of smell	
• Identify the abnormalities associated with the perception of smell	
• Map the pathway of the sense of smell	
• List the basic modalities of taste	
• Identify the abnormalities associated with a sense of taste	
14. Mechanism of Phonation	Interactive Lecture
• Discuss the mechanism of Phonation	
15. Malnutrition	
• Explain the types of malnutrition	
• List 5 most common causes of malnutrition.	
• Discuss the treatment plan for malnutrition	
16. Sense of Olfaction & Olfactory Pathway	Flipped classroom
• List different types of olfactory sensation	
• 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 the Sampling technique of the 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 tests 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 the Informed consent form • Develop a Gantt chart for your synopsis	

LEARNING RESOURCES

SUBJECT	RESOURCES
ANATOMY	**A. GROSS ANATOMY** 1. K.L. Moore,Clinically Oriented Anatomy 2. Neuro Anatomy by Richard Snell 3.https://www.kenhub.com/en/dashboard **B. HISTOLOGY** 1. B. YoungJ.W.Health Wheather's Functional Histology **C. EMBRYOLOGY** 1. KeithL. Moore.The Developing Human 2. Langman's Medical Embryology
BIOCHEMISTRY	**TEXT BOOKS** 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	**A. TEXT BOOKS** 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 **B. REFERENCE BOOKS** 1. Guyton & Hall Physiological Review 2. Essentials Of Medical Physiology by Jaypee 3. Text book Of Medical Physiology by InduKhurana 4. Short Textbook Of Physiology by Arthur 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, assignments, practicals, and the internal exam which will all have specific marks allocation.

Formative Assessment

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

For JSMU Examination Policy, please consult the JSMU website!

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

LNH&MC EXAMINATION RULES & REGULATIONS

- Students must report to the examination hall/venue, 30 minutes before theexam.
- **The exam will begin sharply at the giventime.**
- No student will be allowed to enter the examination hall after 15 minutes of the scheduled examinationtime.
- Students must sit according to their roll numbers mentioned on theseats.
- **Cell phones are strictly not allowed in the examination hall.**
- If any student is found with the cell phone in any mode (silent, switched off, or on) he/she will not be allowed to continue their exam.
- No students will be allowed to sit in the exam without University Admit Card, LNMC College ID Card, and Lab Coat
- Students must bring the following stationary items for the exam: Pen, Pencil, Eraser, and Sharpener.
- In discipline 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	19th December 2022
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		21st January 2023
WEEK 1	NEURO SCIENCE MODULE-I	23rd January 2023
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		
WEEK 7		11th March 2023
WEEK 1	HEAD AND NECK & SPECIAL SENSES MODULE	13th March 2023
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		
WEEK 7		6th May 2023
Mid-Term Examination*		

*Final dates will be announced later