BAQAI MEDICAL COLLEGE
INTEGRATED CURRICULUM
SPIRAL I
2ND YEAR MBBS
STUDY GUIDES

BAQAI MEDICAL COLLEGE
BAQAI MEDICAL UNIVERSITY
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The landscape of medical education is evolving rapidly, embracing a shift from teacher-centered to student-centered learning approaches across undergraduate and postgraduate levels. In response to these advancements, this study guide for the integrated modular system has been meticulously crafted to align with these changes, following the SPICES model of curriculum development.

1. Student-centered Approach: The course organization, content, and activities are predominantly structured around student engagement and empowerment.

2. Problem-Oriented Learning: Case-based learning is integrated into our modules to foster problem-solving skills among students.

3. Explicit Integration: Basic sciences content is seamlessly integrated with pre-clinical and clinical subjects to provide a comprehensive understanding of medical concepts.

4. Community Engagement: Field visits to satellite clinics and community healthcare centers offer students firsthand exposure to community-related health issues.

5. Elective Opportunities: Students are encouraged to pursue electives within our institution and other institutes to broaden their learning experiences.

6. Structured Program: Our curriculum unfolds systematically, starting from foundational medicine concepts and encompassing all facets of medical sciences in Spiral integration.

Therefore, this study guide serves as a comprehensive resource, offering content-related information, guidance on learning strategies, curriculum management, and outlines of student activities. It is designed to support the undergraduate MBBS program in a multidimensional manner, facilitating holistic learning and development.

Baqai Medical University

To evolve as a nucleus for higher learning with a resolution to be socially accountable, focused on producing accomplished health care professionals for services in all spheres of life at the national and global level.

University is dedicated to the growth of the competencies in its potential graduates through dissemination of knowledge for patient care, innovation in scholarship, origination of leadership skills, use of technological advancements, and providing noteworthy contributions to society through commendable service.

Baqai Medical College

The mission of the Baqai Medical College is to produce medical graduates who are responsible and accomplished individuals and have skills for problem-solving, clinical judgment, research, and leadership for a medical practice at the international level and are also aware of the health problems of the less privileged rural and urban population of Pakistan.

OUTCOMES OF THE MBBS PROGRAM

The Baqai University graduate of the MBBS program will be able to:

- **Write focused history, perform physical examination, and formulate a diagnosis and management plan for common health problems.**
- **Use knowledge of basic and clinical sciences for patient care**
- **Apply evidence-based practices for protecting, maintaining, and promoting the health of individuals, families, and community.**
- **Identify the emerging health issues, review literature and conduct evidence based research.**
- **Demonstrate leadership and communication skills as per situational needs for quality health service.**
- **Demonstrate lifelong learning with empathy and cultural sensitivity in health care.**

POLICIES AND PROCEDURES

Code of Conduct and Maintenance of Discipline of Students RegulationsUnder section 25(e) BMU Act.1996

All University students shall be under the full disciplinary control of the University. No studentsshall be allowed to participate in politics. The action against the act of indiscipline shall include fines, debarring from attending class, and cancellation of admission, depending on the gravity of indiscipline.

The following shall constitute acts of indiscipline for which action may be taken against the student or students:

(a) Breach of any rule of public morals, such as:

- Use of indecent or filthy language;
- Use of immodest dress:
- Use of undesirable remarks or gestures; and
- Disorderly behavior, such as shouting, abusing, quarrelling, fighting andinsolence.

(b) Defiance of authority

(c) Action, defamatory of and derogatory to Islam

(d) Immorality

(e) Being found under the effect of an intoxicant or misuse of drugs, including marijuana, LSD,dope, and other opioids.

(f) False personation or giving false information or willful suppression of information,cheating, or deceiving.

(g) Inciting or staging a walk-out, a strike, or an unauthorized procession.

(h) Shouting of slogans derogatory to the prestige of the University or the reputation of itsofficers or teachers.

(i) Visiting without a pass place which are not to be visited without a pass.

(j) Visiting places declared out of bounds for students.

Every student must carry his / her Identity Card, which will be open to examination and will be demanded at the time of entrance to the various University Faculties and functions.

No student will be admitted to the facilities of the library, transport, or the canteen unless he /she is in possession of the Identity Card

INTRODUCTION TO THE INTEGRATED CURRICULUM(SPIRAL- I) FOR 2nd YEAR MBBS

Welcome to the Integrated Curriculum **SPIRAL-I** represents the foundational phase of the MBBS curriculum, implemented during the first two years of medical education. It includes the core basic science disciplines Anatomy, Physiology, and Biochemistry, which are taught through an integrated, organ-system–based approach. This curriculum is designed to provide students with a strong scientific foundation by linking the structure, function, and biochemical processes of the human body. Through horizontal integration of these subjects, students develop a comprehensive understanding of normal body mechanisms and the basic principles underlying health and disease.

The SPIRAL-I curriculum also emphasizes the integration of basic sciences with preclinical and early clinical concepts, allowing students to appreciate the clinical relevance of foundational knowledge from the beginning of their medical training. By organizing learning around organ systems and encouraging collaboration among different disciplines, the curriculum promotes critical thinking, conceptual understanding, and application of knowledge. This integrated approach prepares students for the subsequent phases of the MBBS program and supports the development of competent and well-prepared future healthcare professionals.

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INTRODUCTION OF THE INTEGRATED MODULES

INTEGRATED CURRICULUM - SPIRAL I

2nd YEAR MBBS

S. No	Modules	Duration
1st Module	RENAL MODULE	6 Weeks
2nd Module	ENDOCRINE MODULE	6 Weeks
3rd Module	REPRODUCTION MODULE	6 Weeks
4th Module	HEAD & NECK MODULE	8 Weeks
5th Module	NEUROSCIENCE MODULE	10 Weeks

TEACHING FACULTY FOR 2nd YEAR MBBS

DEPARTMENT OF ANATOMY		
Name	***Designation***	***Days /Time***
Prof. Dr. Syed Inayat Ali drinayatali@baqai.edu.pk	Chairman & Professor	Monday 9:30-10:30
Prof. Dr. Shahid Pervez sshaikh@baqai.edu.pk	Professor	Thursday 10:30-11:30
Dr. Tayyaba Kazmi drtayyabakazmi@baqai.edu.pk	Associate Professor	Tuesday 10:30-11:30
Dr. Syed Samiullah syedsamiullah@baqai.edu.pk	Assistant Professor	Wednesday 11:30-12:30
Dr.Fahmi dr.fahmi@baqai.edu.pk	Lecturer	Friday 9:30-10:30

DEPARTMENT OF PHYSIOLOGY		
Name	***Designation***	***Days /Time***
Prof. Dr. Qamar Aziz drqamaraziz@baqai.edu.pk	Chairman & Professor	Monday 9:30-10:30
Dr. Saba Abrar drsabaabrar@baqai.edu.pk	Associate Professor	Thursday 10:30-11:30
Dr. Adnan Ahmed dradnanahmed@baqai.edu.pk	Associate Professor	Tuesday 10:30-11:30
Dr. Sobia Nabeel sobianabeel@baqai.edu.pk	Assistant Professor	Monday 10:30-11:30
Dr. M.Ali muhammadali@baqai.edu.pk	Assistant Professor	Wednesday 11:30-12:30
Dr Rizwana Yaseen rizwanayaseen@baqai.edu.pk	Senior Lecturer	Friday 9:30-10:30

DEPARTMENT OF BIOCHEMISTRY		
Name	***Designation***	***Days /Time***
Prof.Dr Asher Fawwad asherfawwad@baqai.edu.pk	HOD & Professor	Monday 9:30-10:30
Dr. Kahkashan Parveen dr.kahkashan@baqai.edu.pk	Associate Professor	Tuesday 10:30-11:30
Dr Iffat Ara Aziz iffataziz@baqai.edu.pk	Assistant Professor	Wednesday 11:30-12:30
Dr. Benish Zafar benishzafar@baqai.edu.pk	Assistant Professor	Monday 10:30-11:30
Mr. Muhammad Jamal jamal@bmu.edu.pk	Senior Lecturer	Friday 10:30-11:30
Dr Farhan Sabir farhansabir@baqai.edu.pk	Lecturer	Thursday 9:30-10:30
DEPARTMENT OF PATHOLOGY		
Name	***Designation***	***Days /Time***
Dr.Rozina Khan drrozinakhan@baqai.edu.pk	Lecturer	Tuesday 10:30-11:30
DEPARTMENT OF PHARMACOLOGY		
Name	***Designation***	***Days /Time***
Dr Sehrish Mehmood sehrishmehmood@baqai.edu.pk	Assistant Professor	Monday 9:30-10:30

DEPARTMENT OF COMMUNITY MEDICINE		
Name	***Designation***	***Days /Time***
Prof. Dr. Nazia Jameel drnaziajameel@baqai.edu.pk	HOD & Professor	Monday 9:30-10:30
Dr. Syed Nauman Raza naumanraza@baqai.edu.pk	Assistant Professor	Wednesday 10:30-11:30

DEPARTMENT OF SURGERY & ALLIED		
Name	***Designation***	***Days /Time***
Dr. Sidra Abbass drsidraabbass@baqai.edu.pk	Associate Professor	Tuesday 9:30-10:30

DEPARTMENT OF GYNECOLOGY & OBSTETRICS		
Name	***Designation***	***Days /Time***
Dr. Nikhat Ahsan nikhatahsan@baqai.edu.pk	Associate Professor	Monday 9:30-10:30

DEPARTMENT OF MEDICAL EDUCATION		
Name	***Designation***	***Days /Time***
Dr. Syeda Maheen Ali s.maheen.ali@baqai.edu.pk	Senior Lecturer	Tuesday 9:30-10:30

DEPARTMENT OF PEDIATRIC MEDICINE		
Name	***Designation***	***Days /Time***
Dr. Sidra Saleem sidrasaleem@baqai.edu.pk	Senior Registrar	Wednesday 9:30-10:30

DEPARTMENT OF RESEARCH		
Name	***Qualifications***	***Days /Time***
Maria Rahim maria.rahim@baqai.edu.pk	M.Phil. (Biostats)	Monday 9:30-10:30

DEPARTMENT OF MEDICINE		
Name	***Designation***	***Days /Time***
Dr. Sumayyah Liaquat sumayyah@baqai.edu.pk	Assistant Professor	Tuesday 10:30-11:30

DEPARTMENT OF FORENSIC MEDICINE		
Name	***Designation***	***Days /Time***
Dr. Jan e Alam janealam@baqai.edu.pk	Assistant Professor	Wednesday 11:30-12:30

DEPARTMENT OF OPHTHALMOLOGY		
Name	***Designation***	***Days /Time***
Prof. Mir Amjad Ali miramjadali@baqai.edu.pk	HOD & Professor	Tuesday 09:30-10:30

DEPARTMENT OF OTORHINOLARYNGOLOGY		
Name	***Designation***	***Days /Time***
Prof. Dr. Muhammad ShaheenMalik drsmalik@baqai.edu.pk	HOD & Professor	Wednesday 09:30-10:30

DEPARTMENT OF RADIOLOGY		
Name	***Designation***	***Days /Time***
Dr. Aneel Kumar dr.aneelkumar@baqai.edu.pk	HOD & Assistant Professor	Thursday 09:30-10:30

DEPARTMENT OF BEHAVIOURAL SCIENCES		
Name	***Designation***	***Days /Time***
Dr. Azra Shaheen azra@baqai.edu.pk	Associate Professor	Friday 09:30-10:30

TEACHING METHODOLOGIES

Interactive Lectures

Case-based Learning

Student's Presentations

Self-directed learning

Small group discussions

Practical demonstration

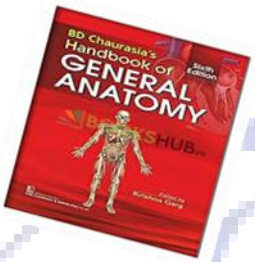
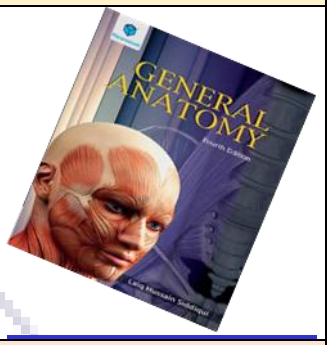
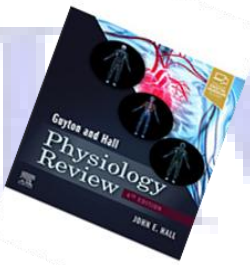
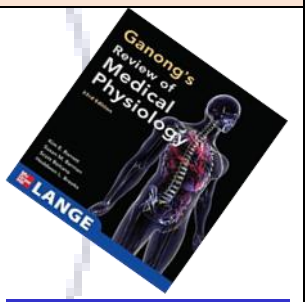
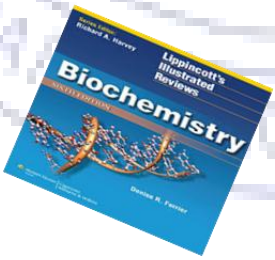
SUGGESTED READING BOOKS

REFERENCES BOOKS AND OTHER READING RESOURCES

Gross Anatomy	• Laiq Hussain Handbook of GENERAL ANATOMY (9TH Edition) • Snell's Clinical Anatomy by Regions (11th Edition) • Grey's Anatomy (42nd Edition) • KLM Clinically Oriented Anatomy (11th Edition) • Netter Atlas of Human Anatomy
Embryology	• Langman's Embryology(15TH Edition)
Histology	• Laiq Hussain Histology(9th Edition)
Physiology	• Guyton and Hall. Textbook of Medical Physiology, 16th Edition. • Ganong's Review of Medical Physiology, 27th Edition.
Biochemistry	• Lippincott Illustrated Reviews: Biochemistry (9th Edition) • Harper's Illustrated Biochemistry (33rd Edition) • Textbook of Medical Biochemistry by MN Chatterjee & Rana Shinde (11th Edition) • DM Vasudevan – Textbook of Biochemistry (11th Edition)
Pathology	• Robin`sBasicPathology-11thEdition
Pharmacology	Essential • Bertram G. Katzung. Basic and Clinical Pharmacology, 16th Edition. 2017. • Katzung and Trevor's pharmacology Examination and Board Review 14th Edition 2015. Recommended • Lippincott's illustrated review of Pharmacology. 8th Edition. 2015.
Pakistan Studies	• Burki, Shahid Javed. State & Society in Pakistan, The Macmillan Press Ltd 1980. • Akbar, S. Zaidi. Issue in Pakistan's Economy. Karachi: Oxford Universi-ty Press, 2000. • SM. Burke and Lawrence Ziring. Pakistan's Foreign policy: An Histori-cal analysis. Karachi: Oxford University Press, 1993. • Mehmood, Safdar. Pakistan Political Roots & Development. Lahore, 1994. • Wilcox, Wayne.The Emergence of Bangladesh., Washington: American Enterprise, Institute of Public Policy Research, 1972.

	• Mehmood, Safdar. Pakistan KayyunToota, Lahore: Idara-e-Saqafat- e-Islamia, Club Road. • Amin, Tahir. Ethno - National Movement in Pakistan, Islamabad: Insti-tute of Policy Studies,Islamabad. • Ziring, Lawrence. Enigma of Political Development. Kent England: WmDawson& sons Ltd,1980. • Zahid, Ansar. History & Culture of Sindh. Karachi: Royal Book Company, 1980. • Afzal, M Rafique. Political Parties in Pakistan, Vol. I, II & III. Is-lamabad: National Institute of Historical and cultural Research, 1998.
Community Medicine	• Ilyas M, Public Health and Community Medicine, 7th Edition, Karachi, Pakistan, Time Publisher, 2007. • Maxcy-Rosenau-Last, public Health and Preventive Medicine, 13th Edition, USA, Prentice-Hall International Inc, 1992. • K.Park, Preventive and Social Medicine, 20th Edition, Jabalpur (India), M/s Banarsidas Bhanot, Publisher, 2009.
Medicine	• Davidson`s Principles and Practice of Medicine-22nd Edition
Clinical Examination	• Talley and O'Connor's Clinical Examination-6th Edition
Surgery	• Bailey and Love Short Practice of Surgery, 27th Edition • Last's anatomy 12th edition • Snell's anatomy by regions 10thedition
Research	• Introduction to Research in Health Sciences- Stephen Polgar, Shane A. Thomas. • Biomedical Research Proposal Writing- Syed Sharaf Ali Shah, Zarfshan Tahir, Rozina Karmaliani. • Epidemiology - Leon Gordis; Fifth Edition.
DME Leadership	• https://www.mededportal.org/publication/10610/
Paediatrics	• Nelson Textbook of Paediatrics, 21st edition. • Textbook of Paediatrics (PPA) Fifth edition. Basis of Paediatrics (Pervez Akbar Khan) 10th edition

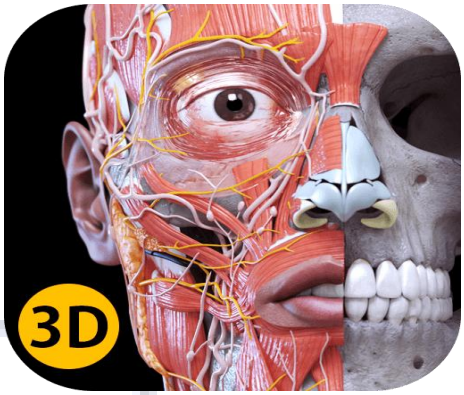
SUGGESTED READING BOOKS

ANATOMY			
BD Chaurasia's Handbook of General Anatomy 9th Edition Edited by Krishna Garg		**GENERAL ANATOMY** 7th Edition Laiq Hussain	
PHYSIOLOGY			
Physiology Review 5th Edition Guyton and Hall		**Ganong's Review of Medical Physiology** 27th Edition Kim E. Barrett, Susan M. Barman, Heddwen L. Brooks, and Jason X.-J. Yuan	
BIOCHEMISTRY			
Lippincotts Ilustrated Review Biochemistry 9th Edition Emine Ercikan Abali, Susan D. Cline, David S. Franklin & Susan M. Viselli		**Harper's Illustrated Biochemistry** 33rd Edition Peter J. Kennelly, Kathleen M. Botham, Owen P. McGuinness, and P. Anthony Weil	

SUGGESTED WEBSITES & SEARCH ENGINE

Medscape

https://www.medscape.com



ANATOMY 3D ATLAS

https://www.anatomy3datlas.com

PubMed

National Library of Medicine NLM

https://pubmed.ncbi.nlm.nih.gov

Google scholar

https://scholar.google.com

MedlinePlus®
Trusted Health Information for You

https://medlineplus.gov

NUS National University of Singapore | Yong Loo Lin School of Medicine

https://medicine.nus.edu.sg/pathweb

ASSESSMENT METHODS

1. *Formative Assessment*

- Assignment
- Quiz (face-to-face or online)
- Student Presentation
- Class participation in small group discussions and case-based learning sessions

1st Year MBBS Students are requested to maintain their practical journals for formative assessment.

2. *Summative Assessment*

- ***Modular Exam:***

As per the Assessment Policy of Baqai Medical College, Version 2.01 2025, an integrated modular exam will be conducted at the end of each module, including all subjects of basic medical sciences. The Integrated Module Examination will be conducted using the following assessment methods:

- MCQ
- SEQ
- OSPE

- ***Annual Exam:***
  - Internal Evaluation = 20%
  - Final Exam= 80%

    Theory: MCQs & SEQs

    Practical: Viva & OSPE

For further details, visit our website: Policy Manual | Baqai Medical University

Renal Module

INTRODUCTION TO MODULE – I

Module-1	
Renal Module	
System	Renal system
Duration	6 weeks (09th February 26 to 18th March 26)
Assessment Date	19th March 26 (Postponed, will be announced later)Study Guide
Assessment pattern	MCQs, SEQs & OSPE

- The Assessment dates are tentative (Subject to change)

MODULE RATIONALE

The Renal System Module is the first component in the second year of the MBBS program which is designed to provide students with an integrated understanding of the structure, function, and clinical significance of the kidneys and urinary tract. This module combines knowledge from anatomy, physiology, biochemistry, pathology, pharmacology, and clinical sciences to help students understand how the kidneys maintain fluid, electrolyte, and acid–base balance, remove metabolic waste products, and regulate blood pressure and homeostasis. Through this integrated approach, students develop the ability to correlate basic scientific concepts with common renal and urinary tract disorders, interpret relevant laboratory investigations such as urine analysis and renal function tests, and appreciate the clinical presentation and management principles of renal diseases. The module therefore prepares students for clinical application in later years of medical training while promoting analytical thinking and evidence-based understanding of renal health and disease.

MODULE LEARNING OUTCOMES

At the end of this module, the students of the 2nd year MBBS will be able to:

1. Associate the development and structural organization of the kidney and urinary tract, with their physiological roles in maintaining body homeostasis.
2. Describe the physiology and biochemical mechanisms of renal function related to glomerular filtration, tubular reabsorption and secretion and urine formation.
3. Appraise the clinical presentation and investigations of common renal and urinary tract disorders.

RENAL MODULE ALIGNMENT GRID

Topics With Objectives	Department	Duration	Teaching Strategy	Assessment
BODY FLUID & COMPARTMENTS At the end of this lecture, Second Year M.B.B.S. student will be able to: • Explain Fluid homeostasis • Define body fluids • Enumerate daily fluid losses from the body • Categorize the body fluid in the fluid compartments. • Differentiate the ionic concentration of intra & extra – cellular fluids. • Explain the process of estimation of fluids in different fluid compartments • Name the substances used to calculate body fluids • Define Donan's Gibbs effect	Physiology	60 minutes	Lecture	MCQs, SEQs
OSMOLARITY At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define Osmolarity, osmolality, osmotic pressure & osmole	Physiology	60 minutes	Lecture	MCQs, SEQs

Differentiate mole from osmole • Define osmolar solution • Explain the terms hypertonic, Isotonic & hypotonic fluids. • Give examples of each type of solution • Summarize maintenance of osmotic equilibrium b/w extra & intra– cellular fluids. • Explain the effects when RBC is placed in different solutions • Define Van't Hoff's Law • Define edema & its types • Define hyper and hyponatremia giving examples				
REGULATORY MECHANISMS OF FLUID AND ELECTROLYTE BALANCE At the end of this lecture, Second Year M.B.B.S. student will be able to: • Recall the compartments of ECF & ICF • State that ECF is divided into 4 compartments along with the amount of fluid found in each compartment	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• List the fluids which are classified as transcellular fluid. • Recognize that kidneys are the main organs involved in regulation of fluid and electrolyte balance • Describe neural and hormonal regulatory mechanisms that operate to maintain homeostasis of fluid • Identify the role of kinins & "atrial natriuretic peptide" in water and electrolyte balance				
WATER AND ELECTROLYTE AND IMBALANCE-1 <u>At the end of this lecture, Second Year M.B.B.S. student will be able to:</u> • Define water intoxication • Enumerate the causes of water intoxication • Describe the pathophysiology of water intoxication • Associate the clinical features and biochemical findings of water intoxication • State the treatment of water intoxication.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

WATER AND ELECTROLYTE AND IMBALANCE-2 At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define dehydration • Classify the types of dehydration as per Marriot's classification: • Enumerate the causes of primary and secondary dehydration • Describe the pathophysiology of each type of dehydration. • Associate the clinical features and biochemical findings of each type of dehydration. • State the treatment of primary and secondary dehydration.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
DEVELOPMENT OF URINARY SYSTEM I **At the end of this lecture, 2nd Year M.B.B.S. student will be able to:** • Describe the role of intermediate mesoderm in the formation of kidney. • Describe the development of kidney and excretory system step wise.	Anatomy	60 minutes	Lecture	MCQs, SEQs

DEVELOPMENT OF URINARY SYSTEM II **At the end of this lecture, 2nd Year M.B.B.S. student will be able to:** • Describe the development of collecting system. • Define the fate of the three progenitors of urinary system: Pronephros, Mesonephros And Metanephros.	Anatomy	60 minutes	Lecture	MCQs, SEQs
DEVELOPMENTAL ANOMALIES OF KIDNEY. At the end of this lecture, Second Year M.B.B.S. student will be able to: ▪ List the common anomalies of kidney and ureter. • Define polycystic kidney, accessory kidney, malrotation of kidney and renal agenesis. • Define ectopic kidney and horseshoe kidney.	Anatomy	60 minutes	Lecture	MCQs, SEQs
GROSS STRUCTURE OF KIDNEY-I At the end of this lecture, Second Year M.B.B.S. student will be able to: •Describe the location and gross structure of the kidney.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

•Discuss the relation of kidney. •List the coverings of kidney. •Define perinephric abscess.				
GROSS STRUCTURE OF KIDNEY-II At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the internal structure of the kidney. • Discuss the blood supply of kidney in detail, with clinical segmentation of kidney according to its blood supply. • Discuss the nerve supply of kidney with pathway of pain in renal colic. • Define renal calculi.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
HISTOLOGY OF KIDNEY-I At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the histological features of kidney (cortex & medulla). • Discuss the parts of a nephron and their types.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
HISTOLOGY OF KIDNEY-II At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the filtration barrier and its significance.s	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

• Describe juxtaglomerular apparatus, its location and significance. • Describe the arrangement of layers in ureter & their microscopic appearance.				
SLIDE OF KIDNEY: <u>At the end of this lecture, Second Year M.B.B.S. student will be able to:</u> • Analyze the slide by low and high magnification. • List the points of identification of histological features of kidney. • Recognize the parts of a nephron and their microscopic appearance. • Describe juxtaglomerular apparatus, their microscopic appearance.	Anatomy	120 minutes	Practical	OSPE
KIDNEY MODEL-1 <u>At the end of this lecture, Second Year M.B.B.S. student will be able to:</u> • Identify the side of the kidney. • Recognize the gross features of kidney. • Identify the internal parts of kidney. • Identify the arrangement of structures at the hilum of kidney	Anatomy	120 minutes	SGT	OSPE

THE FUNCTIONS OF KIDNEY I At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define a nephron & List the parts of nephron • List the functions of kidney. • Summarize urine formation (E=F-R+S) • Give examples of E=F-R+S • Explain the Importance of urea and Creatinine in renal functions	Physiology	60 minutes	Lecture	MCQs, SEQs
RENAL FUNCTIONS II At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define the importance of renal functions • Correlate clinical features with renal functions • List important clinical features differentiating acute from chronic renal failure • Identify scenarios focusing on renal functions	Physiology	60 minutes	Lecture	MCQs, SEQs
THE FUNCTIONS, TYPES OF NEPHRON At the end of this lecture, Second Year M.B.B.S. student will be able to: • Identify cortex and medulla & explain their importance	Physiology	60 minutes	Lecture	MCQs, SEQs

• Explain the physiological importance of different parts of the nephron • Name the different types of glomeruli • explain the functional arrangement of the glomerulus • define glomerular membrane (GM) • explain pores through which filtration occurs • explain selectivity of GM • explain the functional arrangement of the glomerulus • List the functions of different parts of nephron.				
JUXTAGLOMERULAR APPARATUS At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define the arrangement of Juxtaglomerular apparatus. • - Explain the functional significance of juxtaglomerular apparatus.	Physiology	60 minutes	Lecture	MCQs, SEQs
MACULA DENSA (MD) At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define and explain the location of Macula Densa • Summarize the stimulation of MD	Physiology	60 minute	Lecture	MCQs, SEQs

• Describe the release of renin from JG cells • Explain the role of JGA in long term regulation of BP				
INTRODUCTION RENAL DISEASES At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the pathophysiology of Cell Injury on Glomeruli, Renal Tubules and Renal Interstitium.	Pathology	60 minute	Lecture	MCQs
GFR –I At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define renal blood flow • Define renal plasma flow • Define filtration fraction • List the components of filtration membrane • Define glomerular filtration rate (GFR). • List the determinants of GFR. • Define & calculate the net filtration pressure. • Differentiate between plasma & the glomerular filtrate	Physiology	60 minutes	Lecture	MCQs, SEQs
INTRODUCTION TO RENAL DISEASES At the end of this lecture, Second Year M.B.B.S. student will be able to:	Medicine	60 minutes	Lecture	MCQs

• Classify different types of renal diseases on the basis of their underlying etiology				
GFR-II At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define filtration coefficient (Kf) • Explain how GFR is increased • Explain how GFR is decreased • Explain the role of hormones on • Define mesangial cells • Explain the role of mesangial cells in GFR • Tabulate factors affecting GFR	Physiology	60 minutes	Lecture	MCQs, SEQs
NEPHROTIC & NEPHRITIC SYNDROME At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define Nephrotic & Nephritic Syndromes. • Describe their Etio-Pathogenesis. • Differentiate between their Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs

CLINICAL PRESENTATION OF RENAL DISEASE At the end of this lecture, Second Year M.B.B.S. student will be able to: • Discuss Various clinical presentations of renal diseases	Medicine	60 minutes	Lecture	MCQs
RENAL FUNCTION TESTS-1 At the end of this lecture, Second Year M.B.B.S. student will be able to: • List the pre-requisites to be covered before performing renal function tests. • Recognize the indications for performing Renal Function Tests • State the importance of Renal Function Tests • Identify the importance of estimating serum uric acid, urea and creatinine levels. • Describe the components of physical examination or urine analysis. • List the clinical causes of abnormal findings in urine analysis.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
INVESTIGATIONS OF RENAL DISEASE At the end of this lecture, Second Year M.B.B.S. student will be able to:	Medicine	60 minutes	Lecture	MCQs

• Understand the importance of various hematological, biochemical test used to investigate renal diseases				
URINE ANALYSIS At the end of this lecture, Second Year M.B.B.S. student will be able to: • list the indications of urine analysis • Describe the method of collection of urine sample. • Discuss the physical, chemical and microscopic examination of urine. • Apply knowledge and interpretation of urinalysis including microscopic examination for casts, red blood cells, white blood cells, and crystals.	Medicine	60 minutes	Lecture	MCQs
NORMAL URINE D/R IN CHILDREN At the end of this lecture, Second Year M.B.B.S. student will be able to: • Reading Urine report	Pediatrics	60 minutes	Lecture	MCQs
RENAL AUTOREGULATION At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define feedback regulation of RBF & GFR	Physiology	60 minutes	Lecture	MCQs, SEQs

• Discuss AR preventing changes in renal excretion • Discuss tubuloglomerular feedback & AR of GFR. • Draw flow diagram of AR • State Dietary influence on AR				
TUBULAR REABSORPTION- I <u>At the end of this lecture, Second Year M.B.B.S. student will be able to:</u> • List specific transport mechanisms occurring in different parts of the nephron. • Tabulate filtration, reabsorption & excretion of substances by the nephron • Calculate rate of filtration of substances • List the substances totally reabsorbed in PCT • List partially reabsorbed substances in PCT	Physiology	60 minutes	Lecture	MCQs, SEQs
TUBULAR REABSORPTION II <u>At the end of this lecture, Second Year M.B.B.S. student will be able to:</u> • Explain Reabsorption of glucose & TMG • Define renal threshold of Glucose • Define TM of other substances.	Physiology	60 minutes	Lecture	MCQs, SEQs
Secretions Of Renal Tubules <u>At the end of this lecture, Second Year M.B.B.S. student will be able to:</u>	Physiology	60 minutes	Lecture	MCQs, SEQs

• List the names of substances secreted in renal tubules • Explain the secretion of H-ions in CT causing acidification of urine • Summarise the HCO3 reabsorption due to H-ion secretion in PCT • Explain Secretion of K-ions helps maintain ECF-K homeostasis • Summarise why K-secretion only in CT helps in acidifying urine				
COUNTER CURRENT MECHANISM-I At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define concentrated urine and conditions when concentrated urine is excreted • Identify the role of Juxta medullary nephrons in CCM • Define dilute urine and conditions when dilute urine is excreted • Define counter current mechanism • Define hyper osmolarity of medullary interstitium • Explain countercurrent multiplier system • Explain counter current exchanger system and its	Physiology	60 minutes	Lecture	MCQs, SEQs

importance & the role of "vasa recta" in maintenance of hyperosmolar medulla				
RENAL CHANGES IN PREGNANCY At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the anatomical changes occurring during pregnancy. • Describe the functional changes taking place during pregnancy. • Explain the reason of glucose in urine of pregnant woman.	Gynaecology & Obstetrics	60 minutes	Lecture	MCQs
COUNTER CURRENT MECHANISM-II At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define obligatory & facultative reabsorption of water • Explain how ADH promotes water reabsorption through the walls of the distal convoluted tubule and collecting duct. • Define AQUAPORINS • Summarize counter – current mechanism in developing medullary hyper osmolarity	Physiology	60 minutes	Lecture	MCQs, SEQs

RENAL INFECTIONS At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define & Classify Pyelonephritis. • Describe its Etio-Pathogenesis. • List its Clinical Manifestations & Complications. • Define & Classify Cystitis. • Describe its Etiology. • List its Clinical Manifestations & Complications.	Pathology	60minutes	Lecture	MCQs
UREA RECYCLING & REABSORPTION At the end of this lecture, Second Year M.B.B.S. student will be able to: • Cite how reabsorption occurs in nephrons • Explain the role of urea recirculation in causing hyper osmolarity of medullary interstitium • State the percentage contribution of urea in urinary osmolarity • State the normal and abnormal osmolarity of urine & compare with plasma osmolarity • Define diluting segment of nephron	Physiology	60 minutes	Lecture	MCQs, SEQs

• Summarize concentration changes in different segments of nephron				
URINE ANALYSIS OF ORGANIC CONSTITUENTS At the end of this lecture, Second Year M.B.B.S. student will be able to: • Detect the presence of the following organic constituents in the given sample: *urea,* and *creatinine* • Name the reagents to be used in the experiment of organic constituents. • Describe the principle of the reaction taking place in the experiment	Biochemistry	120 minutes	Practical	OSPE
NORMAL UCE IN CHILDREN: At the end of this lecture, Second Year M.B.B.S. student will be able to: • Discuss the reading and interpretation of renal profile report in children.	Pediatrics	60 minutes	lecture	MCQs
SPECTROPHOTOMETRY At the end of this lecture, 2nd Year M.B.B.S. student will be able to: • Describe the principle of spectrophotometry through its components.	Biochemistry	120 minutes	Practical	OSPE

• Relate the use of the electromagnetic radiation: visible light in the application of spectrophotometry. • Discuss the terms Incident light, transmitted light, transmittance and optical density. • Describe Lambert-Beers Law. • Relate the function of spectrophotometer with that of estimating the concentration of biomolecules in a fluid.				
ESTIMATION OF SERUM UREA <u>At the end of this lecture, Second Year M.B.B.S. student will be able to:</u> • Describe the principle of the reaction taking place in the experiment by means of the reagents used • Identify the importance of preparing a blank test tube. • Record the readings of transmittance of stock standard solutions and sample with the help of spectrophotometer. • Refer to the transmittance chart for obtaining optical density values of 'S' and 'T' test tubes	Biochemistry	120 minutes	Practical	OSPE

• Calculate the concentration of stock standard solutions of 'S' test tubes.				
HISTORY TAKING IN UROLOGY At the end of this lecture, Second Year M.B.B.S. student will be able to: • Explain general principles of history taking in urology. • Follow correct steps of recording history from patient. • Identify common urological diseases depending on history.	Surgery	60 minutes	Lecture	MCQs
URINE FORMATION At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define urine excretion • Calculate urine excretion by formula E=F+S-R • List substances which are reabsorbed • List substances which are secreted • List substances which are neither reabsorbed nor secreted and are excreted as filtered • List substances which are reabsorbed fully (100%) in PCT	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE

• List substances which are reabsorbed 60% in PCT • Define obligatory and facultative				
OBLIGATORY VOLUME OF URINE At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define and calculate obligatory volume of urine • Calculate the changes in OV when a person is forced to drink sea water after wreckage of ship • Explain the role of obligatory volume in excretion of solutes • Explain consumption of sea water will increase thirst • Calculate obligatory volume of urine in different conditions	Physiology	120 minutes	SGT	MCQs, SEQs
ROLE OF ADH IN FORMATION OF URINE At the end of this lecture, Second Year M.B.B.S. student will be able to: • Discuss the renal regulation of ECF. • Summarize role of ADH on tubular system in regulation of different ions.	Physiology	60 minutes	Lecture	. MCQs, SEQs

WATER REABSORPTION AND ROLE OF ADH IN DILUTION OF URINE At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define dilute urine • Explain dilution of urine • Explain the role of ADH in dilution of urine • Explain SIADH and dilution of urine • Define and calculate obligatory volume of • urine • Calculate the changes in OV when a person is forced to drink sea water after wreckage of ship • Explain the role of obligatory volume in in excretion of solutes • Explain consumption of sea water will increase thirst • Calculate obligatory volume of urine in different conditions • Define diabetes insipedes • Summarise OSMORECEPTOR-ADH feedback	Physiology	60 minutes	Lecture	MCQs, SEQs
RENAL FUNCTION TESTS-2 At the end of this lecture, Second Year M.B.B.S. student will be able to:	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• Classify the tests based on tubular function tests • Describe the procedure to perform concentration and water dilution tests. • Identify the precautions to be taken to perform these tests. • State the importance of performing 15-minute PSP test. • Describe the interpretation of the results of the tubular function tests				
OVERVIEW OF PHARMACOLOGY OF DIURETICS I At the end of this lecture, Second Year M.B.B.S. student will be able to: • Recall structure of nephron. • Describe the renal transport mechanisms. • Define diuretics • Discuss the mechanistic pharmacology of diuretics	Pharmacology	60 minutes	Lecture	MCQs
RENAL FAILURE At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define the terms, Uremia & Azotemia. • Define & Classify Renal Failure.	Pathology	60 minutes	Lecture	MCQs

• Describe their Etiology. • List their Clinical Manifestations & Complications.				
RENAL REGULATION OF ACID-BASE BALANCE At the end of this lecture, Second Year M.B.B.S. student will be able to: • State Acid base formula • List buffer systems of the body. Name the renal buffer • Discuss phosphate buffer in kidney • Describe the secretion of H-ions in PCT • Discuss the role of H-ions in indirect reabsorption of HCO3 in PCT	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
ELECTROLYTE ABNORMALITIES IN RENAL FAILURE At the end of this lecture, Second Year M.B.B.S. students will be able to: • Discuss various electrolytes abnormalities occurs in renal failure	Medicine	60 minutes	Lecture	MCQs
ACIDIFICATION OF URINE-1 At the end of this lecture, Second Year M.B.B.S. student will be able to:	Physiology	60 minutes	Lecture	MCQs, SEQs

• Discuss HPO4/H2PO4 ratio in PCT and DCT • Define acidification of urine • Enumerate mechanisms for regulation of ECF H-concentration • Describe secretion of H-ions in DCT & CT • Name the types of intercalated cells(ICC) in CT • State functions of (ICC) • Define NET GAIN OF HCO3 by the body • Discuss role of ammonia in acidification of urine				
WORKING PRINCIPLE OF PH At the end of this lecture, Second Year M.B.B.S. student will be able to: • Measure the pH of various solutions using pH indicators and meter. • Analyze the properties of buffer solutions.	Physiology	120 minutes	Practical	OSPE
URINARY TRACT INFECTION At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe UTI and various types of UTI • Describe pathophysiology of urinary tract infection.	Surgery	60 minutes	Lecture	MCQs

• Enumerate common organisms causing UTI. • Describe pathophysiology of UTI.				
ACIDIFICATION OF URINE-2 At the end of this lecture, Second Year M.B.B.S. student will be able to: • Name important stimuli for H-secretion • Name factors which increase H-secretion • Name factors which decrease H-secretion • Discuss the role of Kidneys in maintaining acid – base balance. • Define metabolic& respiratory abnormalities in acid base balance • Explain the secretion of H ions and K ions in competition to each other in CT	Physiology	60 minutes	Lecture	MCQs, SEQs
ESTIMATION OF PH OF URINE: At the end of this lecture, Second Year M.B.B.S. student will be able to: Estimate the pH of urine / water sample.	Physiology	120 minutes	Practical	OSPE

ACTION OF ALDOSTERONE ON DCT & CT At the end of this lecture, Second Year M.B.B.S. student will be able to: • List the actions of aldosterone on DCT and CT • Name the cells on which aldosterone acts • Explain the effect of aldosterone on Na reabsorption • Explain the effect of aldosterone on K secretion.	Physiology	60 minutes	Lecture	MCQs, SEQs
REGULATION OF K-SECRETION At the end of this lecture, Second Year M.B.B.S. student will be able to: • State the normal serum K levels in ECF and ICF • Define hypokalemia and hyperkalemia • Enumerate the problems associated with hypo and hyper conditions • Describe how the intake must be in balance with output • List factors which alter K distribution in ECF and ICF • Explain the role of insulin causing hypokalaemia • Summarise the reabsorption and secretion of K in different segments of nephrons	Physiology	60 minutes	Lecture	MCQs, SEQs

• Explain the role of principal cells in secretion of K • List important factors which stimulate K secretion • Cite the competitive secretion of K with H-ions				
URINE ANALYSIS OF INORGANIC CONSTITUENTS At the end of this lecture, Second Year M.B.B.S. students will be able to: • Detect the presence of the following inorganic constituents in the given sample: chloride, calcium and phosphorus. • Name the reagents to be used in the experiment of inorganic constituents. • Describe the principle of the reaction taking place in the experiment.	Biochemistry	120 minutes	Practical	OSPE
RENAL CLEARANCE At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define renal clearance • List different tests of renal functions • Define renal clearance formula • Define inulin clearance • State the importance of inulin clearance	Physiology	60 minutes	Lecture	MCQs, SEQs

• Discuss the method of creatinine clearance for estimating the kidney function. • State the role of PAH in measurement of renal blood flow • Calculate filtration fraction				
RENAL FUNCTION TESTS-3 At the end of this lecture, Second Year M.B.B.S. student will be able to: • Classify Renal Function Tests • Define 'clearance' • Explain briefly the procedure and interpretation of endogenous creatinine clearance test and inulin clearance test • Relate the importance of using Cr-EDTA clearance test in children	Biochemistry	60 minutes	Lecture	MCQs, SEQs
RENAL FUNCTION TESTS-4 At the end of this lecture, Second Year M.B.B.S. student will be able to: • Discuss about the tests based on Renal Plasma Flow. • State the normal range of renal plasma flow • Define PAH clearance and state its normal value • Define Filtration Fraction (FF) and state its normal range.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• Identify the significance of estimating Filtration Fraction in diagnosing kidney diseases.				
VASCULAR DISEASES OF KIDNEYS At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define Nephrosclerosis. • Describe its Etio-Pathogenesis. • List its Clinical Manifestations & Complications.	Pathology	60 minutes	lecture	MCQs
ESTIMATION OF SERUM CREATININE At the end of this practical, Second Year M.B.B.S. student will be able to: • Describe the principle of the reaction taking place in the experiment by means of the reagents used. • Identify the importance of preparing a blank test tube. • Record the readings of transmittance of stock standard solutions and sample with the help of spectrophotometer. • Refer to the transmittance chart for obtaining optical density values of 'S' and 'T' test tubes.	Biochemistry	120 minutes	Practical	OSPE

• Calculate the concentration of stock standard solutions of 'S' test tubes.				
INTERPRETATION OF VALUES OF SERUM UREA AND SERUM CREATININE At the end of this practical, Second Year M.B.B.S. student will be able to: • Draw the graphs to obtain the concentration of Serum creatinine and serum urea for the samples used in previous experiments. • State the normal range of serum creatinine and serum urea. • Interpret the result of whether the samples are creatinemia/hypocreatinemia, or within the normal range and uremic/hypouremic or within the normal range	Biochemistry	120 minutes	Practical	OSPE
RENAL STONES At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define Urolithiasis/Nephrolithiasis. • List the Types of Renal Stones. • Describe the Etiology of each Type.	Pathology	60 minutes	Lecture	MCQs

• List their Clinical Manifestations & Complications.				
UROLITHIASIS At the end of this lecture, Second Year M.B.B.S. student will be able to: • Summarize the basic renal and pelvi-calyceal anatomy. • Describe different types of stones i.e., radiolucent/radio-opaque. • Describe the shape of crystals of various types of stones. • Describe the pathophysiology of stone formation.	Surgery	60 minutes	Lecture	MCQs
GROSS ANATOMY OF URETER At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the structure, and location of ureter. • Name the parts of ureter. • Describe the course, anatomical constrictions, and relations of ureter. • Describe the blood supply, nerve supply and lymphatic drainage of the ureter.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

HEMATURIA At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define hematuria. • Take pertinent history of patients with hematuria. • Enumerate various causes of hematuria. • Describe the pathophysiology of hematuria.	Surgery	60 minutes	Lecture	MCQs
RENAL TUMOURS-1 At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define Renal Cell Carcinoma. • Describe its Etio-Pathogenesis. • Discuss its Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs
RENAL TUMOURS-2 At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define Transitional Cell Carcinoma. • Classify and describe its types. • Describe its Etio-Pathogenesis. • Discuss its Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs

MODEL OF URETER At the end of this Small group discussion, Second Year M.B.B.S. student will be able to: • Identify the locations of ureter in abdomen model. • Recognize the side of ureters. • Describe level of constriction on the model of ureter.	Anatomy	120 minutes	SGT	OSPE
IMAGING OF RENAL PATHOLOGIES At the end of this lecture, Second Year M.B.B.S. students will be able to: • Identify the radiological anatomy of these procedures. • Calculate the risk versus cost benefits. • Differentiate between Indication and contraindication.	Radiology	60 minutes	Lecture	MCQs
SLIDE OF URETER At the end of this practical, the Second Year M.B.B.S. student will be able to: • Identify the slide and adjust under the microscope. • Recognize the epithelium of ureter. • List the points of identification of histological features of ureter. .	Anatomy	120 minutes	Practical	OSPE

DEVELOPMENT AND ANOMALIES OF URINARY BLADDER. At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the development of the urinary bladder. • Discuss the anomalies of urinary bladder.	Anatomy	60 minutes	Lecture	MCQs, SEQs
GROSS FEATURES OF URINARY BLADDER. At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the structure and location of urinary bladder. • Name the parts of urinary bladder. • Explain the apex, base, surfaces and relation of urinary bladder. • Describe the trigone of the urinary bladder. • Explain the support to the urinary bladder. • Describe the blood supply, nerve supply and lymphatic drainage of urinary bladder. • Define cystoscopy.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
ANEMIA IN CKD At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe various causes of anemia in CKD.	Medicine	60 minutes	Lecture	MCQs

MODEL OF URINARY BLADDER At the end of this small group teaching, Second Year M.B.B.S. student will be able to: •Describe the model of urinary bladder in detail. • Discusst he locations of urinary bladder in abdomen on model. • Identify the parts of urinary bladder.	Anatomy	120 minutes	SGT	OSPE
AUTOIMMUNE DISEASES OF KIDNEYS At the end of this lecture, Second Year M.B.B.S. student will be able to: • List the Autoimmne Diseases affecting kidney. • Define Systemic Lupus Erythematosus (SLE). • Describe its Etio-Pathogenesis. • List its Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs
HISTOLOGY OF URINARY BLADDER AND URETHRA At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the arrangement of layers in urinary bladder &	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

their microscopic appearance. • Describe the arrangement of layers in different segments of urethra & their microscopic appearance.				
SLIDE OF URINARY BLADDER At the end of this practical, Second Year M.B.B.S. student will be able to: • Identify the slide and adjust under the microscope. • Recognize the epithelium of u. bladder. • List the points of identification of histological features of urinary bladder.	Anatomy	120 minutes	Practical	OSPE
IMAGING ANATOMY OR KIDNEYS AND URINARY BLADDER: At the end of this lecture, Second Year M.B.B.S. student will be able to: • Differentiate between the various pathologogical presentations on these procedures, including. • Stricture • Reflux • Hydroneprosis. • Cross fused ectopia • Pelvic kidney	Radiology	60 minutes	Lecture	MCQs

RENAL FUNCTION TESTS-5 At the end of this lecture, Second Year M.B.B.S. student will be able to: • Identify the importance of miscellaneous tests, i.e. I/V pyelography , renogram and renal scintiscan for assessing renal size, shape and renal blood flow. • List the indications and contraindications for performing IVP, renogram and renal scintiscan. • Describe the principle of renogram and renal scintiscan.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
URINARY OUTFLOW TRACT OBSTRUCTION At the end of this lecture, Second Year M.B.B.S. student will be able to: • List the major causes of urinary outflow tract obstruction. • Define Hydronephrosis. • Describe its Etio-Pathogenesis. • List its Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs

URINARY RETENTION At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe clinical anatomy of bladder, prostate and urethra • Recall proper steps of history taking in a patient with urinary retention • Identify a patient with urinary retention on history and examination • Enumerate various causes of urinary retention	Surgery	60 minutes	Lecture	MCQs
DEVELOPMENT OF URETHRA At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the development and • congenital anomalies of urethra**.**	Anatomy	60 minutes	Lecture	MCQs, SEQs
GROSS FEATURES OF URETHRA At the end of this lecture, Second Year M.B.B.S. student will be able to: • Name the parts of urethra. • Describe the structure and location of male and female urethra. • Describe the blood supply, nerve supply and lymphatic	Anatomy	60 minutes	Lecture	MCQs, SEQs

drainage of urethra.				
MICTURITION REFLEX: At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define MR • List components of MR • Describe MR • Discuss voluntary control of MR • State act of micturition	Physiology	60 minutes	Lecture	MCQs, SEQs
CYSTIC DISEASES At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define & Classify Polycystic Kidney Disease. • Describe their Etio-Pathogenesis. • List their Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs
URINARY INCONTINENCE: At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define and describe urinary retention • Describe various types of urinary incontinence • Follow appropriate steps to formulate a relevant history in	Surgery	60 minutes	Lecture	MCQs

patients with urinary incontinence • list causes of urinary retention				
OVERVIEW OF PHARMACOLOGY OF DIURETICS II At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the physiology of acid-base balance. • Explain the pathophysiology of renal diseases. • Discuss the mechanistic pharmacology of drugs acting on kidneys	Pharmacology	60 minutes	Lecture	MCQs
RENAL AND URINARY TRACT DISORDERS IN PREGNANCY **At the end of this lecture, Second Year M.B.B.S. student will be able to:** • List the common disorders in pregnancy. • Discuss the clinical approach of pregnant women with renal disease. • Enumerate the fetal and maternal outcome with renal diseases in pregnancy.	Gynaecology & Obstetrics	60 minutes	Lecture	MCQs

DIABETIC NEPHROPATHY At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define Diabetic Nephropathy. • Describe its Etio-Pathogenesis. • List its Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs
OVERVIEW OF CKI and CKD STAGING At the end of this lecture, Second Year M.B.B.S. student will be able to: • Differentiate between AKI and CKD • Describe different methods to assess renal function i-e GFR estimation based on creatinine (Cockcroft-Gault, EPI-CKD formula) • Describe different stages of CKD	Medicine	60 minutes	Lecture	MCQs
POSTERIOR ABDOMINAL WALL: At the end of this lecture, Second Year M.B.B.S. student will be able to: • Name the boundaries of posterior abdominal wall. • Discuss the fascia of posterior abdominal wall.	Anatomy	60 minutes	Lecture	MCQs, SEQs

• Describe the attachment of muscles of posterior abdominal wall. • Describe the neurovascular supply and action.				
GROSS ANATOMY OF ABDOMINAL AORTA At the end of this lecture, Second Year M.B.B.S. student will be able to: ▪ Describe the location and vertebral extent of abdominal aorta. ▪ Enumerate the ventral, lateral ,parietal and terminal branches. ▪ Describe the relation of abdominal aorta.	Anatomy	60 minutes	Lecture	MCQs, SEQs
GROSS ANATOMY OF INFERIOR VENA CAVA AND LYMPHATICS At the end of this lecture, Second Year M.B.B.S. student will be able to: ▪ Describe the location and vertebral extent of IVC. ▪ Enumerate the tributaries of inferior vena cava. ▪ Describe the relation of IVC. ▪ Enumerate the chief lymph trunk and groups of lymph nodes in the abdomen.	Anatomy	60 minutes	Lecture	MCQs, SEQs

▪ Describe the territories drained by the lymph node groups present in the abdomen				
LUMBAR PLEXUS At the end of this lecture, Second Year M.B.B.S. student will be able to: ▪ Describe the formation of lumbar plexus its site and root value. ▪ List the branches of lumbar plexus. ▪ Describe the motor and sensory supply of lumbar plexus.	Anatomy	60 minutes	Lecture	MCQs, SEQs
SYMPATHETIC SYSTEM ABDOMINAL PART At the end of this lecture, Second Year M.B.B.S. student will be able to: ▪ Describe the anatomy of ANS in the abdomen. ▪ Describe the lumbar sympathetic chain ▪ Define lumbar sympathectomy.	Anatomy	60 minutes	Lecture	MCQs, SEQs
VERTEBRAE: At the end of this lecture, Second Year M.B.B.S. student will be able to: ▪ Identify the type of vertebrae. ▪ Identify the parts of the vertebrae.	Anatomy	120 minutes	SGT	OSPE

• List the structures attached on vertebrae.				
INTRODUCTION TO PROTEIN METABOLISM At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define amino acid pool • Describe the formation of amino acid pool. • Identify the difference between positive and negative nitrogen balance. • Recognize that α-NH_2 group from amino acids is removed as ammonia	Biochemistry	60 minutes	Lecture	MCQs, SEQs
CATABOLISM OF AMINO ACIDS At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the process of transamination and role of pyridoxal-P in the reaction. • Describe the process of oxidative deamination through glutamate dehydrogenases and amino acid oxidases. • Describe the processing of D-amino acids in the body. • State the importance of non-oxidative	Biochemistry	60 minutes	Lecture	MCQs, SEQs

deamination with examples. • Describe the metabolism of non-essential amino acids. • Discuss the Metabolic defects in amino acid metabolism (phenylketonuria, maple syrup urine disease, albinism, homocystinuria, alkaptonuria)				
UREA FORMATION (PROTEIN METABOLISM) At the end of this lecture, Second Year M.B.B.S. student will be able to: • Identify that transport of ammonia takes place in the form of glutamate, glutamine and alanine and is diverted to urea formation. • Recognize that urea is synthesized solely in liver. • Describe the steps and regulation of urea synthesis. • Discuss the consequences of ammonia intoxication. • List the congenital and acquired causes of hyperammonia.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
FATE OF CARBON SKELETONS At the end of this lecture, Second Year M.B.B.S. student will be able to:	Biochemistry	60 minutes	Lecture	MCQs, SEQs

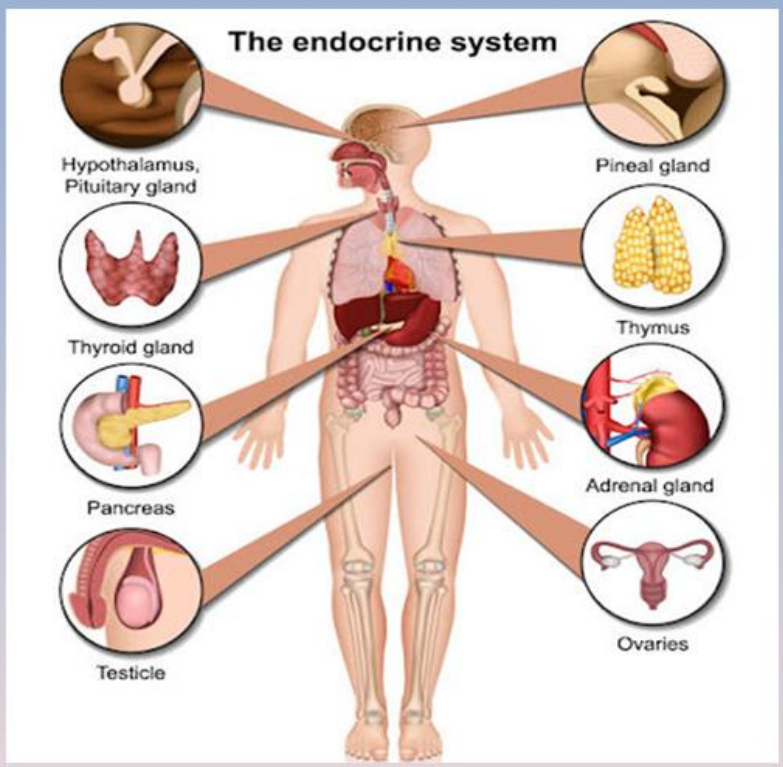
• Define glucogenic, ketogenic and glucoketogenic amino acids • Identify the fate of carbon skeletons of various amino acids after its degradation • List the amino acids under the categories of glucogenic, ketogenic and glucoketogenic amino acids • Describe the metabolism of non-essential amino acids. • Discuss the Metabolic defects in amino acid metabolism (phenylketonuria, maple syrup urine disease, albinism, homocystinuria, alkaptonuria)				
PURINE NUCLEOTIDE SYNTHESIS-1 <u>At the end of this lecture, Second Year M.B.B.S. student will be able to:</u> • Recall the structure of nucleotides. • Illustrate the structure of purine base. • List the sources of C and N atoms of purine • Describe the reactions of de novo purine synthesis leading	Biochemistry	60 minutes	Lecture	MCQs, SEQs

to the formation of the parent molecule IMP.				
PURINE NUCLEOTIDE SYNTHESIS -2 At the end of this lecture, Second Year M.B.B.S. student will be able to: • Relate the formation of AMP and GMP from IMP. • Describe the regulation of purine synthesis.	Biochemistry	60 minutes	Lecture	MCQs, SEQs & OSPE
RECYCLING OF PURINES At the end of this lecture, Second Year M.B.B.S. student will be able to: • Define salvage pathway. • Describe the reactions of 'salvage pathway' of purine bases.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
PYRIMIDINE NUCLEOTIDE SYNTHESIS At the end of this lecture, Second Year M.B.B.S. student will be able to: • Illustrate the structure of pyrimidine base and sources of C and N atoms of pyrimidine • Identify that synthesis of pyrimidine begins with the formation of carbamoyl phosphate. • Describe the reactions of pyrimidine synthesis.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• Explain the synthesis of deoxypyrimidine nucleotides and its importance in DNA formation.				
DEGRADATION OF PURINES AND PYRIMIDINES At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the catabolism of pyrimidine nucleotides. • Describe the catabolism of guanosine and adenosine to form uric acid. • Identify that uric acid is excreted in urine • List the causes of hyperuricemia. • Describe the consequence of gout.	Biochemistry	60 minutes	Lecture	MCQs, SEQs & OSPE
SOURCES OF WATER: At the end of this lecture, Second Year M.B.B.S. student will be able to: • Explain the interconnection between water and health. • Discuss different sources of water.	Community Medicine	60 minutes	Lecture	MCQs
INDICATOR OF WATER QUALITY:	Community Medicine	60 minutes	Lecture	MCQs

At the end of this lecture, Second Year M.B.B.S. student will be able to: • Discuss the indicator of water quality. • Classify the hardness of water.				
WATER POLLUTION : At the end of this lecture, Second Year M.B.B.S. student will be able to: • Describe the different causes of water pollution • Explain the environmental health risk of water pollution	Community Medicine	60 minutes	Lecture	MCQs

Endocrine Module



INTRODUCTION TO MODULE – II

Module-2	
Endocrine Module	
System	Endocrine system
Duration	6 weeks (24th March 2026 to 29th April 2026)
Assessment Date	30th April 2026
Assessment pattern	MCQs, SEQs & OSPE

*The Assessment dates are tentative (Subject to change)

MODULE RATIONALE

The Endocrine System Module in the second year of the MBBS program is designed to provide students with an integrated understanding of the structure, function, and clinical significance of the endocrine glands and hormones that regulate body homeostasis. The module integrates concepts from anatomy, physiology, biochemistry, pathology, pharmacology, and clinical sciences to explain how hormones control important processes such as growth and development, metabolism, glucose regulation, calcium balance, stress responses, and reproductive functions. Through this integrated learning approach, students develop the ability to correlate basic scientific knowledge with the pathophysiology, clinical manifestations, and laboratory diagnosis of common endocrine disorders, including diabetes mellitus, thyroid diseases, and adrenal and pituitary disorders. This module therefore prepares students to apply foundational endocrine knowledge to clinical reasoning and patient care in subsequent clinical years, while promoting an understanding of evidence-based management and the importance of endocrine health in the community.

MODULE LEARNING OUTCOMES

At the end of this module, the students of the 2nd year MBBS will be able to:

1. Explain the development and structural organization of major endocrine glands namely hypothalamus, pituitary, thyroid, parathyroid, pancreas, adrenal glands, thymus, and pineal gland.
2. Describe the physiological and biochemical mechanisms of hormone synthesis, secretion, regulation involved in maintaining metabolic, calcium, growth, and glucose homeostasis.
3. Correlate the endocrine concepts of anatomy, physiology and biochemistry with the clinical manifestations and laboratory investigations of common endocrine disorders.

ENDOCRINE MODULE ALIGNMENT GRID

Topics With Objectives	Department	Duration	Teaching Strategy	Assessment
ANATOMICAL OVERVIEW OF ENDOCRINE GLANDS **At the end of this lecture, 2nd year MBBS students will be able to:** • List different endocrine glands and their general features. • Discuss the locations of different endocrine glands.	Anatomy	60 minutes	Lecture	MCQs, SEQs
OVERVIEW OF ENDOCRINE SYSTEM: **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss the Human Endocrine System. • Identify the differences between endocrine and exocrine glands. • List the hormones secreted by different endocrine glands. • Discuss the positive and negative feedback regulation of hormones.	Physiology	60 minutes	Lecture	MCQs, SEQs
ENDOCRINE HORMONES & THEIR MODES OF ACTION: **At the end of this lecture, 2nd year MBBS students will be able to:** • Define hormones • Classify hormones according to their biochemical structure.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• Describe the modes of action employed by different hormones to execute their function. • Identify the factors involved in hormonal regulation.				
EMBRYOLOGY OF HYPOTHALAMUS & PITUITARY GLAND: **At the end of this lecture, 2nd year MBBS students will be able to:** • Define the sources of the development of hypothalamus and pituitary gland. • Describe the development of pituitary gland. • Discuss the congenital anomalies of pituitary gland.	Anatomy	60 minutes	Lecture	MCQs, SEQs
HYPOTHALAMUS & PITUITARY GLAND: **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the location of hypothalamus and pituitary gland. • Describe the relation and external features of hypothalamus. • Describe the relations and external features of pituitary gland. • Describe the blood supply of hypothalamus and pituitary gland. • Define Diabetes Insipidus.	Anatomy	60 minutes	Lecture	MCQs, SEQs
HISTOLOGY OF HYPOTHALAMUS & PITUITARY GLAND:	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

<u>At the end of this lecture, 2nd year MBBS students will be able to:</u> • List the different parts of hypothalamus and pituitary gland. • Describe the histological features of hypothalamus and each part of pituitary gland. • Discuss the histological features of different cells of hypothalamus and their secretions. • Describe the characteristic features of different cells of pituitary gland and their secretions.				
SLIDE OF HYPOTHALAMUS & PITUITARY GLAND: **<u>At the end of this practical, 2nd year MBBS students will be able to:</u>** • Identify the two major parts of pituitary gland. • Name the basophil and acidophil cells of anterior pituitary • Know the role of hypothalamic secretion in regulation of anterior and posterior pituitary gland.	Anatomy	120 minutes	Practical	OSPE
FUNCTIONS OF HYPOTHALAMIC HORMONES: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss the function of the hypothalamus. • Describe the disorders of hypothalamic functions.	Physiology	60 minutes	Lecture	MCQs, SEQs

POSTERIOR PITUITARY HORMONE: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • List the hormones produced by posterior pituitary gland. • Describe the physiological functions of vasopressin. • Explain the difference in the receptor types and the receptor specificity between vasopressin and desmopressin.	Physiology	60 minutes	Lecture	MCQs, SEQs
DIABETES INSIPIDUS: CLINICAL FEATURES AND MANAGEMENT **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the clinical features of diabetes insipidus • Understand the diagnostic approach for diabetes insipidus • Describe the management of diabetes insipidus	Medicine	60 minutes	Lecture	MCQs
ANTERIOR PITUITARY HORMONE: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • List the anterior pituitary hormones. • Identify the site of action of anterior pituitary hormones. • Describe the mechanism of interaction of anterior pituitary with the hypothalamus	Physiology	60 minutes	Lecture	MCQs, SEQs

• Describe Sheehan syndrome				
FUNCTIONS OF GROWTH HORMONE: **At the end of this lecture, 2nd year MBBS students will be able to:** • List the types of growth hormone. • Describe its mechanism and site of action. • Explain the functions of growth hormone on body. • Discuss the factors that regulate the production of growth hormone.	Physiology	60 minutes	Lecture	MCQs, SEQs
NORMAL CHILD GROWTH: **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss about orientation to Growth parameters in children.	Pediatrics	60 minutes	Lecture	MCQs
ABNORMALITIES OF GROWTH HORMONE: **At the end of this lecture, 2nd year MBBS students will be able to:** • Define Gigantism & Dwarfism. • Describe their Etio-Pathogenesis. • Discuss their Clinical Features & Complications	Pathology	60 minutes	Lecture	MCQs
ACROMEGALY	Physiology	120 minutes	Small Group Teaching	OSPE

At the end of this small group teaching session, 2nd year MBBS students will be able to: • Define acromegaly and gigantism • List the clinical features of acromegaly • Discuss the causes of acromegaly and gigantism				
ABNORMAL CONSTITUENTS OF URINE **At the end of this practical session, 2nd year MBBS students will be able to:** • List the common abnormal constituents of urine commonly seen in urine. • Detect the presence of sugar by Benedicts test in the given sample. • Detect the presence of proteins using acetic acid in the given sample. • Detect ketone bodies using Rothera's nitroprusside test in the given sample. • Describe the principle of the reaction taking place in Benedicts test, acetic acid test and rothers's test with the reagents used. • Recognize the importance of detecting glucose, proteins and ketone bodies in urine of diabetes mellitus patients	Biochemistry	120 minutes	Practical	OSPE
OVERVIEW OF PHARMACOLOGY OF ENDOCRINE SYSTEM: **At the end of this lecture, 2nd year MBBS students will be able to:**	Pharmacology	60 minutes	Lecture	MCQs

• List the physiologic role of various endocrine hormones. • Discuss the mechanistic pharmacology of endocrine disorders. • List the physiologic role of various endocrine hormones.				
EMBRYOLOGY OF THYROID & PARATHYROID: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the development of thyroid and parathyroid glands. • Define the congenital anomalies of thyroid and parathyroid glands including Ectopic Thymus and Parathyroid Tissue. • Define Congenital Hypothyroidism, accessory thyroid and thyroid agenesis. • Define Thyroglossal duct.	Anatomy	60 minutes	Lecture	MCQs, SEQs
THYROGLOSSAL CYST & FISTULA **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the embryology of thyroglossal cyst and fistula • Explain the basic of tongue protrusion test. • List the sign and symptoms of thyroglossal duct and fistula. • Enumerate the complications of thyroglossal duct	Surgery	60 minutes	Lecture	MCQs

GROSS ANATOMY OF THYROID & PARATHYROID: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the location of thyroid and parathyroid glands. • Discuss the relations of thyroid and parathyroid gland. • Describe neurovascular supply of thyroid and parathyroid gland. • Discuss Enlargement of Thyroid Gland and Thyroidectomy.	Anatomy	60 minutes	Lecture	MCQs, SEQs
HISTOLOGY OF THYROID & PARATHYROID: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the microscopic structure of thyroid and parathyroid gland. • Discuss the types of cells found in thyroid gland. • Describes the cell found in parathyroid gland and their functions.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
SLIDES OF THYROID GLAND **<u>At the end of this practical, 2nd year MBBS students will be able to:</u>** • Recognize the slide of thyroid gland. • Identify the functional unit of thyroid gland. • Name the lining epithelium of thyroid follicle.	Anatomy	120 minutes	Practical	OSPE

SYNTHESIS OF THYROID HORMONES: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • List the hormones produced by the thyroid gland. • Describe the biosynthesis of thyroid hormones. • Associate the function of iodine with biosynthesis of thyroid hormones. • Explain the regulation of thyroid hormone synthesis through hypothalamo-pituitary-thyroid axis unit.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
FUNCTION OF THYROID HORMONES: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the functions in the body of thyroid hormones. • Discuss the types and their physiological levels in circulation. • Discuss the outcomes of raised levels of thyroid hormones.	Physiology	60 minutes	Lecture	MCQs, SEQs
NORMAL CHILD DEVELOPMENT **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** Discuss about orientation to milestones in children.	Pediatrics	60 minutes	Lecture	MCQs
THYROID FUNCTION TESTS-1: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>**	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• Classify thyroid function tests based on physiological and biochemical functions of the thyroid gland. • List the indications for performing thyroid function tests. • Summarize the interpretation of the results of blood levels of thyroid hormones i.e. T_3, T_4 and TSH in thyroid and non-thyroidal diseases. • Recognize the importance of immunological tests in diagnosis of autoimmune thyroid diseases.				
THYROID FUNCTION TESTS-2: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Relate the importance of tests of assessing the metabolic effects brought about by either high or low amount of thyroid hormones. • Summarize the interpretation of the results of tests involved in assessing primary function of thyroid gland. • Discuss about the indications and benefits of thyroid scans for assessing goitres in reference to hot or warm and cold nodules.	Biochemistry	60 minutes	Lecture	MCQs, SEQs,
REGULATION OF THYROID HORMONES: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the regulation of thyroid hormone secretion (endocrine axis).	Physiology	60 minutes	Lecture	MCQs, SEQs

• Discuss the secretion of thyrotropin releasing hormone (TRH).				
ABNORMALITIES IN THYROID GLAND-1: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define Hypothyroidism & Hyperthyroidism. • Describe their Etio-Pathogenesis. • Discuss their Clinical Features & Complications. • Define Hypothyroidism & Hyperthyroidism.	Pathology	60 minutes	Lecture	MCQs
CONGENITAL HYPOTHYROIDISM **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Understand the etiology and pathophysiology of congenital hypothyroidism. • Recognize the clinical signs and symptoms of congenital hypothyroidism in neonates. • Identify the diagnostic tests used to screen for and confirm congenital hypothyroidism. • Explain the importance of early detection and treatment of congenital hypothyroidism. • Describe the management and treatment options for	Paediatrics	60 minutes	Lecture	MCQs

congenital hypothyroidism, including medication dosing and monitoring. • Discuss the long-term consequences of untreated congenital hypothyroidism on growth, development, and neurocognitive function.				
ABNORMALITIES OF THYROID GLAND-2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define Graves Disease. • Describe its Etio-Pathogenesis. • Discuss its Clinical Features & Complications.	Pathology	60 minutes	Lecture	MCQs
BENIGN THYROID DISEASES **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the development and anatomy of the thyroid glands • Summarize the physiology and investigation of thyroid disorders • List Common benign thyroid diseases. • Define goiter. • Enumerate the risk factors for development of goiter. • Explain Symptoms related to hypothyroidism or hyperthyroidism depending on the specific condition.	Surgery	60 minutes	Lecture	MCQs

ABNORMALITIES OF THYROID GLAND-3 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define Goiter. • List its Types. • Describe its Etio-Pathogenesis. • Discuss its Clinical Features & Complications.	Pathology	60 minutes	Lecture	MCQs
ENDOCRINOLOGICAL ASPECTS OF PRIMARY AMENORRHEA **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define primary amenorrhea. • Enumerate causes of primary amenorrhea. • Discus endocrinology of primary amenorrhea.	Gynaecology & Obstetrics	60 minutes	Lecture	MCQs
THYROID CANCER **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Explain the role of the thyroid gland in hormone production and its impact on metabolism • Describe the lymphatic drainage of neck • Identify factors that increase the likelihood of developing thyroid cancer • Classify different types of thyroid cancer • List the clinical presentation of thyroid cancer	Surgery	60 minutes	Lecture	MCQs

REGULATION OF CALCIUM METABOLISM: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Recall the mechanism of bone remodeling. • Describe the role of calcium & phosphate regulation in ECF. • Recognize the role of parathyroid hormone, Cholecalciferol, and calcitonin in calcium homeostasis • Enumerate the effects of hypercalcemia & hypocalcaemia .	Physiology	60 minutes	Lecture	MCQs, SEQs
FUNCTION OF PARATHYROID HORMONE: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • List the hormones produced by parathyroid gland. • Describe the rapid phase of ca mobilization from bone. • Describe the slow phase of bone reabsorption. • Explain the effects of PTH on kidney and GIT. • Explain the indirect effects of PTH on GIT. • Discuss the Regulation of PTH by serum Calcium. • Discuss the outcomes of deranged parathormone levels in our body.	Physiology	60 minutes	Lecture	MCQs, SEQs

ROLE OF VITAMIN D3: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the source of synthesis & release of vitamin D3. • Explain the activation of vitamin D from sunlight. • Discuss the functions of Vitamin D3.	Physiology	60 minutes	Lecture	MCQs, SEQs
ABNORMALITIES OF PARATHYROID GLAND **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define Hypoparathyroidism and Hyperparathyroidism. • Describe their Etio-Pathogenesis. • Discuss their Clinical Features & Complications.	Pathology	60 minutes	Lecture	MCQs
ROLE OF CALCITONIN: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the roles of PTH, vitamin D and calcitonin in calcium homeostasis and bone remodeling. • Explain the role of calcitonin in osteoblastic activity.	Physiology	60 minutes	Lecture	MCQs, SEQs
PARATHYROID DISORDERS: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the development and anatomy of the parathyroid glands.	Surgery	60 minutes	Lecture	MCQs

• Discuss the investigations of parathyroid function. • Explain the consequences of parathyroid excision or removal.				
OSTEOPOROSIS **At the end of this lecture, 2nd year MBBS students will be able to:** • List the risk factors of Osteoporosis • Discuss the preventive strategies for Osteoporosis	Community Medicine	60 minutes	Lecture	MCQs
APPROACH TO TIREDNESS-1 **At the end of this lecture, 2nd year MBBS students will be able to:** • Define tiredness • Evaluate different causes of tiredness	Family Medicine	60 minutes	Lecture	MCQs
EMBRYOLOGY OF PANCREAS: **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the development of pancreas. • Define the congenital anomalies of pancreas.	Anatomy	60 minutes	Lecture	MCQs, SEQs
CONGENITAL ANOMALIES OF PANCREAS **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the Embryological development of the pancreas	Surgery	60 minutes	Lecture	MCQs

• List common pancreatic anomalies. • Explain the Clinical manifestations of these anomalies.				
GROSS ANATOMY OF PANCREAS: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the location of pancreas. • Describe the anatomical structure of pancreas. • Discuss the relation of pancreas with other abdominal viscera. • Describe the neurovascular supply of pancreas. • Define Pancreatitis.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
HISTOLOGY OF PANCREAS: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss the histological components of pancreas. • Describe the microscopic structure of pancreas. • Describe the histology of endocrine part of pancreas. • Identify the differences between exocrine and endocrine pancreas.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
SLIDES OF PANCREAS: **<u>At the end of this practical 2nd year MBBS students will be able to:</u>**	Anatomy	120 minutes	Practical	OSPE

• Discriminate between endocrine and exocrine parts of pancreas. • Recognize islets of langerhans's. • Discuss the various types of endocrine pancreas cells and their products.				
PANCREATIC HORMONES: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss endocrine functions of pancreas. • List the hormones produced by the pancreas. • Describe the short term & long-term effects of insulin.	Physiology	60 minutes	Lecture	MCQs, SEQs
INSULIN AND ITS SYNTHESIS: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the structure of insulin. • Describe the biosynthesis of insulin. • Identify the biochemical technique of commercial production of insulin.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
INSULIN AND ITS METABOLIC EFFECTS: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss the factors involved in regulation of insulin release. • Describe the mechanism of action of insulin. • Describe the metabolic effects of insulin	Biochemistry	60 minutes	Lecture	MCQs, SEQs

Islets Hormones & Its Regulation: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss the functions of insulin. • Discuss the functions of glucagon. • Describe insulin: glucagon molar ratio. • Explain the role of the pancreatic endocrine cells in the regulation of blood glucose.	Physiology	60 minutes	Lecture	MCQs, SEQs
ESTIMATION OF SERUM GLUCOSE **<u>At the end of this practical session, 2nd Year MBBS students will be able to:</u>** • Name the reagents to be used in the experiment • Read the instructions to prepare the stock standard solutions and the sample for measuring optical density with spectrophotometer. • Describe the principle of the reaction taking place in the experiment. • Identify the importance of preparing a blank test tube • Record the readings of transmittance of stock standard solutions and sample with the help of spectrophotometer.	Biochemistry	120 minutes	Practical	OSPE

• Refer to the transmittance chart for obtaining optical density values of 'S' and 'T' test tubes				
APPROACH TO HYPOGLYCEMIA : **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the causes of hypoglycemia • Recognize the symptoms of hypoglycemia	Medicine	60 minutes	Lecture	MCQs
GLUCAGON AND ITS METABOLIC EFFECTS: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Recognize that glucagon is a single polypeptide chain structure. • Identify the factors involved in stimulation and inhibition of secretion of glucagon. • Describe the mode of action of glucagon. • Describe the metabolic effects of glucagon.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
HOMEOSTASIS OF BLOOD GLUCOSE: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • State the normal range of fasting blood glucose and random blood glucose. • Identify the events which occur in the body as blood glucose rises and falls.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• Describe the hormonal regulation of blood glucose.				
INTERPRETATION OF SERUM GLUCOSE VALUES **<u>At the end of this practical session, 2nd year MBBS students will be able to:</u>** • Calculate the concentration of stock standard solutions of 'S' test tubes. • Draw the graph to obtain the concentration of Serum glucose for the sample. • State the normal range of FBS and RBS. • Interpret the result of whether the sample is hypoglycemic/hyperglycemic or within the normal range. • Discuss a few causes of hypoglycemia and hyperglycemia	Biochemistry	120 minutes	Practical	OSPE
GLYCOSURIA: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define Glycosuria. • Define renal threshold for glucose and state its range. • Classify types of Glycosuria • Enumerate the causes in each type of Glycosuria.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
ESTIMATION OF CREATININE CLEARANCE **<u>At the end of this practical, 2nd year MBBS students will be able to:</u>**	Biochemistry	120 minutes	Practical	OSPE

• State the normal range of creatinine clearance. • Describe the principle of the reaction taking place in the experiment by means of the reagents used • Identify the importance of preparing a blank test tube. • Record the readings of transmittance of stock standard solutions and sample with the help of spectrophotometer • Refer to the transmittance chart for obtaining optical density values of 'S' and 'T' test tubes.				
DIABETES MELLITUS: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Explain the relationship between metabolic syndrome and diabetes mellitus. • Differentiate Type 1 and Type 2 diabetes mellitus. • Explain the early signs of diabetes. • Compare the causes and development of hypoglycemia and hyperglycemia. • Describe the common degenerative effects of diabetes mellitus.	Physiology	60 minutes	Lecture	MCQs, SEQs
ABNORMALITIES OF PANCREAS-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define Diabetes Mellitus.	Pathology	60 minutes	Lecture	MCQs

• List its Types. • Describe their Etio-Pathogenesis. • Discuss their Clinical Features & Complications occurring in various organs.				
DIABETES MELLITUS **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss the public health aspect of Diabetes Mellitus • List the risk factors for Diabetes Mellitus • Describe the prevention strategies for Diabetes Mellitus	Commmunity Medicine	60 minutes	Lecture	MCQs
DIABETES MELLITUS: Classification, Clinical Features & Diagnostic Criteria **At the end of this lecture, 2nd year MBBS students will be able to:** o Classify diabetes mellitus o Identify the clinical features of diabetes mellitus o Describe the diagnostic criteria for diabetes mellitus	Medicine	60 minutes	Lecture	MCQs
OVERVIEW OF PHARMACOLOGY OF HYPERGLYCEMIA **At the end of this lecture, 2nd year MBBS students will be able to:** • Define hyperglycemia.	Pharmacology	60 minutes	Lecture	MCQs

• Explain the pathophysiology of hyperglycemia. • Discuss the mechanistic pharmacology of hyperglycemia				
INSULINOMA **<u>At the end of this small group teaching session, 2nd year MBBS students will be able to:</u>** • Define insulinoma • Describe the role of insulin in blood glucose regulation. • Enumerate the clinical features of insulinoma	Physiology	120 minutes	Small Group Teaching	OSPE
BIOCHEMICAL DERANGEMENTS IN DIABETES MELLITUS: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss the metabolic derangements that occur in diabetes mellitus. • Correlate clinical features of diabetes mellitus with derangements in biochemical parameters.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
COMPLICATION OF DIABETES MELLITUS: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss the short term and long-term complications of diabetes mellitus occurring due to biochemical derangements.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

INTERPRETATION OF CREATININE CLEARANCE VALUES **<u>At the end of this practical, 2nd year MBBS students will be able to:</u>** • Calculate the concentration of stock standard solutions of 'S' test tubes. • Draw the graph to obtain the concentration of urinary creatinine for the sample. • Calculate the rate of flow of urine 'v' with the help of the given 24 hour urine volume of the urinary sample. • Apply the formula of (UV/P) using the value of 'P'and 'U' from the practical of estimation of serum creatinine and estimation of creatinine clearance respectively to calculate the value of Creatinine clearance. • Discuss the stages of chronic kidney disease based on the values of GFR. • Interpret the result of creatinine clearance test obtained from the performance of experiment to categorize the stage of chronic kidney disease.	Biochemistry	120 minutes	Practical	OSPE
DIABETIC FOOT: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the metabolic changes in diabetes. • list the causes of diabetic foot.	Surgery	60 minutes	Lecture	MCQs

• Enumerate the clinical signs and symptoms of diabetic foot.				
ABNORMALITIES OF PANCREAS-2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define Pancreatic NeuroEndocrine Disorders. • List its Clinical Syndromes. • Describe the Etio-Pathogenesis of each type. • Discuss the Clinical Features & Complications of each type.	Pathology	60 minutes	Lecture	MCQs
APPROACH TO TIREDNESS-2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss about diabetes mellitus and thyroid disorders	Family Medicine	60 minutes	Lecture	MCQs
BASIC INTERPRETATION OF ENDOCRINE IMAGING OF THYROID GLAND & PANCREAS **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Recall the gross Anatomy of thyroid gland and pancreas. • Interpret the findings of diseases of thyroid gland and pancreas in various radiological tests.	Radiology	60 minutes	Lecture	MCQs

EMBRYOLOGY OF ADRENAL GLAND: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Explain the embryological origin and development of adrenal gland. • Discuss the congenital anomalies of adrenal gland.	Anatomy	60 minutes	Lecture	MCQs, SEQ
GROSS ANATOMY OF ADRENAL GLAND: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the location of adrenal gland. • Describe the gross anatomical structure of adrenal gland & relations. • Describe the neurovascular supply of adrenal gland.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
HISTOLOGY OF ADRENAL GLAND: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the microscopic structure of adrenal gland. • Discuss the cells found in cortex and medulla of adrenal gland.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
SLIDES OF ADRENAL GLAND: **<u>At the end of this practical, 2nd year MBBS students will be able to:</u>**	Anatomy	120 minutes	Practical	OSPE

• Recognize the adrenal gland and its subdivisions. • Recognize three zones of adrenal cortex. • Name the hormones produced by each zone.				
ADRENAL HORMONES: **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the hormones produced by the adrenal cortex and adrenal medulla. • Summarize the target cells and effects.	Physiology	60 minutes	Lecture	MCQs, SEQs
ADRENOSTEROID HORMONE SYNTHESIS: **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the synthesis and degradation of steroid hormones produced by adrenal cortex.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
FUNCTION OF ALDOSTERONE: **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss the functions of Aldosterone in fluid & electrolyte regulation. • Explain the Rennin-Angiotensin-Aldosterone system. • Define Hyperaldosteronism and Hypoaldosteronism.	PHYSIOLOGY	60 minutes	Lecture	MCQs, SEQs
FUNCTIONS OF CORTISOL: **At the end of this lecture, 2nd year MBBS students will be able to:**	Physiology	60 minutes	Lecture	MCQs, SEQs

• Explain the functions of cortisol in the body. • Describe the anti-inflammatory & anti histamine effects of cortisol. • Recognize cortisol as a 'stress hormone'. • Explain the difference between Cushing syndrome & Cushing disease. • Describe afferent mineralocorticoid excess (AME).				
ABNORMALITIES OF ADRENAL GLAND-1 **At the end of this lecture, 2nd year MBBS students will be able to:** • Define Addisons Disease. • Describe its Etio-Pathogenesis. • Discuss its Clinical Features & Complications.	Pathology	60 minutes	Lecture	MCQs
ABNORMALITIES OF ADRENAL GLAND-2 **At the end of this lecture, 2nd year MBBS students will be able to:** • Differenciate between Cushing Syndrome & Cushing Disease. • Describe the Types of Cushing Syndrome based on Etiology. • Discuss its Clinical Features & Complications.	Pathology	60 minutes	Lecture	MCQs
OBESITY **At the end of this lecture, 2nd year MBBS students will be able to:** • List the risk factors of obesity	Community Medicine	60 minutes	Lecture	MCQs

• Discuss the preventive strategies for obesity				
ENDOCRINE CAUSES OF HYPERTENSION **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the endocrine disorders that can cause hypertension • Understand the clinical features associated with endocrine hypertension	Medicine	60 minutes	Lecture	MCQs
FUNCTION OF ADRENAL ANDROGEN: **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss the role in secondary sexual characteristic development. • Define adrenogenital syndrome.	Physiology	60 minutes	Lecture	MCQs, SEQ
ENDOCRINOLOGICAL ASPECTS OF SECONDARY AMENORRHEA **At the end of this lecture, 2nd year MBBS students will be able to:** • Define secondary amenorrhea. • Enumerate causes of secondary amenorrhea. • Discuss the endocrinology of secondary amenorrhea.	Gynae & Obs	60 minutes	Lecture	MCQs
TANNER'S CLASSIFICATION	Gynae & Obs	60 minutes	Lecture	MCQs

At the end of this lecture, 2nd year MBBS students will be able to: • Define tanner's classification • Discuss the normal development of female secondary characteristics during puberty. • Identify the clinical features regarding tanner's classification.				
CATECHOLAMINE SYNTHESIS: **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the synthesis and degradation of catecholamine's produced by adrenal medulla.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
ADRENAL MEDULLA: **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss the functions of catecholamines. • Describe abnormalities of adrenal medulla.	Physiology	60 minutes	Lecture	MCQs, SEQs
DISORDERS OF ADRENAL GLAND **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the location and structure of the adrenal glands. • Explain the different layers of the adrenal cortex and the hormones produced by each layer	Surgery	60 minutes	Lecture	MCQs

• Discuss the role of the adrenal medulla and the hormones it secretes • Outline the regulation of adrenal hormone secretion by the hypothalamus-pituitary-adrenal (HPA) axis. • Define adrenal insufficiency and its causes (primary vs secondary). • Define Cushing syndrome and its causes • List signs and symptoms of these disorders				
ABNORMALITIES OF ADRENAL GLAND-II: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Classify the Types of Cushing Syndrome based on Etiology. • Describe the differences between Cushing Syndrome & Cushings Disease. • Describe the clinical features of Cushings syndrome and Cushings disease • Classify the Types of Cushing Syndrome based on Etiology.	Pathology	60 minutes	Lecture	MCQs
CONN'S SYNDROME **<u>At the end of this small group teaching session, 2nd year MBBS students will be able to:</u>** • Define Conn's syndrome	Physiology	120 minutes	Small Group Discussion	OSPE

• List the clinical features of conn's syndrome. • List the name of laboratory tests with their reference values. • Explain the effects of aldosterone on Na, K, H balance.				
CUSHINGS SYNDROME **<u>At the end of this small group teching session, 2nd year MBBS students will be able to:</u>** • Define Cushings syndrome • List the clinical manifestation of cushings syndrome. • Explain the feature of hypertension in cushings syndrome.	Physiology	120 minutes	Small Group Discussion	OSPE
METABOLIC RESPONSE TO INJURY: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the basic metabolic response to injury. • List the metabolic changes during injury and sepsis • Describe the metabolic priorities for survival during a critical illness	Surgery	60 minutes	Lecture	MCQs
THYMUS & PINEAL GLAND: **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the anatomical structure of thymus.	Anatomy	60 minutes	Lecture	MCQs, SEQs

• Discuss the relation of thymus. • Describe the development and congenital anomalies of pineal gland. • Summarize the location, structure, relation, blood supply, venous drainage and lymphatic drainage of pineal gland. • Describe the microscopic features of pineal gland in detail.				
THYMUS & PINEAL GLANDS: **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe their respective functions in our body. • Discuss the types of cells in thymus gland and the hormone released. • Discuss the function of melatonin.	Physiology	60 minutes	Lecture	MCQs, SEQs

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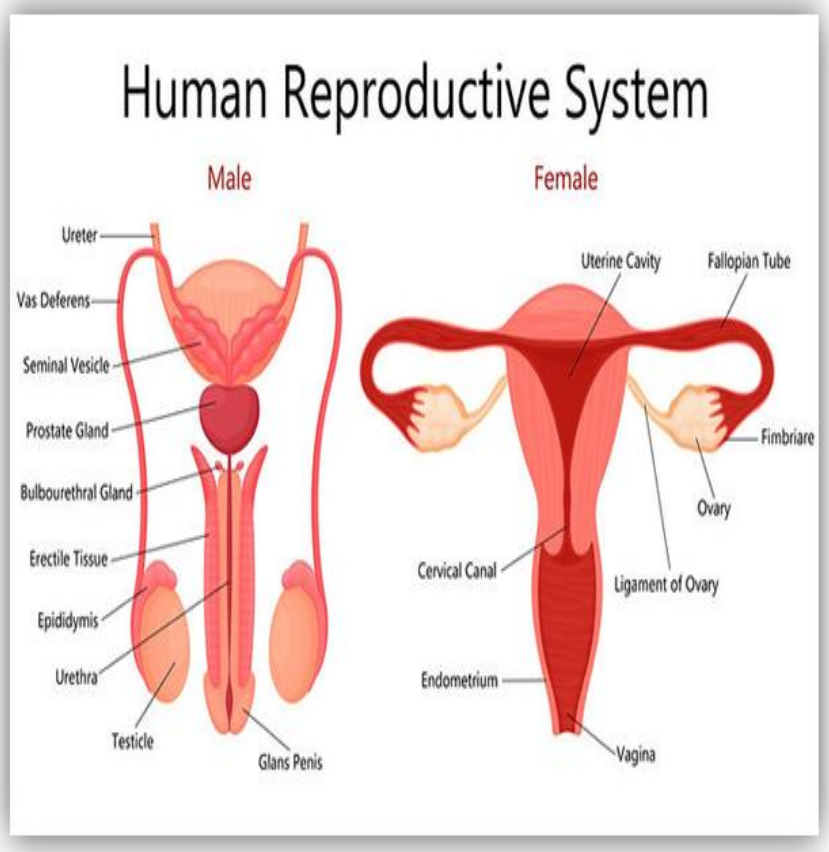
REPRODUCTIVE MODULE



INTRODUCTION TO MODULE – III

Module-3	
Reproductive Module	
System	Reproductive system
Duration	6 weeks (4th May 2026 to 9th July 2026)
Assessment Date	10th July 2026
Assessment pattern	MCQs, SEQs & OSPE

*The Assessment dates are tentative (Subject to change)

MODULE RATIONALE

The reproduction module provides essential knowledge about the anatomy, development, and histology of male and female reproductive systems, enabling students to understand normal reproductive structure and function. It explains the physiology and hormonal regulation of reproductive processes, including gametogenesis, the menstrual cycle, fertilization, pregnancy, parturition, and lactation. The module highlights the clinical relevance of reproductive health, helping learners recognize congenital anomalies, hormonal disorders, and common reproductive system diseases encountered in medical practice.

MODULE LEARNING OUTCOMES

At the end of this module, the students of the 2nd year MBBS will be able to:

1. Explain the structure, radiological anatomy, and development of the pelvis of male and female reproductive systems, including their gross and microscopic features, muscles, fascia, and related congenital anomalies and clinical applications.

2. Describe the synthesis, secretion, and functions of reproductive hormones, including their role in the menstrual cycle, parturition, lactation, and associated hormonal disorders.

REPRODUCTION MODULE ALIGNMENT GRID

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
INTRODUCTION OF REPRODUCTIVE SYSTEM **At the end of this lecture 2nd year MBBS students will be able to:** • List the reproductive organs. • Describe the various part of Reproductive system. • Compare the identification feature of male and female reproductive systems.	Anatomy	60 minutes	Lecture	MCQs
BONES AND JOINTS OF PELVIS **At the end of this SGT session 2nd year MBBS students will be able to:** • Identify the bone of pelvis. • List the joints of pelvis. • Explain types, articulation and ligaments of pelvic joints. • Describe blood supply, nerve supply and movements of joints. • Discuss types of pelvic fractures. • Discuss clinical significance of the	Anatomy	60 minutes	Lecture	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
sacroiliac joint.				
BONY PELVIS & PELVIC WALL AND FLOOR **At the end of this SGT session 2nd year MBBS students will be able to:** • Identify the greater and lesser pelvis. • Discuss the pelvic inlet and outlets • Describe the contents of pelvis • Discuss the different shapes of pelvis in female. Describe the structure of Pelvic walls. • Discuss the muscle and fascia of pelvic floor • Descibe Pelvimetry. • Explain the Variations of male and female pelvic girdle. • Define Cystocele and Rectocele. • Describe disruption of perineal body.	Anatomy	60 Minutes	Lecture	MCQs, SEQs
EMBRYOLOGY OF FEMALE REPRODUCTIVE SYSTEM I **At the end of this lecture 2nd year MBBS students will be able to:**	Anatomy	60 minutes	Lecture	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
•Recall process of oogenesis. •Define the location and division of genital ridge. •Describe the development and differentiation of paramesonephric ducts..				
EMBRYOLOGY OF FEMALE REPRODUCTIVE SYSTEM II **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the development of various parts of female reproductive system. • List the time line in which the development of female reproductive system starts and ends. • Discuss Uterine and Vaginal Defects. • Define defects in sex differentiation.	Anatomy	60 minutes	Lecture	MCQs, SEQs
CHROMOSOMAL ANOMALIES CAUSING PRIMARY AMENORRHEA: **At the end of this lecture 2nd year MBBS students will be able to:** • Define primary amenorrhea.	Gynae & Obs	60 minutes	Lecture	MCQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
• List the causes of primary amenorrhea. • Enumerate genetic/chromosomal anomalies causing primary amenorrhea. • Understand the future risks associated with chromosomal anomalies.				
GENITAL TRACT OBSTRUCTION CAUSING PRIMARY AMENORRHEA. <u>At the end of this lecture 2nd year MBBS students will be able to</u>: • Discuss the embryology of female genital system. • Describe the etiology of outflow tract obstruction. • Classify the congenital anomalies of the genital tract which cause primary amenorrhea.	Gynae & Obs	60 minutes	Lecture	MCQs
FEMALE REPRODUCTIVE SYSTEM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Explain the functions of various parts of female reproductive system.	Physiology	60 minutes	Lecture	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
• Define the periods of sexual life in females. • Enumerate the changes in puberty. • Discuss the role of hormones in puberty.				
INFECTIONS OF FEMALE REPRODUCTIVE TRACT: **At the end of this lecture 2nd year MBBS students will be able to:** • Define Pelvic Inflammatory Disease (PID). • Describe its etio-pathogenesis. • Discuss its Clinical Features & Complications.	Pathology	60 minutes	Lecture	MCQs
MATERNAL MORTALITY **At the end of this lecture 2nd year MBBS students will be able to**: • Define maternal mortality • Explain causes and risk factors of maternal mortality • Explain the intervention to reduce maternal mortality	Community Medicine	60 minutes	Lecture	MCQs, SEQs
OVARY & FALLOPIAN TUBE: **At the end of this lecture 2nd year MBBS students will be**	Anatomy	60 minutes	Lecture	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
able to: •Describe the gross structure of ovary and fallopian tube and their location and shape. • Discuss the anatomical relations of ovary and fallopian tube. • Discuss the blood supply and venous drainage of ovary and fallopian tube • Define Hysterosalpingography and Tubal Ligation.				
HISTOLOGY OF OVARY AND FALLOPIAN TUBE: **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the histological features of ovary and fallopian tube. • Detail of the microanatomy of ovarian follicles, lining epithelium and cells found in the ovary and fallopian tube. • Define Ovarian Carcinomas.	Anatomy	60 minutes	Lecture	MCQs, SEQs
SLIDE OF OVARY: **At the end of this practical session 2nd year MBBS students will be able to:** • Identify the type of	Anatomy	120 minutes	Practical	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
epithelium cover the surface of ovary. • Recognize the zones of ovary. • Identify the different stages of ovarian follicle in reproductive age. • Identify the histological features of graafian follicle.				
SLIDE OF FALLOPIAN TUBE: **At the end of this practical session 2nd year MBBS students will be able to:** • Recognize the coats of fallopian tube. • Identify the lining epithelium of fallopian tube.	Anatomy	120 minutes	Practical	OSPE
INTRODUCTION TO REPRODUCTIVE HORMONES **At the end of this lecture 2nd year MBBS students will be able to:** • List the hormones involved in reproduction • Identify the different mode of action used by hormones involved in reproduction namely	Biochemistry	60 minutes	Lecture	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
GnRH, FSH, LH, estrogen, progesterone, androgen, oxytocin, prolactin, growth hormone, inhibin, relaxin and anti-mullerin hormone. • Discuss the modes of action of FSH, LH and steroid reproductive hormones.				
SYNTHESIS OF ESTROGEN: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Identify the different forms of estrogen, its source of secretion. • State the normal range of estrogen in females & males. • Describe the synthesis, degradation and regulation of estrogen. • Discuss the metabolic effects of estrogen and progesterone.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
FUNCTIONS OF ESTROGEN: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>**	Physiology	60 minutes	Lecture	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
• Describe the role of estrogen in female reproductive system. • Discuss the different effects of estrogen on body.				
CHEMISTRY OF PROGESTERONE: **At the end of this lecture 2nd year MBBS students will be able to:** • Identify the different sources of progesterone. • Discuss about the metabolism, regulation of secretion and transport in plasma of progesterone. • Describe the reactions involved in synthesis of progesterone. • Discuss the metabolic effects produced by progesterone in females.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
FUNCTIONS OF PROGESTERONE: **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the important functions of progesterone on body. • Discuss its normal levels in the human body	Physiology	60 minutes	Lecture	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
OVERVIEW OF PHARMACOLOGY OF FEMALE REPRODUCTIVE SYSTEM: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Discuss the physiology of Estrogen and Progesterone. • Outline the pathophysiology of Disorders related to Estrogen & Progesterone. • Discuss the mechanistic pharmacology of disorders related to Estrogen & Progesterone.	Pharmacology	60 minutes	Lecture	MCQs
OVARIAN CYCLE: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Explain oogenesis and follicular development. • Describe the changes in the ovarian follicles in relation to oogenesis. • Identify and describe the cell types of the ovarycorpus luteim.	Physiology	60 minutes	Lecture	MCQs, SEQs
DISORDERS OF OVARY-1: **<u>At the end of this lecture 2nd year MBBS students will be</u>**	Pathology	60 minutes	Lecture	MCQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
able to: • Define Polycystic Ovarian Syndrome (PCOS). • Describe its etio-pathogenesis. • Describe its Morphology. • Discuss its Clinical Features & Complications.				
POLYCYSTIC OVARIAN SYNDROME AND ENDOCRINE IMBALANCES: **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the hormonal imbalances in PCOS (insulin resistance, hyperandrogenism). • Discuss the effects of PCOS on fertility and overall health.	Medicine	60 minutes	Lecture	MCQs
DISORDERS OF OVARY-2: **At the end of this lecture 2nd year MBBS students will be able to:** • Classify Ovarian Tumours. • Define Teratoma. • Describe its etio-pathogenesis. • Describe its Morphology.	Pathology	60 minutes	Lecture	MCQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
• Discuss its Clinical Features & Complications.				
UTERUS & ITS SUPPORT **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the gross structure of uterus, its location and shape. • List the coverings of uterus. • Discuss the structural relations of uterus. • Discuss the blood supply, nerve supply and lymphatic drainage of uterus. • Describe the primary & secondary supports of uterus • Describe Uterine Prolapse. • Define Hysterectomy. • Describe Carcinoma of Uterus and Cervix.	Anatomy	60 minutes	Lecture	MCQs, SEQs
VAGINA & ITS SUPPORT **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the gross structure of vagina, its location and shape. • List the coverings of vagina.	Anatomy	60 minutes	Lecture	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
• Discuss the structural relations of vagina. • Discuss the blood supply, nerve supply and lymphatic drainage of vagina. • Discuss the secondary supports of uterus and vagina. • Define Culdoscopy and Culdocentesis. • Define Episiotmy. • Define Vaginal Fistula, Bartholin Cysts and Abscesses.				
HISTOLOGY OF UTERUS AND VAGINA: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe the histological features of uterus and vagina. • Define the microanatomy of the walls of the uterus and vagina. • Define the lining epithelium of vagina and uterus. • Describe the cells found in the uterine endometrium.	Anatomy	90 minutes	Lecture	MCQs, SEQs
SLIDE OF UTERUS: **<u>At the end of this practical</u>**	Anatomy	120 minutes	Practical	OSPE

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
session 2nd year MBBS students will be able to: • Recognize the layers of uterus. • Identify the lining epithelium of endometrium and type of cells. • Distinguish the cyclical changes in the uterine endometrium.				
DISORDERS OF UTERUS (ENDOMETRIUM): **At the end of this lecture 2nd year MBBS students will be able to:** • Define Endometritis, Endometriosis, Adenomyosis, Endometrial Hyperplasia, and Endometrial Polyps. • Describe their etio-pathogenesis. • Discuss their Clinical Features & Complications.	Pathology	60 minutes	Lecture	MCQs
DISORDERS OF UTERUS (MYOMETRIUM): **At the end of this lecture 2nd year MBBS students will be able to:** • Define Leiomyoma. • Describe its etio-pathogenesis.	Pathology	60 minutes	Lecture	MCQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
• Describe its Morphology. • Discuss its Clinical Features & Complications.				
DISORDERS OF UTERUS (CERVIX -1): **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define Cervicitis and list its Types: Acute & Chronic Cervicitis. • Describe its etio-pathogenesis. • Discuss its Clinical Features.	Pathology	60 minutes	Lecture	MCQs
DISORDERS OF UTERUS (CERVIX -2): **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define Cervical Intraepithelial Neoplasia (CIN) and Squamous Cell Carcinoma of Cervix. • Describe their etio-pathogenesis. • Discuss their Clinical Features & Complications. Discuss the screening methods for Cervical Cancer and its preventive measures	Pathology	60 minutes	Lecture	MCQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
ENDOCRINE REGULATION OF MENSTRUAL CYCLE: **At the end of this lecture 2nd year MBBS students will be able to:** • Explain the hormonal control of the menstrual cycle, including the roles of GnRH, FSH, LH, estrogen, and progesterone. • Describe feedback mechanisms and the interaction between the hypothalamus, pituitary, and ovaries.	Medicine	60 minutes	Lecture	MCQs
MENSTRUAL IRREGULARITIES: (SCANTY MENSTRUATION) **At the end of this lecture 2nd year MBBS students will be able to**: • Define menstrual irregularities. • Classify the different types of menstrual irregularities. • Discuss the etiology of menstrual irregularities and scanty menstruation.	Gynae & Obs	60 minutes	Lecture	MCQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
• Enumerate the clinical features of menstrual irregularities.				
MENSTRUAL IRREGULARITIES (HEAVY MENSTRUATION) **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define heavy menstrual bleeding. • Classify the different types of menstrual irregularities (HMB). • Discuss the etiology of menstrual irregularities (HMB). • Enumerate the clinical features of menstrual irregularities.	Gynae & Obs	60 minutes	Lecture	MCQs
MATURATION & FERTILIZATION OF OVUM: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define the process of maturation of ovum. • Describe the process of fertilization. • Identify the site of fertilization.	Physiology	60 minutes	Lecture	MCQs, SEQs

Topics With Learning Objectives	Department	Duration	Teaching Strategy	Assessment
• Explain how the egg prevents fertilization by more than one sperm. • List the results of fertilization.				
IMPLANTATION OF OVUM: **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the formation of blastocyst. • Identify the implantation site. • Define mechanism of implantation. • Describe the formation of primary chorionic villi. • List the sites of ectopic pregnancy.	Physiology	60 minutes	Lecture	MCQs, SEQs
FEMALE FACTORS OF INFERTILITY: **At the end of this lecture 2nd year MBBS students will be able to:** • List down various causes of female infertility. • Enumerate the lab investigations for evaluation of female infertility.	Medicine	60 minutes	Lecture	MCQs

PREGNANCY TEST; **<u>At the end of this lab 2nd year MBBS students will be able to:</u>** • List different test of pregnancy • Explain the strip test of pregnancy in urine • Recognize the importance of pregnancy test done by serum	Physiology	120 min	Practical	OSPE
PRENATAL DIAGNOSIS OF GENETIC DISEASES: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define prenatal diagnosis. • List the indications and benefits of prenatal diagnosis • Identify the important prenatal procedures performed for diagnosing genetic disorders through placental tissue and amniotic fluid extraction. • Discuss biochemical interpretation of analyzing amniotic fluid for diagnosis of genetic disorders.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

FUNCTIONS OF PLACENTA: **<u>At the end of this lecture 2nd year MBBS students will be able to</u>:** • Explain Placental circulation. • List the function of placenta. • Enumerates the hormones of placenta. • Discuss the placental changes in pregnancy. • Recognize the pathologies associated with the placenta.	Physiology	60 minutes	Lecture	MCQs, SEQs
DOUBLE BOHR'S EFFECT: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • **Define** and describe the double Bohr's effect. • Discuss in detail its components. • Elaborate the clinical significance of knowing the phenomenon.	Physiology	60 minutes	Lecture	MCQs, SEQs
BIOCHEMICAL ROLE OF PLACENTA: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define fetoplacental unit.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• List the hormones produced by placenta. • Describe the endocrine role of fetoplacental unit in placenta. • Discuss the functions of placental hormones.				
DISORDERS OF PLACENTA: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define Hydatidiform Mole. • Describe its etio-pathogenesis. • Describe its Morphology. • Discuss its Clinical Features & Complications.	Pathology	60 minutes	Lecture	MCQs
PREGNANCY: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Recognize the signs of pregnancy in medico legal cases. • Associate the height of fundus of uterus with weeks of gestation. • Identify the medico legal importance of pregnancy.	Forensic Medicine	60 minutes	Lecture	MCQs

SECONDARY AMENORRHEA AFFECTING REPRODUCTION **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define secondary amenorrhea. • Discuss its pathophysiology. • Discuss non endocrinological causes of secondary amenorrhea affecting reproduction	Gynae & Obs	60 minutes	Lecture	MCQs
APPROACH TO A PATIENT WITH MENSTRUAL PROBLEMS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Discuss assessment of menstrual cycle • Discuss different menstrual disorders.	Family Medicine	60 minutes	Lecture	MCQs
PARTURITION: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define parturition. • Describe the physiological factors causing parturition	Physiology	60 minutes	Lecture	MCQs, SEQs

• List the physiological events occurring during and after parturition. • Discuss the hormonal and mechanical factors to increase uterine contractility.				
PHYSIOLOGICAL ROLE OF CONTRACEPTION: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define contraception. • List different contraceptive methods with pros and cons. • Describe the composition of hormonal contraceptives. • Describe the mechanism of action of hormonal contraceptives. • Identify the advantages and disadvantages of oral contraceptives.	Physiology	60 minutes	Lecture	MCQs, SEQs
SAFE MOTHERHOOD: -I **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List the WHO recommended strategies for safe motherhood.	Community Medicine	60 minutes	Lecture	MCQs

• Discuss about the antenatal care.				
ABORTION (MISCARRIAGE): **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define abortion and miscarriage. • Classify types of abortion & methods of induced Abortion. • List the complications of criminal abortion. • Discuss the ethical & Medicolegal considerations of Abortion.	Forensic Medicine	60 minutes	Lecture	MCQs
NEONATAL PHYSIOLOGY: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Explain the adaptations in maternal physiology during pregnancy. • Compare the difference in maternal and fetal physiology. • Describe the adaptations in physiological function between the human fetus and neonate.	Physiology	60 minutes	Lecture	MCQs, SEQs

MAMMARY GLAND: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe the gross structure of mammary gland. • Describe their location, relations, blood supply, nerve supply and lymphatic drainage of breast. • Describe the clinical conditions associated with breast.	Anatomy	60 minutes	Lecture	MCQs, SEQs
HORMONE ACTING ON BREAST: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Discuss functions of breast. • Describe role of growth hormone in breast development. • Explain role of estrogen, progesterone, prolactin, oxytocin & ILGF on breast.	Physiology	60 minutes	Lecture	MCQs, SEQs

MILK EJECTION REFLEX: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe stages of lactation. • Identify composition of milk. • List the factors affecting lactation. • Explain Milk Ejection Reflex	Physiology	60 minutes	Lecture	MCQs, SEQs
SAFE MOTHERHOOD-2 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define the role of a skilled birth attendant in ensuring safe motherhood • Define family planning and explain its significance in improving maternal and child health outcomes.	Community Medicine	60 minutes	Lecture	MCQs
NORMAL NEWBORN: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Introduction to neonatology	Paediatrics	60 minutes	Lecture	MCQs

CARE OF A NEWBORN: **At the end of this lecture 2nd year MBBS students will be able to:** • Orientation to Neonatology	Paediatrics	60 minutes	Lecture	MCQs
DISORDERS OF BREAST: **At the end of this lecture 2nd year MBBS students will be able to:** • Define Mastitis, Fibrocystic Change in breast. • Describe their etio-pathogenesis. • Discuss their Clinical Features & Complications. • List the causes of Nipple Discharge. • Define Gynaecomastia and list its etiology	Pathology	60 minutes	Lecture	MCQs
PROLACTIN: **At the end of this lecture 2nd year MBBS students will be able to:** • Identify the source of prolactin. • Enumerate the normal functions of prolactin in the body. • List the problems secondary to prolactin excess.	Medicine	60 minutes	Lecture	MCQs

DISORDERS OF BREAST (EPITHELIAL TUMOURS): **At the end of this lecture 2nd year MBBS students will be able to:** • Define Carcinoma in Situ & Invasive Carcinoma w.r.t Carcinoma of Breast. • Describe their etio-pathogenesis. • Describe their Morphology. • Discuss their Clinical Features & Complications.	Pathology	60 minutes	Lecture	MCQs
BENIGN BREAST DISEASE: **At the end of this lecture 2nd year MBBS students will be able to:** • To summarize the basic anatomy and physiology of the breast. • To enlist congenital anomalies of breast • Enlist the causes of breast lump • Classify breast lump and association with hormonal changes • Demonstrate triple assessment	Surgery	60 minutes	Lecture	MCQs

BREAST ABSCESS: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define breast abscess • Enlist the risk factors for the development of breast abscess • Describe the pathophysiology of development of breast abscess • Name the causative organism of breast abscess • Discuss the clinical signs and symptoms of breast abscess.	Surgery	60 minutes	Lecture	MCQs
DISORDERS OF BREAST (STROMAL TUMOURS): **<u>At the end of this lecture 2nd year MBBS students will be able to</u>:** • Define Fibroadenoma & Phyllodes Tumour of Breast • Describe their etio-pathogenesis. • Describe their Morphology. • Discuss their Clinical Features & Complications..	Pathology	60 minutes	Lecture	MCQs

BREAST CARCINOMA: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • To summarize the basic anatomy and physiology of the breast • Discuss the lymphatic drainage of breast • Describe different groups of axillary lymph nodes • Define triple assessment • Enlist risk factors for breast carcinoma • Describe the clinical signs and symptoms of breast carcinoma • Explain the basic steps of breast self-examination	Surgery	60 minutes	Lecture	MCQs
BIOCHEMICAL CHANGES IN MENOPAUSE: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** o Discuss about the biochemical changes which occur in females after menopause in different organ systems.	Biochemistry	60 minutes	Lecture	MCQs

ESTIMATION OF SERUM URIC ACID: **<u>At the end of this practical session 2nd year MBBS students will be able to:</u>** • Name the reagents to be used in the experiment. • Follow the instructions to prepare the stock standard solutions and the sample.. • Describe the principle of the reaction taking place in the experiment. • Record the readings of transmittance of stock standard solutions and sample by using spectrophotometry • Utilize the transmittance chart given in the practical for obtaining optical density values of 'S' and 'T' test tubes. • Calculate the concentration of stock standard solutions of 'S' test tubes	Biochemistry	120 minutes	Practical	OSPE
INTERPRETATION OF SERUM URIC ACID VALUES: **<u>At the end of this practical session 2nd year MBBS students will be able to:</u>** • Construct the graph to obtain the concentration of uric acid for the sample.	Biochemistry	120 minutes	Practical	OSPE

• State the normal range of serum uric acid. ○ Interpret the result of whether the sample is hypouricemic/hyperurice mic or within the normal range. • Discuss a few clinical causes of hypouricemia and hyperuricemia.				
TESTIS AND SCROTUM: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe the anatomy of the scrotum, and testes. • Describe the layers of testis and scrotum. • Discuss the blood supply and venous drainage of testis and scrotum. • Discuss the nerve supply of testis and scrotum. • Discuss the lymphatic drainage of testis and scrotum.	Anatomy	60 minutes	Lecture	MCQs
HISTOLOGY OF TESTIS AND SCROTUM: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Identify the histological features of scrotum and testes.	Anatomy	60 minutes	Lecture	MCQs, SEQs

• Describe the histology of seminiferous tubules, sertoli cells, spermatozoa, Leydig cells, rete testis and epididymis.				
SLIDE OF TESTES: **<u>At the end of this practical session 2nd year MBBS students will be able to:</u>** • Identify the histological features of testis. • Recognize the lining epithelium of seminiferous tubules. • List the cells found in the epithelium of seminiferous tubules. • Recognize the cells of leydig. • Explain the role of Sertoli and leydig cells In the production of sperm and regulation of male reproductive system.	Anatomy	120 minutes	Practical	OSPE
SCROTAL SWELLING **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Take a pertinent history and examination in a patient with scrotal swelling. • Differentiate scrotal swelling from	Surgery	60 minutes	Lecture	MCQs

inguinoscrotal swelling depending on history and examination. • Describe the anatomy of scrotum and testis. • List causes of scrotal swellings. • Differentiate different types of scrotal swelling upon history and examination				
TESTICULAR TORSION **At the end of this lecture 2nd year MBBS students will be able to:** • Identify and describe clinical anatomy of testis and scrotum • Formulate steps of history taking and take an appropriate history • Describe the steps of examination in patient with testicular torsion • Describe the risk factors for development of testicular torsion • Describe various complications of testicular torsion	Surgery	60 minutes	Lecture	MCQs

EMBRYOLOGY OF MALE REPRODUCTIVE SYSTEM I **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the development of testis. • Name the factors responsible for decent of testis • Discuss developmental anomalies of testis • Discuss defects of Male Internal Genitalia. • Define Hernias and cryptorchism.	Anatomy	60 minutes	Lecture	MCQs, SEQs
UNDESCENDED TESTIS **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the path of descend of testis. • Describe the hormones responsible for testicular descend. • Describe the anatomy of inguinal canal, testis, and scrotum. • Identify and examine the Undescended testis	Surgery	60 minutes	Lecture	MCQs

EMBRYOLOGY OF MALE REPRODUCTIVE SYSTEM II **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the development of epididymis, vas deferens and seminal vesicles. • Describe the development of male genitalia. • Discuss developmental anomalies of male external genitalia.	Anatomy	60 minutes	Lecture	MCQs, SEQs
ANATOMY OF DUCTS OF MALE REPRODUCTIVE SYSTEM **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the gross anatomy of Epididymis, Vas deferens, Seminal vesicle, ejaculatory duct. • Describe the neurovascular supply of Seminal vesicle . • Define Vasectomy.	Anatomy	60 minutes	Lecture	MCQs, SEQs
HISTOLOGY OF DUCTS OF MALE REPRODUCTIVE SYSTEM **At the end of this lecture 2nd year MBBS students will be able to:**	Anatomy	60 minutes	Lecture	MCQs, SEQs

• Identify the histological features of Epididymis, Vas deferens, Seminal vesicle, ejaculatory duct and prostate gland. • Describe the histology Epididymis, Vas deferens, • Seminal vesicle, ejaculatory duct and prostate gland.				
HISTOLOGY SLIDE OF SEMINAL VESICLES **At the end of this practical session 2nd year MBBS students will be able to:** • Identify the histological features of seminal vesicle. • Recognize the three coats of seminal vesicle. • Identify the lining epithelium of seminal vesicle.	Anatomy	120 minutes	Practical	OSPE
FUNCTIONAL PARTS OF MALE REPRODUCTIVE SYSTEM: **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the functional components of male reproductive system. • Discuss the functional organization of the testis. • Describe the process of spermatogenesis in the	Physiology	60 minutes	Lecture	MCQs, SEQs

germinal epithelium of the seminiferous tubule. • Explain the structural and functional significance of the blood-testis barrier.				
BASICS OF REPRODUCTIVE SYSTEM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Name different parts of male and female reproductive systems. • List the names of the hormones secreted by male and female reproductive organs. • Identify the functions of male and female reproductive hormones.	Medicine	60 minutes	Lecture	MCQs
CHEMISTRY OF ANDROGENS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List the Hormones produced by testes. • Identify the types of androgens produced by different sources of secretion. • Discuss the transport, plasma level, metabolism and regulation of secretion of testosterone.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• Describe the secretion and regulation of testosterone in fetal life, puberty, adult and old age. • State that the female hormones estrogen and progesterone are present in small quantities in males.				
SYNTHESIS OF TESTOSTERONE: **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the synthesis of testosterone through Δ4-pathway in testes. • Describe the synthesis of testosterone through Δ5-pathway in testes. • Discuss the metabolic effects of testosterone in adolescent and adult life in males. • List the non-metabolic effects of testosterone in fetal life and adult life.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
Function of Testosterone: At the end of this lecture 2nd year MBBS students will be able to: • Name the male sex hormones. • Explain the function of male hormones in reproduction.	Physiology	60 minutes	Lecture	MCQs, SEQs

• Describe the onset of puberty is signaled by high pulses of GnRH secreted by the hypothalamus. • Discuss the release of FSH and LH from the pituitary gland.				
REPRODUCTIVE HORMONES **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List the sources of testosterone, estrogen & progesterone and its functions in the male and female body respectively. • Identify the problems which arise due to testosterone, estrogen & progesterone deficiency in males and females respectively.	Medicine	60 minutes	Lecture	MCQs
SPERMATOGENESIS **<u>At the end of this lecture 2nd year MBBS students will be able to</u>**: • Describe the histological organization of the testis. • Summarize the process of spermatogenesis in the germinal epithelium of the seminiferous tubule. • Explain the structural and functional significance of the	Physiology	60 minutes	Lecture	MCQs, SEQs

blood-testis barrier. • Describe the structure and function of each segment of the male reproductive tract. • Describe the epithelia of seminal vesicle				
OVERVIEW OF PHARMACOLOGY OF MALE REPRODUCTIVE SYSTEM **At the end of this lecture 2nd year MBBS students will be able to:** • Recall the physiological effects of Testosterone. • Discuss the pathophysiology of Disorders related to Testosterone. • Discuss the mechanistic pharmacology of Testosterone.	Pharmacology	60 minutes	Lecture	MCQs
ESTIMATION OF SERUM CHOLESTEROL **At the end of this practical session 2nd year MBBS students will be able to:** • Name the reagents to be used in the experiment. • Read the instructions to prepare the stock standard solutions and the sample. • Describe the principle of the reaction taking place in	Biochemistry	120 minutes	Practical	OSPE

the experiment. • Record the readings of transmittance of stock standard solutions and sample with the help of spectrophotometer. • Refer to the transmittance chart for obtaining optical density values of 'S' and 'T' test tubes.				
ANALYSIS OF SERUM CHOLESTEROL VALUES **<u>At the end of this practical session 2nd year MBBS students will be able to:</u>** • Calculate the concentration of stock standard solutions of cholesterol of 'S' test tubes prepared in experiment of estimation of serum cholesterol. • Draw the graph to obtain the concentration of Serum cholesterol for the sample. • State the normal range of serum total cholesterol.	Biochemistry	120 minutes	Practical	OSPE
INTERPRETATION OF SERUM CHOLESTEROL VALUES **<u>At the end of this practical session 2nd year MBBS students will be able to:</u>** • Interpret the result	Biochemistry	120 minutes	Practical	OSPE

obtained from construction of serum cholesterol graph of whether the sample is hypocholesterolemic / hypercholesterolemic or within the normal range. • Discuss a few clinical causes hypocholesterolemia and hypercholesterolemia.				
CAPACITATION OF SPERMATOZOA AND FERTILIZATION OF OVUM **At the end of this lecture 2nd year MBBS students will be able to:** • Define capacitation • Discuss the events of capacitation • Discuss the main purpose and significance of capacitation	Physiology	60 minutes	Lecture	MCQs, SEQs
GROSS ANATOMY OF PROSTATE GLAND **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the gross features of the prostate gland. • Describe their location, relations, blood supply, nerve supply and lymphatic drainage.	Anatomy	60 minutes	Lecture	MCQs, SEQs

• Discuss Benign Prostatic Hyperplasia and Prostatic Cancer.				
SLIDE OF PROSTATE GLAND **<u>At the end of this practical session 2nd year MBBS students will be able to:</u>** • Recognize the histological features of prostate gland. • Recognize the different zones of prostate gland and their clinical importance.. • Identify the prostatic urethra. • Recognize the corpora amylacea.	Anatomy	120 minutes	Practical	OSPE
BENIGN PROSTATIC HYPERPLASIA **<u>At the end of this lecture 2nd year MBBS students will be able to</u>:** • Define Benign Prostatic Hyperplasia. • Explain the etiology & pathogenesis of BPH. • Describe the morphology of BPH (gross & microscopic). • List the clinical findings & complications of BPH.	Pathology	60 minutes	Lecture	MCQs

BENIGN PROSTATIC HYPERPLASIA **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the clinical anatomy of prostate gland and urethra. • Justify proper steps of history taking in patients with lower urinary tract symptoms. • Describe the various sign and symptoms in patients with lower urinary tract symptoms. • Describe the pathophysiology of benign prostatic hyperplasia.	Surgery	60 minutes	Lecture	MCQs
IMAGING OF MALE & FEMALE PELVIS **At the end of this lecture 2nd year MBBS students will be able to:** • Recall the anatomy of female pelvis • Identify the radiological features of female pelvis as viewed on an x-ray. • Recall the anatomy of prostate gland.	Radiology	60 minutes	Lecture	MCQs, OSPE

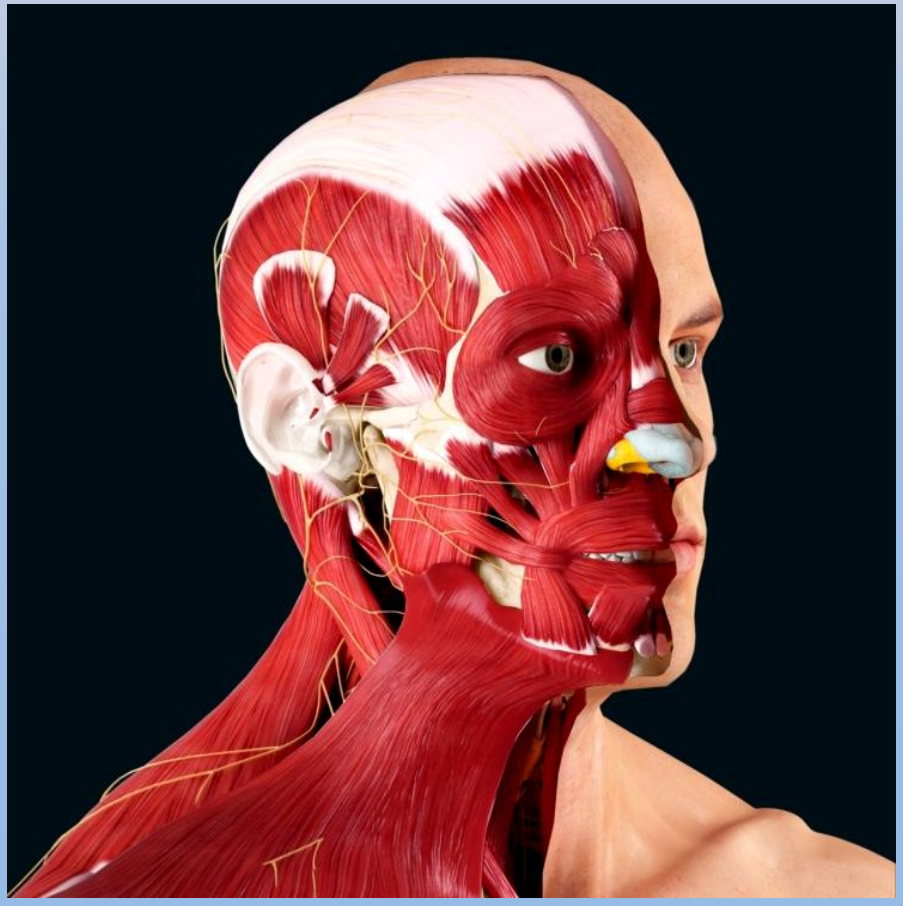
• Identify the radiological features of prostate gland as viewed on a CT scan.				
FUNCTION OF SEMEN: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Identify the normal composition of semen • Explain morphology and motility of semen • Define the indication and importance of semen analysis.	Physiology	60 minutes	Lecture	MCQs
ENDOCRINE REGULATION OF MALE REPRODUCTION: **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Explain the role of hormones (LH, FSH, testosterone) in spermatogenesis. • Define infertility • Identify the differences between primary and secondary infertility. • List down various causes of male infertility • Enumerate the lab investigations for evaluation of male infertility.	Medicine	60 minutes	Lecture	MCQs

• Describe how disorders like hypogonadism affect male fertility.				
MALE UROGENITAL TRIANGLE **At the end of this lecture 2nd year MBBS students will be able to:** • Describe male urogenital triangle and its contents. • Describe the gross anatomy of male urethra. • Describe the blood supply, nerve supply and lymphatic drainage of male urethra. • Describe the clinical conditions associated with penis and male urethra.	Anatomy	60 minutes	Lecture	MCQs, SEQs
UROGENITAL TRAUMA **At the end of this lecture 2nd year MBBS students will be able to:** • Summarize clinical anatomy of genitals, ureter, bladder and urethra. • Describe ATLS protocol. • List the signs and symptoms of patient presenting with urogenital trauma.	Surgery	60 minutes	Lecture	MCQs

Baqai Medical University

BMC
BAQAI MEDICAL COLLEGE

Head & Neck Module



Module-4	
Head and Neck Module	
System	Head and Neck region
Duration	8 weeks (13th July 2026 to 3rd Sept 2026)
Assessment Date	4th Sept 2026
Assessment pattern	MCQs, SEQs & OSPE

*The Assessment dates are tentative (Subject to change)

MODULE RATIONALE

The **Head and Neck module** in the second year MBBS curriculum provides students with a comprehensive understanding of the structure and function of vital anatomical regions that are essential for communication, sensory perception, and maintenance of vital functions such as breathing, swallowing, and speech. This module integrates foundational subjects to help students develop a clear understanding of the normal development, structure, and functioning of head and neck structures, including cranial nerves and special sensory organs. An integrated approach also links basic medical sciences with relevant clinical disciplines such as ENT, Ophthalmology, Surgery, and Community Medicine. This enables students to correlate normal structure and function with the underlying mechanisms of disease affecting the head and neck region such as infections, congenital anomalies, sensory impairments, and tumours. Furthermore, this module encourages students to apply their integrated knowledge to simple clinical scenarios, promoting early development of clinical reasoning and problem-solving skills which would support their future clinical training and prepare them for effective patient care in later years of the MBBS program.

MODULE LEARNING OUTCOMES

At the end of this module, the students of the 2nd year MBBS will be able to:

1. Integrate knowledge of basic medical sciences to explain the normal structure and function of the head and neck region, including cranial nerves and special senses.

2. Correlate basic medical sciences with clinical disciplines of ENT, Ophthalmology, Surgery, and Community Medicine to understand the etiology, pathogenesis, and clinical features of common head and neck disorders.

3. Apply integrated knowledge to interpret clinical examination findings, relevant investigations, and basic management principles in common head and neck disorders.

HEAD & NECK MODULE ALIGNMENT GRID

Topics With Objectives	Department	Duration	Teaching Strategy	Assessment
BONES AND JOINTS OF SKULL **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the bones of skull. • Name the different norma of skull. • Identify the important landmarks of each bone. • Describe the joints of skull and their attachments. • Describe the important clinical significance of specific landmarks.	Anatomy	60 minutes	Lecture	MCQs, OSPE
DEVELOPMENT OF SKULL **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the development of skull. • Describe the various anomalies of skull development.	Anatomy	60 minutes	Lecture	MCQs, SEQs
NORMA VERTICALIS **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the norma verticalis on the skull. • Name the bones of each norma.	Anatomy	60 minutes	Lecture	MCQs, OSPE

Topics With Objectives	Department	Duration	Teaching Strategy	Assessment
• Identify the important landmarks of each bone. • Identify the foramina with their contents. • Describe the muscle attachments of norma verticalis.				
NORMA OCCIPITALIS **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the norma occipitalis on the skull. • Identify the foramina with their contents. • Describe the muscle attachments of norma occipitalis.	Anatomy	60 minutes	Lecture	MCQs, OSPE
NORMA FRONTALIS **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the norma frontalis. • Name the bones of norma frontalis. • Identify the important landmarks of norma frontalis. • Identify their foramina with their contents. • Describe the muscle attachments of norma frontalis.	Anatomy	60 minutes	Lecture	MCQs, OSPE

Topics With Objectives	Department	Duration	Teaching Strategy	Assessment
NORMA LATERALIS **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the norma lateralis. • Name the bones of norma lateralis. • Identify the important landmarks of norma lateralis. • Identify their foramina. . • Describe the attachments of norma lateralis.	Anatomy	60 minutes	Lecture	MCQs, OSPE
NORMA BASALIS-1 **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the norma basalis. • List the bones forming the norma. Basalis. • Identify the important landmarks of norma basalis. • Identify their foramina with their contents.	Anatomy	60 minutes	Lecture	MCQs, OSPE
NORMA BASALIS-2 **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the attachments of norma basalis. • Describe the important clinical significance of specific landmarks**.**	Anatomy	60 minutes	Lecture	MCQs, OSPE
DEVELOPMENT OF PHARYNGEAL APPARATUS	Anatomy	60 minutes	Lecture	MCQs, SEQs

Topics With Objectives	Department	Duration	Teaching Strategy	Assessment
At the end of this lecture, 2nd year MBBS students will be able to: • Describe the development of Pharyngeal apparatus.				
SCALP **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the structure of the scalp. • Describe the muscles innervation, vascular supply & lymphatic drainage of the scalp. • Describe the applied anatomy of the scalp.	Anatomy	60 minutes	Lecture	MCQs,SEQs
HISTOLOGY OF SCALP **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the histological features of scalp. • Describe the various cells of scalp.	Anatomy	60 minutes	Lecture	MCQs,SEQs
SCALP **At the end of this practical session, 2nd year MBBS students will be able to:** • Describe the histological features of scalp. • Detail of the microanatomy of cells of layers of scalp. Differentiate between scalp	Histology	120 minutes	Practical	OSPE

Topics With Objectives	Department	Duration	Teaching Strategy	Assessment
layers				
TRAUMA TO THE HEAD AND NECK **At the end of this lecture, 2nd year MBBS students will be able to:** • Define Head Injury as per National Advisory Neurological Diseases & Stroke Council. • Classify Cranio-Cerebral Injury (Scalp , Skull & Brain). • Classify Brain Injury with mention of Mechanism of its production. • Explain Cerebral Concussion, Contusions & Lacerations. • Describe Coup & Contre-Coup Injury.	Forensic Medicine	60 minutes	Lecture	MCQs
MANDIBLE **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the parts of mandible. • List the attachment on the various parts of mandible. • Identify their foramina with their contents. • Discuss the applied anatomy of mandible	Anatomy	60 minutes	Lecture	MCQs, OSPE

TEMPORAL FOSSA **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the temporal fossa. • Describe the boundaries of temporal fossa. • List the content of temporal fossa. • Describe the Temporalis muscles its attachment, Innervation and action.	Anatomy	60 minutes	Lecture	MCQs,SEQs
RADIOLOGICAL ANATOMY OF HEAD **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the radiological anatomy of head. • Know about view of head. • Defend the need for next appropriate radiological investigation like other views of x-ray, ultrasound, CT and MRI.	Radiology	60 minutes	Lecture	MCQs
EMBRYOLOGICAL PHARYNGEAL APPARATUS-2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define the terms Branchial fistulas, Brachial sinuses, cysts.	Anatomy	60 minutes	Lecture	MCQs,SEQs

• Define 1st arch syndrome (Treacher Collins syndrome, Pierre Robin Syndrome)				
TEMPORO MANDIBULAR JOINT **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the temporo-mandibular joint its type and its articular surfaces. • Describe the ligaments attached at and movements of it with the muscles involved. • Describe the neuro vascular supply of it.	Anatomy	60 minutes	Lecture	MCQs,SEQs
INFRATEMPORAL FOSSA **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the boundaries of infra temporal fossa. • List the contents of infratemporal fossa • Describe the boundaries of pterygopalatine fossa. • Discuss the contents of pterygopalatine fossa.	Anatomy	60 minutes	Lecture	MCQs,SEQs
DEVELOPMENT OF FACE **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the development of face.	Anatomy	60 minutes	Lecture	MCQs,SEQs

• Describe the various stages of face development. • Describe the various anomalies of face development.				
CLEFT LIP AND PALATE: **<u>At the end of this lecture, 2nd year MBBS students will be able to</u>** • Describe the developmental anatomy of lip and palate • Discuss the causes of cleft lip and palate • Enlist the signs and symptoms of cleft lip and palate	Surgery	60 minutes	Lecture	MCQs
NERVES AND BLOOD VESSELS OF FACE **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss the arterial supply, venous and lymphatic drainage of face. • Identify the cutaneous nerve supply of the face.	Anatomy	60 minutes	Lecture	MCQs,SEQs
MUSCLES OF FACE **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the muscles of facial expression with attachments, nerve supply & actions.	Anatomy	60 minutes	Lecture	MCQs,SEQs

• Describe the applied anatomy of the face muscles.				
<u>At the end of this lecture, 2nd year MBBS students will be able to</u> • Describe the ATLS protocol for trauma • Describe various types of facial trauma • Enlist signs and symptoms of various types of facial trauma]\	Surgery	60 minutes	Lecture	MCQs
EYELID AND LACRIMAL GLAND **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss the eye lid and their parts. • Describe lacrimal apparatus. • Define the diseases related to lacrimal apparatus.	Anatomy	60 minutes	Lecture	MCQs,SEQs
HEAD & NECK SURGERY **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the anatomy of skull and meninges. • Describe how to take history in patient with head injury. • Discuss the ATLS protocols and its application in	Surgery	60 minutes	Lecture	MCQs

primary and secondary survey. • Describe Glasgow Coma Scale • Enlist different types of head injury • Describe the signs and symptoms of head injury				
ORBIT AND ITS CONTENTS **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the boundaries and contents of orbital cavity. • Describe the Ciliary ganglion and its location and connection.	Anatomy	60 minutes	Lecture	MCQs,SEQs
EYEBALL AND ITS CONTENT **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the structures & contents of the eye ball. • Enumerate the extrinsic & intrinsic muscles of the eye ball. • Describe the neuro vascular supply of these muscles.	Anatomy	60 minutes	Lecture	MCQs,SEQs
EYEBALL **At the end of this lecture, 2nd year MBBS students will be able to:**	Physiology	60 minutes	Lecture	MCQs,SEQs

• Name the Layers / Coats of Eyeball. • Explain the structure and importance of sclera. • Describe the corneal layers. • Summarize the choroid layer. • Describe the uveal tract. • Define Iris and Pupil.				
EMBRYOLOGY **DEVELOPMENT OF EYE** **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the developmental stages of eye. • Discuss the common congenital anomalies of eye.	Anatomy	60 minutes	Lecture	MCQs,SEQs
RETINA-1 **At the end of this lecture, 2nd year MBBS students will be able to:** • Name the layers of retina. • Summarize the functions of rods and cones. • Define macula and fovea. • Define and elaborate the optic nerve emerging from the optic disc.	Physiology	60 minutes	Lecture	MCQs,SEQs
RETINA-2 **At the end of this lecture, 2nd year MBBS students will be able to:**	Physiology	60 minutes	Lecture	MCQs,SEQs

• Define visual field and its parts. • Recognizes the representation of visual field on retina. • Memorize the Visual pathway. • Recognize the visual field defects. • Explain diagrammatically the visual field errors (Hemiopia). • Define binocular, monocular vision and diplopia.				
HISTOLOGY EYE **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the gross and microscopic structure of eye. • Describe the histological features of the layers of eye. • Describe the various cells of eye.	Anatomy	60 minutes	Lecture	MCQs,SEQs
FUNDOSCOPY **At the end of this practical session, 2nd year MBBS students will be able to:** • Explain the parts of Fundoscope. • Detail the protocols of Fundoscopy. • Perform Fundoscopy (Ophthalmoscopy) of given subject.	Physiology	120 minutes	Practical	OSPE

OPTICS OF VISION **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define refraction of light. • Discuss refractive index. • Discuss image formation on retina. • Discuss biconvex and biconcave lenses. • Define focal length. • Define dioptric power of a lens. • Calculate the refractive power of a reduced eye.	Physiology	60 minutes	Lecture	MCQs,SEQs
ERRORS OF REFRACTION **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Name the errors of refraction. • Explain Myopia (near sightedness) and its correction. • Explain Hyperopia (Long sightedness) and its correction. • Explain Presbyopia and its correction. • Explain stigmatism and its correction.	Physiology	60 minutes	Lecture	MCQs,SEQs
ACCOMODATION-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>**	Physiology	60 minutes	Lecture	MCQs,SEQs

• Define accommodation and explain the changes in the eyeball during accommodation. • Name the autonomic control on accommodation. • Explain the changes in the lens during accommodation.				
ACCOMODATION-2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Explain the pupillary changes during accommodation. • Explain the role of pupils during accommodation.	Physiology	60 minutes	Lecture	MCQs,SEQs
ACCOMODATION-3 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Explain the advantages of pupillary constriction (chromatic & spherical aberration, image distortion and depth of focus). • Explain the accommodation reflex. • Define Argyll Robertson Pupil. • Differentiate the pathway A.R and ARP.	Physiology	60 minutes	Lecture	MCQs,SEQs

• Explain the importance of medial convergence during accommodation.				
LIGHT REFLEX **At the end of this lecture, 2nd year MBBS students will be able to:** • Define light reflex • Describe the pathway of light reflex. • Compare the accommodation reflex with the light reflex pathway. • Identify the lesion in Argyle Robertson pupil.	Physiology	60 minutes	Lecture	MCQs,SEQs
EYE DISORDERS **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the Etiology, Clinical Manifestations and Complications of eye disorders namely Stye and Chlazion, Conjuctivitis., Cataract, Glaucoma., Retinal Detachment., Trachoma and Retinoblastoma.	Pathology	60 minutes	Lecture	MCQs
PAPILLARY REFLEX ABNORMALITIES **At the end of this lecture, 2nd year MBBS students will be able to:**	Ophthalmology	60 minutes	Lecture	MCQs

• Nerve supply to the pupillary muscles. • Normal response of the pupil to light and accommodation. • Effects of interruption in the different levels of innervations on pupillary reflexes. • Common abnormalities in pupillary responses.				
REFRACTIVE SURGERY **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Recall normal optics of a healthy eye. • Explain the occurrence of eye conditions like myopia, hypermetropia, astigmatism and presbyopia • Recognize the general principles of refractive surgery.	Ophthalmology	60 minutes	Lecture	MCQs
PHOTOCHEMISTRY OF VISION **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define Rhodopsin. • Summarize Rhodopsin cycle. • Explain the excitation of Rods and the conduction of action potential through the	Physiology	60 minutes	Lecture	MCQs,SEQs

ganglion cells the visual center. • Explain the role of Vit – A in the formation of Rhodopsin. • Define night blindness.				
COLOUR VISION **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define color vision. • State the theory of duplicity of color vision. • Distinguish between scotopic and photopic vision. • Identify the photoreceptor involved in color vision. • Name the pigment present in cone cells. • List the functions of cone cells. • Explain the photochemistry of color vision. • Identify the theories of color vision. • Explain the importance of sensitivity of photoreceptors to different wavelengths of light.	Physiology	60 minutes	Lecture	MCQs,SEQs
VISUAL ACUITY **<u>At the end of this practical session, 2nd year MBBS students will be able to:</u>** • Define visual acuity.	Physiology	120 minutes	Practical	OSPE

• Recognize visual acuity by using the Snellen's chart. • Explain the principles of Snellen's chart and Explain visual angle.				
LIGHT AND DARK ADAPTATION **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define dark and light adaptation. • Explain the dark adaptation. • Discuss dark adaptation curve. • Explain the importance of dart and light adaptation in vision.	Physiology	60 minutes	Lecture	MCQs,SEQs
MOVEMENTS OF EYEBALL **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • List the muscles controlling eyeball movements with their nerve supply. • Explain fixation movements of the eyes. • Explain saccadic movement of the eyes. • Explain pursuit movement of the eyeball. • Recognize strabismus and its types. • Define Horner's Syndrome.	Physiology	60 minutes	Lecture	MCQs,SEQs

• Explain about the lesions which occur in Horner's Syndrome.				
VISUAL CORTEX-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Memorize primary and secondary visual centers in the Visual Cortex. • Explain the Magnocellular and Parvocellular Pathways terminating in the visual cortex (VC). • Enumerate the six layers of lateral geniculate body and their functions.	Physiology	60 minutes	Lecture	MCQs,SEQs
VISUAL CORTEX-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define the function of visual association area. • Enumerate the layers of VC. • Explain the pathways for analysis of visual information. • Define stereopsis.	Physiology	60 minutes	Lecture	MCQs,SEQs
VITAMIN A **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the different forms of vitamin A.	Biochemistry	60 minutes	Lecture	MCQs,SEQs

• Recognize the dietary sources and daily requirements of vitamin A. • List the functions of vitamin A and its derivatives. • Describe the role of vitamin A in visual cycle.				
VISUAL CORTEX-3 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • **Define functions of horizontal cells.** • Define functions of bipolar cells. • Define functions of "X" & "Y" Ganglion Cells. • Discuss transmission of action potential in ganglion cells. • Name the neurotransmitters released by the photo – receptors. • Explain the electrotonic conduction of impulse in retinal cells. • Define lateral inhibition.	Physiology	60 minutes	Lecture	MCQs,SEQs
OPTIC NERVE **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the origin and course of optic nerve. • List its branches.	Anatomy	60 minutes	Lecture	MCQs,SEQs

• Discuss the area of supply of optic nerve.				
AMBLYOSCOPY **At the end of this practical session, 2nd year MBBS students will be able to:** • Explain the parts of Amblyoscope. • Detail the protocols of Amblyoscopy. • Perform Amblyoscopy on a given subject.	Physiology	120 minutes	Practical	OSPE
SQUINT **At the end of this lecture, 2nd year MBBS students will be able to:** • Recall the functions of extra-ocular muscles. • Classify squint. • Identify the principles of management of concomitant squint. • Define amblyopia • Discuss the causes and principle of management of amblyopia.	Ophthalmology	60 minutes	Lecture	MCQs
NOSE **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the external nose. • Identify the structures forming medial & lateral wall of the nose.	Anatomy	60 minutes	Lecture	MCQs,SEQs

• Describe the features of the lateral wall of the nose. • Describe the blood and nerve supply of the nose.				
SLIDE OF NOSE **At the end of this practical session, 2nd year MBBS students will be able to:** • Describe the histological features of the epithelium of nasal by observing under the microscope.	Histology	120 minutes	Practical	OSPE
DISORDER OF NOSE **At the end of this lecture, 2nd year MBBS students will be able to:** • Define Sinusitis. • List its causes and Describe some of its Clinical Manifestations. • Define Rhinitis. • List its causes and Describe some of its Clinical Manifestations. • Define Nasal Polyp. • List its causes. • Differentiate between its two types. • Describe its histological features. • Discuss its Clinical Manifestations and Complications. • Describe Nasopharyngeal carcinoma	Pathology	60 minutes	Lecture	MCQs

EPITAXIS AND ITS MANAGEMENT **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify causes and presentations by age • Demonstrate first aid, nasal packing, surgical management	ENT	60 minutes	Lecture	MCQs
DEVIATED NASAL SEPTUM **At the end of this lecture, 2nd year MBBS students will be able to:** • Define deviated Nasal septum. • Discuss about the causes, clinical features and complications of deviated nasal septum. • Associate the steps of surgical correction of deviated nasal septum with the complications which arise due to the procedure.	ENT	60 minutes	Lecture	MCQs
OLFACTORY NERVE **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the origin and course of olfactory nerve. • List its branches. • Discuss the area of supply of olfactory nerve	Anatomy	60 minutes	Lecture	MCQs,SEQs

OLFACTION-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Discuss the olfactory membrane. • Explain the mechanism of excitation of an olfactory cell. • Describe the concept of adaptation to smell. • Describe the olfactory pathway.	Physiology	60 minutes	Lecture	MCQs,SEQs
OLFACTION-2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Name the primary sensation of smell. • Define odorants and odor blindness. • Identify the threshold of smell. • Explain the centrifugal control of smell.	Physiology	60 minutes	Lecture	MCQs,SEQs
SENSE OF SMELL **<u>At the end of this practical session, 2nd year MBBS students will be able to:</u>** • Explain the mechanism smell perception. • Test sense of smell of a given subject by using different odorants.	Physiology	120 minutes	Practical	OSPE

• Mark the result as "Normal" or "Abnormal".				
PARANASAL SINUSES **At the end of this lecture, 2nd year MBBS students will be able to:** • List the para nasal sinuses. • Describe the openings of the para nasal sinuses. • Describe the neuro vascular supply of the para nasal sinuses.	Anatomy	60 minutes	Lecture	MCQs
SINUSITIS **At the end of this lecture, 2nd year MBBS students will be able to:** • Recall the anatomy of paranasal sinuses, their classification, their location with reference to lateral wall of nose and their drainage and functions of these sinuses. • Discuss the causes, clinical features and management of acute sinus Infection.	ENT	60 minutes	Lecture	MCQs
EXTERNAL EAR **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the parts and structures of the external ear. • Describe the neuro vascular supply of its different parts.	Anatomy	60 minutes	Lecture	MCQs

• Discuss the important clinical significance of the external ear.				
MIDDLE EAR **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the parts and structures of the middle ear. • Name the neuro vascular supply of its different parts. • Describe the boundaries and content of middle ear cavity. • Describe the important clinical significance of the middle ear.	Anatomy	60 minutes	Lecture	MCQs,SEQs
INTERNAL EAR **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the parts of the internal ear. • Describe the structure of the internal ear. • Identify the neuro vascular supply of its different parts. • Describe the clinical condition associated with the internal ear.	Anatomy	60 minutes	Lecture	MCQs,SEQs
SLIDE OF EAR **<u>At the end of this practical session, 2nd year MBBS students will be able to:</u>**	Histology	120 minutes	Practical	OSPE

• Describe the histological features of middle ear and cochlear apparatus by observing under the microscope.				
INTERNAL EAR **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the functions of organ of Corti. • Explain endo-cochlear potential. • Define place principle theory of hearing. • Define decibel. • Explain threshold of hearing at different frequencies.	Physiology	60 minutes	Lecture	MCQs,SEQs
VESTIBULOCOCHLEAR NERVE **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the Vestibulocochlear nerve and its branches. • Identify its pathway and relations. • Discuss the applied anatomy of Vestibulocochlear nerve.	Anatomy	60 minutes	Lecture	MCQs
PHYSIOLOGY OF HEARING	Physiology	60 minutes	Lecture	MCQs,SEQs

<u>At the end of this lecture, 2nd year MBBS students will be able to:</u> • Explain the physiological role of outer, middle and inner Ears in conduction of sound. • List the contents of middle ear cavity. • Explain the mechanism of sound conduction in middle ear.				
IMPEDANCE MATCHING **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** Discuss about attenuation reflex and Impedance matching**.**	Physiology	60 minutes	Lecture	MCQs
AUDITORY PATHWAY **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the auditory centers in the cerebral cortex. • Types of deafness. • Explain audiograms in deafness.	Physiology	60 minutes	Lecture	MCQs,SEQs
HEARING TEST **<u>At the end of this practical session, 2nd year MBBS students will be able to:</u>** • List the Instrument Used in Hearing Test.	Physiology	120 minutes	Practical	OSPE

• Perform hearing test by using tunning forks. • Differentiate between Nerve deafness & conductive deafness				
DISORDERS OF EAR **At the end of this practical session, 2nd year MBBS students will be able to:** • Define Otitis Externa, Otitis Media and Otitis Interna. • Describe their Etio-Pathogenesis. • Discuss their Clinical Manifestations and Complications. • Describe Cholesteatoma.	Pathology	60 minutes	Lecture	MCQs
EXTERNAL EAR AND ITS PATHOLOGIES **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss about external ear pathologies related excess wax secretion, foreign bodies dislodgement, otitis externa and fungal infections.	ENT	60 minutes	Lecture	MCQs
MIDDLE EAR AND ITS COMMON PATHOLOGIES **At the end of this lecture, 2nd year MBBS students will be able to:** • Define otitis media • Classify types of otitis media	ENT	60 minutes	Lecture	MCQs

• Identify pathological features of acute suppurative otitis media.				
ORAL CAVITY **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the boundaries and contents of oral cavity. • Describe the permanent and deciduous teeth. • Name the nerve supply of upper and lower teeth.	Anatomy	60 minutes	Lecture	MCQs
TONGUE & HYPOGLOSSAL NERVE **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the extrinsic & intrinsic muscles of the tongue. • Describe the nerve supply & lymphatic drainage of tongue	Anatomy	60 minutes	Lecture	MCQs,SEQs
HISTOLOGY OF TONGUE **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the microscopic features of tongue. • Describe the various tongue papillae.	Anatomy	60 minutes	Lecture	MCQs,SEQs
SLIDE OF TONGUE	Histology	120 minutes	Practical	OSPE

At the end of this practical session, 2nd year MBBS students will be able to: • Describe the microscopic features of tongue. • Describe the various tongue papillae.				
DEVELOPMENT OF TONGUE **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the development of tongue. • Describe the various anomalies of tongue development.	Anatomy	60 minutes	Lecture	MCQs,SEQs
TASTE-1 **At the end of this lecture, 2nd year MBBS students will be able to:** • Define types of primary tastes with examples. • Enumerate the taste buds and their locations. • Summarize a taste cells. • Name the different types of papillae and their locations. • Enumerate the pathway of taste.	Physiology	60 minutes	Lecture	MCQs,SEQs
TASTE-2 **At the end of this lecture, 2nd year MBBS students will be able to:**	Physiology	60 minutes	Lecture	MCQs,SEQs

• Discuss the mechanism of stimulation of taste buds. • Discuss the role of saliva in taste. • Define taste blindness. • Define adaptation of taste. • Define taste preferences and taste aversion.				
SENSE OF TASTE **<u>At the end of this practical session, 2nd year MBBS students will be able to:</u>** • Explain the mechanism smell perception. • Test sense of smell of a given subject by using different odorants. • Mark the result as "Normal" or "Abnormal".	Physiology	120 minutes	Practical	OSPE
DISORDERS OF ORAL CAVITY **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the following oral lesions: •Dental Caries. •Gingivitis. •Apthous Ulcers •Oral Candidiasis. •Leukoplakia & Erythroplakia. •Squamous Cell Papilloma & Carcinoma.	Pathology	60 minutes	Lecture	MCQs

PAROTID REGION **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe major & minor salivary glands. • Describe the structure of Parotid and its location. • Describe the location and openings of the parotid duct.	Anatomy	60 minutes	Lecture	MCQs,SEQs
SUBMANDIBULAR REGION **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the submandibular gland. • Describe the location and openings of the duct of sub-mandibular gland.	Anatomy	60 minutes	Lecture	MCQs,SEQs
SLIDE OF SALIVARY GLANDS **<u>At the end of this practical session, 2nd year MBBS students will be able to:</u>** • Describe the microscopic features of submandibular and sublingual salivary glands. • Describe the histological differences between serous and mucous acini of submandibular and sublingual salivary glands.	Histology	120 minutes	Practical	OSPE

DISORDERS OF SALIVARY GLANDS **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define Sialadenitis. • List the causes of sialadenitis. • List Benign and Malignant tumors of Salivary Glands. • Describe the morphological feature of Pleomorphic Adenoma.	Pathology	60 minutes	Lecture	MCQs
SALVARY GLAND DISORDERS **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define the surgical anatomy of the salivary glands • Classify salivary gland disorders. • Describe the clinical presentation of various disorders of salivary glands .	Surgery	60 minutes	Lecture	MCQs
APPLIED ANATOMY OF HEAD & NECK **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>**	Surgery	60 minutes	Lecture	MCQs

• Identify the indications for the management of epilepsy and pain syndromes and the approaches required to treat the patient • Discuss the etiology and natural history of squamous cell carcinoma of upper aerodigestive tract.				
GLOSSOPHARYNGEAL AND VAGUS NERVE **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the origin and course of glossopharyngeal and vagus nerve. • List their branches. • Discuss the area of supply of of glossopharyngeal and vagus nerve.	Anatomy	60 minutes	Lecture	MCQs
PAROTITIS, PLEOMORPHIC ADENOMA AND SIALOLITHIASIS **At the end of this lecture, 2nd year MBBS students will be able to:** • Recall the classification of salivary glands. • Discuss about salivary gland pathologies and their management.	ENT	60 minutes	Lecture	MCQs

MUSCLE OF MASTICATION **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the muscles of mastication. • Describe the movements of TMJ with the muscles involved. • Describe the neuro vascular supply of it.	Anatomy	60 minutes	Lecture	MCQs,SEQs
HYOID BONE **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the structure of hyoid bone. • State the anatomical importance of hyoid bone in relation to structures and muscles located around it.	Anatomy	60 minutes	Lecture	MCQs
PARASYMPATHETIC GANGLION **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the structure of parasympathetic ganglion in relation to preganglionic and postganglionic fibres arising from it. • Identify the structures it offers its innervation to.	Anatomy	60 minutes	Lecture	MCQs,SEQs

DEEP CERVICAL FASCIA AND PLATYSMA MUSCLE **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the deep cervical fascia and its location. • Describe platysma muscle.	Anatomy	60 minutes	Lecture	MCQs
CERVICAL PLEXUS **At the end of this lecture, 2nd year MBBS students will be able to:** • Name the nerve root of cervical plexus. • Describe the formation and branches of cervical plexus.	Anatomy	60 minutes	Lecture	MCQs,SEQs
CERVICAL VERTEBRAE **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the cervical vertebra. • Describe the features and joints formed by cervical vertebrae. • Differentiate between typical and atypical vertebrae.. • Describe the important clinical significance of cervical vertebra.	Anatomy	60 minutes	Lecture	MCQs,SEQs
PRETRACHEAL FASCIA, CAROTID SHEATH AND	Anatomy	60 minutes	Lecture	MCQs,SEQs

TISSUE SPACES OF NECK-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the pretracheal fascia and its location. • Describe the carotid sheath and their content**s.**				
PRETRACHEAL FASCIA, CAROTID SHEATH AND TISSUE SPACES OF NECK-2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the relations of carotid sheath and pretracheal fascia. • Describe the various tissue spaces of neck, their contents and their relations.	Anatomy	60 minutes	Lecture	MCQs
PREVERTEBRAL FASCIA **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the pre-vertebral fascia and its location. • Describe the relations of carotid sheath and pre-vertebral fascia.	Anatomy	60 minutes	Lecture	MCQs

STERNOCLEIDOMASTOID & TRAPEZIUS MUSCLES ACCESSORY NERVE **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify sternocleidomastoid muscle and trapezius muscle.. • Describe the attachment of,nerve supply and action of sternocleidomastoid. • Describe the attachment ,nerve supply and action of trapezius muscle.	Anatomy	60 minutes	Lecture	MCQs
ANTERIOR TRIANGLE OF NECK **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the anterior triangle of the neck. • Name the subdivision of anterior triangle • Describe the boundaries and content of subdivision of anterior triangle.	Anatomy	60 minutes	Lecture	MCQs,SEQs
POSTERIOR TRIANGLE OF NECK **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>**	Anatomy	60 minutes	Lecture	MCQs,SEQs

• Describe the posterior triangle of the neck. • Name the subdivision of anterior triangle • Describe the boundaries and content of subdivision of the posterior triangle of neck.				
NECK RADIOLOGY **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify the radiological anatomy of neck. • Know about view of neck. • Defend the need for next appropriate radiological investigation like other views of x-ray, ultrasound, CT and MRI.	Radiology	60 minutes	Lecture	MCQs
SUPRAHYOID MUSCLES **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the location of suprahyoid muscles. • Describe the attachment of suprahyoid muscles. • Mention the nerve supply and actions of suprahyoid muscles.	Anatomy	60 minutes	Lecture	MCQs,SEQs
INFRAHYOID MUSCLES	Anatomy	60 minutes	Lecture	MCQs,SEQs

<u>At the end of this lecture, 2nd year MBBS students will be able to:</u> • Describe the location of infrahyoid muscles. • Describe the attachment of infrahyoid muscles. • Mention the nerve supply and actions of infrahyoid muscles.				
LYMPHATICS OF NECK **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the lymphatic drainage of the neck. • Describe the applied anatomy of the lymphatic drainage of the neck.	Anatomy	60 minutes	Lecture	MCQs
ROOT OF NECK **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the landmarks and fascia of the root of neck. • Describe the structures passing through the root of neck.	Anatomy	60 minutes	Lecture	MCQs
VEINS OF NECK **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>**	Anatomy	60 minutes	Lecture	MCQs

• Identify the arteries of the neck. • Describe arteries of head and neck.				
CRANIAL NERVES-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the olfactory nerve, and its pathway. • Identify optic, oculomotor, trochlear, abducent nerves their pathway and branches. • Describe the trigeminal nerve, branches, and its pathway. • Describe the facial nerve, branches, and its pathway. • Discuss the applied anatomy.	Anatomy	60 minutes	Lecture	MCQs
CRANIAL NERVES-2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the vestibulocochlear nerve, branches, and its pathway. • Describe glassophalangeal, vagus, accessory and hypoglossal nerves.	Anatomy	60 minutes	Lecture	MCQs,SEQs

• Discuss the applied anatomy of cranial nerves.				
LESIONS OF CRANIAL NERVE **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss the common cranial nerve lesions with their presentation.	Medicine	60 minutes	Lecture	MCQs
ARTERIES OF NECK **At the end of this lecture, 2nd year MBBS students will be able to:** • Identify the arteries of the neck. • Describe arteries of head and neck.	Anatomy	60 minutes	Lecture	MCQs,SEQs
CERVICAL SYMPATHETIC TRUNK-1 **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss the organization of the autonomic nervous system. • Describe the sympathetic and parasympathetic nervous system. • Describe cervical sympathetic trunk.	Anatomy	60 minutes	Lecture	MCQs
CERVICAL SYMPATHETIC TRUNK-2	Anatomy	60 minutes	Lecture	MCQs

<u>At the end of this lecture, 2nd year MBBS students will be able to:</u> • Describe the sympathetic autonomic ganglia. • Describe some important autonomic innervations. • Discuss some important reflexes involving the nervous system.				
INJURIES AND THEIR CONTROL **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define injury. • Explain types of injuries and their risk factors. • Discuss accident and injury prevention and control measures.	Community Medicine	60 minutes	Lecture	MCQs
SCHOOL HEALTH - I **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define School Health • Discuss the components of coordinated school health program	Community Medicine	60 minutes	Lecture	MCQs
SCHOOL HEALTH – II **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>**	Community Medicine	60 minutes	Lecture	MCQs

• Discuss the responsibilities of school health services team members • List the functions of school health services (levels of prevention)				
STRUCTURE OF DNA **At the end of this lecture, 2nd year MBBS students will be able to:** • Recall the structure of nucleotides. • Describe in detail the structural characteristics of DNA- "Watson and Crick Model of Double Helix". • Recognize that DNA is a genetic material. Genes of eukaryotes are present in 'chromatin' which is made up of protein and DNA.	Biochemistry	60 minutes	Lecture	MCQs and SEQs
DNA REPLICATION – 1 **At the end of this lecture, 2nd year MBBS students will be able to:** • Define central dogma of life and DNA replication. • Recall cell cycle and indicate the phase in which DNA replication takes place. • List the requirements of DNA replication. • Identify that DNA replication takes place in 3 phases.	Biochemistry	60 minutes	Lecture	MCQs and SEQs

• Describe the process of DNA replication in first phase.				
DNA REPLICATION – 2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the process of elongation and termination in DNA replication • Describe the differences between prokaryotic and eukaryotic DNA replication.	Biochemistry	60 minutes	Lecture	MCQs and OSPE
DNA REPAIR-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • List the environmental factors involved in DNA damage. • Identify the various types of DNA damage that occur during replication along with the types of DNA repair systems required to correct them. • Describe the mechanism of DNA repair systems.	Biochemistry	60 minutes	Lecture	MCQs and SEQs

DNA REPAIR-II **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the mechanism of different DNA repair systems. • Discuss briefly about xeroderma pigmentosa. • Explain the role of telomeres in aging of a cell.	Biochemistry	60 minutes	Lecture	MCQs and SEQs
STRUCTURE OF RNA **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define RNA and enlist the types of RNA which exists in organisms. • Differentiate between RNA and DNA. • Describe the structure and functions of mRNA and tRNA. • Describe the structure of prokaryotic and eukaryotic ribosomes in relation with rRNA.	Biochemistry	60 minutes	Lecture	MCQs and SEQs
TRANSCRIPTION-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define transcription • Explain briefly about RNA polymerase and its role in	Biochemistry	60 minutes	Lecture	MCQs and SEQs

the process of transcription in prokaryotes.				
TRANSCRIPTION-2 **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the stages of transcription. • Summarize the methods employed by prokaryotes to terminate transcription.	Biochemistry	60 minutes	Lecture	MCQs and SEQs
POST-TRANSCRIPTIONAL MODIFICATION **At the end of this lecture, 2nd year MBBS students will be able to:** • Discuss about post-transcriptional modifications of m-RNA, t-RNA and r-RNA.	Biochemistry	60 minutes	Lecture	MCQs and SEQs
GENETIC CODE & MUTATION **At the end of this lecture, 2nd year MBBS students will be able to:** • Define the terms genetic code and mutation • Discuss the characteristics of genetic code. • Discuss about point mutation and its effects with examples.	Biochemistry	60 minutes	Lecture	MCQs and SEQs

• Define frame shift mutations. • Identify the types frameshift mutations. • Describe the features of deletion and insertion mutation with examples.				
TRANSLATION-1 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • List the materials required for protein synthesis in eukaryotes. • Explain the formation of aminoacyl tRNA. • Describe the initiation of translation with reference to initiation factors.	Biochemistry	60 minutes	Lecture	MCQs and SEQs
TRANSLATION-2 **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Describe the process of elongation with reference to role of elongation factors • Describe the termination of protein synthesis.	Biochemistry	60 minutes	Lecture	MCQs and SEQs
POST-TRANSLATIONAL MODIFICATIONS **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>**	Biochemistry	60 minutes	Lecture	MCQs and SEQs

• List the types of post-translational modifications which occur in proteins. • Discuss about the types of post-translational modifications of proteins				
INTRODUCTION TO RECOMBINANT DNA TECHNOLOGY **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define the terms biotechnology, recombinant DNA and recombinant DNA technology • List the goals of recombinant dna technology • Identify the applications of recombinant DNA technology	Biochemistry	60 minutes	Lecture	MCQs and SEQs
RECOMBINANT DNA TECHNOLOGY TOOLS **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • List the tools used in techniques of recombinant DNA technology. • Define the terms DNA probe, cDNA and vector	Biochemistry	60 minutes	Lecture	MCQs and SEQs

• Identify the origin of restriction and reverse transcriptase enzymes. • Describe the role of each tool used in recombinant DNA technology				
DNA CLONING **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define DNA Cloning • List the requirements for DNA Cloning. • Describe the process of DNA cloning • State the applications of DNA cloning • Define DNA libraries • Classify the types of DNA libraries.	Biochemistry	60 minutes	Lecture	MCQs and SEQs
HUMAN GENOME PROJECT **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define human genome project • Identify the need of starting human genome project. • Summarize the goals and outcomes of human genome project.	Biochemistry	60 minutes	Lecture	MCQs and SEQs

• Sort the potential applications and benefits of human genome project • Research the important ethical and social issues arising out of human genome project.				
RESTRICTION FRAGMENT LENGTH POLYMORPHISM **At the end of this lecture, 2nd year MBBS students will be able to:** • Define restriction fragment length polymorphism. • Classify the variations of RFLP. • Discuss about SNPs and their types, tandem repeats and VNTRs • List the applications of RFLP in research and medicine	Biochemistry	60 minutes	Lecture	MCQs and SEQs
POLYMERASE CHAIN REACTION **At the end of this lecture, 2nd year MBBS students will be able to:** • Describe the process of polymerase chain reaction (PCR)	Biochemistry	60 minutes	Lecture	MCQs and SEQs

• Identify the advantages of PCR • List the applications of PCR .				
SOUTHERN BLOTTING **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define blotting. • Identify that DNA is analyzed by Southern Blot. • Describe the principle of southern blotting • List the applications and benefits of southern blotting	Biochemistry	60 minutes	Lecture	MCQs and SEQs
NORTHERN & WESTERN BLOTTING **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Identify that RNA and proteins are analyzed by Northern Blot and Western Blot tests respectively. • Describe the principle of northern and western blotting • List the applications and benefits of nouthern and western blotting	Biochemistry	60 minutes	Lecture	MCQs and SEQs
MICROARRAYS **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>**	Biochemistry	60 minutes	Lecture	MCQs and SEQs

• Identify that microarray technique can be used to detect DNA and RNA. • Describe the principle of the technique of microarrays. • List the applications of microarrays. • Recognize the advantages and disadvantages of using microarrays technique.				
ELISA **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** • Define ELISA • Identify the purpose of performing ELISA on a body fluid sample. • Describe the principle of ELISA • Classify the types of ELISA tests. • List the applications of ELISA tests in medicine.	Biochemistry	60 minutes	Lecture	MCQs and SEQs
GENE THERAPY **<u>At the end of this lecture, 2nd year MBBS students will be able to:</u>** ▪ Define gene therapy ▪ Classify the types of gene therapy based on the type of cells targeted.	Biochemistry	60 minutes	Lecture	MCQs and SEQs

▪ Differentiate between in-vivo and ex-vivo gene therapy ▪ List the types of vectors used for gene therapy. ▪ List the methods of gene delivery into cells.				

Baqai Medical University

BMC
BAQAI MEDICAL COLLEGE

Neuroscience Module

Module-5	
Neuroscience Module	
System	Nervous system
Duration	10 weeks (7th Sept 2026 to 12th Nov 2026)
Assessment Date	13th Nov 2026
Assessment pattern	MCQs, SEQs & OSPE

*The Assessment pattern and dates are tentative (Subject to change)

MODULE RATIONALE

The Neuroscience Module in the second year of the MBBS program is designed to provide students with a comprehensive and integrated understanding of the structure, function, development, and clinical relevance of the nervous system**,** encompassing the central, peripheral, and autonomic divisions. The module integrates concepts from anatomy, physiology, histology, biochemistry, pathology, pharmacology, medicine, surgery and allied disciplines to explain fundamental processes such as neuronal signaling, synaptic transmission, sensory and motor pathways, reflexes, higher cortical functions, and autonomic regulation**.** It also emphasizes the pathophysiology, clinical presentation, diagnostic approaches, and basic management principles of common neurological disorders**,** including infections, trauma, neurodegenerative diseases, and metabolic and developmental abnormalities. Through practical sessions and clinical correlations, students develop skills in neurological examination, interpretation of investigations, and clinical reasoning**,** thereby preparing them for effective patient care in subsequent clinical years while fostering an evidence-based and multidisciplinary approach to neurological health.

MODULE LEARNING OUTCOMES

At the end of this module, the students of the 2nd year MBBS will be able to:

1. Explain the development and structural organization of the nervous system, including the forebrain, midbrain, hindbrain, meninges, ventricular system, and blood supply, along with their related congenital and clinical conditions.
2. Correlate the structure and function of the central and peripheral nervous systems with the clinical presentation of neurological disorders, including cranial nerve lesions.
3. Describe the biochemical mechanisms that maintain brain energy metabolism and support proper nervous system functioning under different physiological and metabolic states.

NEUROSCIENCES MODULE ALIGNMENT GRID

Topics With Objectives	Department	Duration	Teaching strategy	Assessment
OVERVIEW OF NERVOUS SYSTEM **At the end of this lecture 2nd year MBBS students will be able to:** • Recognize the structure and function of major division and components of central, peripheral and autonomic nervous system.	Anatomy	60 minutes	Lecture	MCQs, SEQs
NEUROBIOLOGY OF NEURON & NEUROGLIAL CELLS **At the end of this lecture 2nd year MBBS students will be able to:** • Classify the types of neuron and identify them in the different parts of the nervous system. • Name the processes of neurons. • Explain the structure of synapses. • Identify the types of neuroglial cells present in the different parts of the nervous system.	Anatomy	60 minutes	Lecture	MCQs, SEQs
THE NEURONAL CIRCUITS AND POOL **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the structure of neuronal circuits.	Physiology	60 minutes	Lecture	MCQs, SEQs

• Name the pools present in the CNS & the PNS. • List the types of neuronal circuits. • Summarize the role of each type of circuits.				
SYNAPSES AND TYPES **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe the structure of synapses. • Classify the types of synapse. • Name the electrical potential present at the synapse. • Describe the excitatory postsynaptic potentials & inhibitory postsynaptic potentials. • Explain the features of axonal and synaptic communication in neurons.	Physiology	60 minutes	Lecture	MCQs, SEQs
HISTOLOGY OF NEURON AND NEUROGLIA **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Explain the histology of neuron and neuroglia. • Microanatomy of various types neuroglia cells.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
NERVE FIBRES, RECEPTORS AND DERMATOME **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>**	Anatomy	60 minutes	Lecture	MCQs, SEQs

• Define the nerve fibers and name its processes. • Describe the varieties of receptors and identify them in the different parts of the body. • Explain the structure of receptors. • Recognize the dermatome of the nervous system and understand their landmarks. • Describe the transport of materials from the cell body to the axon terminals.				
PATTERNS OF INJURY OF THE NERVOUS SYSTEM **At the end of this lecture 2nd year MBBS students will be able to:** • List the causes of injury to the Nervous System. • Discuss the pattern of response of the cellular constituents of the nervous system to various forms of injury. • List the symptoms and signs related to nervous system injuries.	Pathology	60 minutes	Lecture	MCQs
PHARMACEUTICAL PREPARATIONS **At the end of this lecture 2nd year MBBS students will be able to:** • List different pharmaceutical preparations • Correlate the use of	Pharmacology	60 minutes	Lecture	MCQs

different pharmaceutical preparations according to needs of a patient				
RECEPTOR I, TYPES AND PROPERTIES **At the end of this lecture 2nd year MBBS students will be able to:** • Define sensory receptor. • Tabulate the different types of sensory receptors with their stimuli. • Categorize the tactile receptor.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
RECEPTOR II, TYPES AND PROPERTIES **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the basic properties of receptors. • Discuss the signal transmission through various receptors. • Explain the mechanism of stimulation of each type of receptor. • Explain receptor potential.	Physiology	60 minutes	Lecture	MCQs, SEQs
EXCITATORY POST-SYNAPTIC POTENTIAL **At the end of this lecture 2nd year MBBS students will be able to:** • Define EPSP. • Describe the characteristics of excitatory synapses on the post synaptic membrane. • Describe the features of EPSP.	Physiology	60 minutes	Lecture	MCQs, SEQs

INHIBITORY POST-SYNAPTIC POTENTIAL **At the end of this lecture 2nd year MBBS students will be able to:** • Define IPSP. • Describe the characteristics of IPSP. • Discuss the effects of inhibitory synapses on the postsynaptic membrane.	Physiology	60 minutes	Lecture	MCQs, SEQs
SUMMATION & OTHER PROPERTIES **At the end of this lecture 2nd year MBBS students will be able to:** • Define summation. • Describe spatial summation and temporal summation.	Physiology	60 minutes	Lecture	
MENINGES OF BRAIN-1 **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the structure and function of the three meninges. • Describe the venous sinuses within the skull.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
MENINGES OF BRAIN-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Explain the contribution of meninges to the walls of the skull. • Discuss the relationship of the meninges to the different form of cerebral hemorrhage.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

PRESENTING PROBLEMS IN NEUROLOGICAL DISORDERS **At the end of this lecture 2nd year MBBS students will be able to:** • Recognize symptoms that may signify a neurological disorder including headache, ALOC, limb weakness, numbness/paresthesia, fits etc.	Medicine	60 minutes	Lecture	MCQs
CNS INFECTIONS **At the end of this lecture 2nd year MBBS students will be able to:** • Define Encephalitis. • Define Meningitis. • Describe the Etio-Pathogenesis of Meningitis. • Discuss the Clinical Manifestations & Complications of Meningitis.	Pathology	60 minutes	Lecture	MCQs
IV INFUSIONS **At the end of this lecture 2nd year MBBS students will be able to:** • List different Intravenous Infusions • Correlate the use of different IV infusions according to needs of a patient • List precautions related to these IV infusions	Pharmacology	60 minutes	Lecture	MCQs
SPINAL CORD I **At the end of this lecture 2nd year MBBS students will be able to:**	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

• Discuss the basic structure of the spinal cord. • Describe the structure of typical spinal nerve. • Explain the position of the main nervous pathways and nerve cell group in the spinal cord.				
SPINAL CORD II **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Comparison of structural details in different regions of the spinal cord. • Discuss the transverse section of spinal cord at different levels. • List the main arteries and veins supplying the spinal cord.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
HISTOLOGY OF SPINAL CORD **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** Discuss the basic micro structure of the spinal cord.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
SPINAL CORD **<u>At the end of this practical 2nd year MBBS students will be able to:</u>** • Identify the slide and adjust under microscope • Visualize the slide by both eyes in binocular lens. • Analyze the slide by low and high magnification.	Anatomy	120 minutes	Practical	OSPE

• Identify the microscopic features of Spinal cord. • Discuss the spinal cord at different levels. • Comparison of structural details in different regions of the spinal cord.				
DEVELOPMENT OF SPINAL CORD **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the Neuro-epithelial, Mantle, and Marginal Layers. • Describe the Basal, Alar, Roof, and Floor Plates. • Enumerate the Histological Differentiation • Explain the role of neural crest cells. • Describe the processes of myelination. • Describe the clinical correlation of spinal cord development.	Anatomy	60 minutes	Lecture	MCQs, SEQs
DEVELOPMENTAL NEUROLOGICAL DISORDERS **At the end of this lecture 2nd year MBBS students will be able to:** • Define Syringomyelia. • Describe its Etio-Pathogenesis. • Discuss its Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs

RATE OF IV FLOW CALCULATIONS **At the end of this lecture 2nd year MBBS students will be able to:** • List various formulas used to calculate rate of flow, infusion time and total volume ofinfusion • Interpret the given Clinical scenarios related to rate of flow.	Pharmacology	60 minutes	Lecture	MCQs
NEURAL TUBE DEFECTS **At the end of this lecture 2nd year MBBS students will be able to:** • Identify the spectrum of conditions associated with failed closure of posterior neuropore. • Discuss the entities in posterior fossa malformation. • Describe craniosynostosis, clinical features and its types.	Surgery	60 minutes	Lecture	MCQs
SPINAL CORD PHYSIOLOGY **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the functions of spinal cord. • Name the sensory and motor tracts.	Physiology	60 minutes	Lecture	MCQs, SEQs

• Describe the functional arrangement of spinal cord. • Categorize the spinal and cranial nerves. • Discuss the importance of crossed tracts.				
CLINICAL PRESENTATION OF SPINAL CORD DISORDERS **At the end of this lecture 2nd year MBBS students will be able to:** o Recall the functional anatomy and physiology of the spinal cord • Discuss the clinical features (symptoms and signs) of spinal cord disorders.	Medicine	60 minutes	Lecture	MCQs
CNS TRAUMA **At the end of this lecture 2nd year MBBS students will be able to:** • Define **Cerebral Contusion** and **Concussion.** • Describe their etiology and Clinical Manifestations and Complications. • Define **Hematoma**, **Epidural Hematoma** and **Subdural Hematoma.** • Describe their Etio-Pathogenesis. • Discuss their Clinical Manifestaions & Complications.	Pathology	60 minutes	Lecture	MCQs

INTERNATIONAL SYSTEM OF UNITS **At the end of this lecture 2nd year MBBS students will be able to:** • Define International system of units with help of examples. • List different ways of conversions used in pharmaceutical practicals. • List different household measurements.	Pharmacology	60 minutes	Lecture	MCQs
ASCENDING TRACTS OF SPINAL CORD **At the end of this lecture 2nd year MBBS students will be able to:** • List the names of ascending tracts. • Drawing of each of the ascending tracts, showing their cells of origin, their course through the central nervous system and their destinations.	Anatomy	60 minutes	Lecture	MCQs, SEQs
DESCENDING TRACTS OF SPINAL CORD **At the end of this lecture 2nd year MBBS students will be able to:** • List the names of descending tracts. • Demonstrate each of the descending tracts, showing their cells of origin, their course through the central nervous system and their destinations.	Anatomy	60 minutes	Lecture	MCQs, SEQs

TRIPLE RESPONSE OF SKIN **At the end of this practical 2nd year MBBS students will be able to:** • Explain the mechanism of the three stages of triple response. • Define Axon reflex. • Describe the types of sensory fibers and neurotransmitters involved in triple response. • Discuss orthodromic and antidromic nerve conduction.	Physiology	120 minutes	Practical	OSPE
CLINICAL PRESENTATION OF NEUROLOGICAL DISEASE **At the end of this lecture 2nd year MBBS students will be able to:** Recognize sign and symptoms that may signify neurologic diseases.	Medicine	60 minutes	Lecture	MCQs
INTRODUCTION TO PRESCRIPTION WRITING **At the end of this lecture 2nd year MBBS students will be able to:** • Define Prescription. • List different parts of Prescription. • Correlate the use of abbreviations in Prescription Writing.	Pharmacology	60 minutes	Lecture	MCQs
SENSORY PATHWAYS-1 **At the end of this lecture 2nd year MBBS students will be able**	Physiology	60 minutes	Lecture	MCQs, SEQs

to: • Discuss the dorsal column medial lemniscus system function. • Discuss lateral pathway and its function.				
SENSORY PATHWAYS-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the pathway and functions of spinothalamic tract • Describe the pathway of fine touch.	Physiology	60 minutes	Lecture	MCQs, SEQs
TRANSMISSION OF TOUCH **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the types of touch receptors. • List the types of mechanoreceptors. • Explain the functions of mechanoreceptors. • Discuss the spinal reflex arc.	Physiology	60 minutes	Lecture	MCQs, SEQs
SENSE OF TEMPERATURE **At the end of this lecture 2nd year MBBS students will be able to:** • Define the sense of temperature. • Discuss the pathway of temperature regulation • Discuss the clinical manifestations showing disturbed senses of temperature.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
EXAMINATION OF SENSORY SYSTEM **At the end of this practical 2nd**	Physiology	120 minutes	Practical	OSPE

year MBBS students will be able to: • List the types of senses. • Describe & discuss the somatic senses with demonstration. • Explain the fine & crude senses with their tracts & demonstrate. • Define two point discrimination, stereognosis, morphosynthesis, and graphaesthesia barognosis with practical demonstration.				
UNDERSTANDING SENSORY DISTURBANCES **At the end of this practical 2nd year MBBS students will be able to:** • Recall anatomy and physiology of the somatosensory system. • Discuss presenting symptoms associated with the diseases affecting sensory pathway. • Identify patterns of sensory loss along the neuro-axis in various neurological disorders.	Medicine	60 minutes	Lecture	MCQs
PAIN TRANSMISSION **At the end of this lecture 2nd year MBBS students will be able to:** • Define pain and pain perception. • List the different classes of pain. • Differentiate between nociceptive and non-nociceptive pain.	Physiology	60 minutes	Lecture	MCQs, SEQs

GATING SYSTEM OF PAIN **At the end of this lecture 2nd year MBBS students will be able to:** • Describe Analgesia system. • Explain gate control theory of pain. • List the neurotransmitters responsible for pain suppression.	Physiology	60 minutes	Small Group Teaching	OSPE
REFERRED PAIN **At the end of this lecture 2nd year MBBS students will be able to:** • Define referred pain. • Explain referred pain. • Discuss the types. • Discuss the theories of pain.	Physiology	60 minutes	Lecture	MCQs, SEQs
PAIN ABNORMALITIES **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss how to differentiate between pain threshold, perceptual dominance and pain tolerance. • Describe the effects of neuromodulator on the transmission of pain impulses. • Discuss headache and Trigeminal neuralgia • Discuss the effect of pain from tooth and nose referred as headache.	Physiology	60 minutes	Lecture	MCQs, SEQs
SOMNIFEROUS POISONS-1(OPIOIDS) **At the end of this lecture 2nd year MBBS students will be able to:** • List the Uses of Opioids. • Describe the Extraction of Opioids from Poppy Plant.	Forensic Medicine	60 minutes	Lecture	MCQs

• Identify the Active Principles contained in them.				
PAIN MANAGEMENT **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define pain • Classify types of pain • Describe different methods of measurement of pain. • List the common drugs used for pain relief	Anesthesiology	60 minutes	Lecture	MCQs
ANAESTHETIC AGENTS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List the drugs used during anesthesia • Describe the pharmacological properties of anesthetic agents • Discuss the side effects of anesthetic drugs	Anesthesiology	60 minutes	Lecture	MCQs
LOCAL ANAESTHETIC AGENTS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define local anesthetic agents and LAST • Classify local anesthetic agents • Identify the site of action of LA. • State the maximum doses of lidocaine and bupivacaine which can be administered to a patient.	Anesthesiology	60 minutes	Lecture	MCQs
REGIONAL ANAESTHESIA **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>**	Anesthesiology	60 minutes	Lecture	MCQs

• Recall the anatomy of spinal cord • List the types of regional anaesthesia namely spinal anesthesia, epidural anesthesia, caudal anesthesia and nerve Nerve blocks				
INVESTIGATION OF NEUROLOGICAL DISEASE **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** List the names and indications of various investigations used in neurological disorders, including neuroimaging, neurophysiological tests, and cerebrospinal fluid (CSF) analysis	Medicine	60 minutes	Lecture	MCQs
INTRODUCTION TO MOTOR SYSTEM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe the organization of motor areas in Brain. • Explain the motor pathway • Discuss the functions of pyloric tract. • List the extra pyloric tract. • Discuss the functions and arrangement of the alpha and gamma motor neurons in the anterior grey matter of spinal cord. • Define a motor unit and its role in controlling the force developing in a skeletal muscle.	Physiology	60 minutes	Lecture	MCQs, SEQs
MOTOR SYSTEM PATHWAY-1 **<u>At the end of this lecture 2nd</u>**	Physiology	60 minutes	Lecture	MCQs, SEQs

year MBBS students will be able to: • Define descending tracts. • List the types of descending tracts. • Explain the physiologic arrangement of descending tract.				
MOTOR SYSTEM PATHWAY-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the origin, termination & functions of descending tracts. • Explain functions of motor cortex, premotor cortex and supplementary motor cortex.	Physiology	60 minutes	Lecture	MCQs, SEQs
DEVELOPMENT OF BRAIN **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the development of fore brain. • Describe the defects of fore brain. • Describe the development of Mesencephalon: Midbrain. • Describe the defects of midbrain. • Describe the development of Rhombencephalon: Hindbrain. • Describe the defects of hind brain.	Anatomy	60 minutes	Lecture	MCQs, SEQs
BRAIN TUMORS: **At the end of this lecture 2nd year MBBS students will be able to:** • Classify brain tumors based on WHO classification.	Surgery	60 minutes	Lecture	MCQs

• Discuss the chromosomal abnormalities associated with brain tumors. • Describe the clinical presentation in common brain tumors.				
REFLEX AND ITS TYPES-1 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define reflex. • List the components of a reflex arc. • Define autonomic reflexes and list them. • Classify reflexes according to the type of synapses (mono, die, and poly).	Physiology	60 minutes	Lecture	MCQs, SEQs
REFLEX AND ITS TYPES-2 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Explain reciprocal inhibition. • Define graded reflexes. • List the root values of reflexes.	Physiology	45 minutes	Lecture	MCQs, SEQs
STRETCH REFLEX **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define stretch, inverse stretch reflex and conditioned reflex. • Describe the muscle spindle and knee jerk. • List the properties of reflexes. • Describe the static & dynamic response of a muscle. • Explain alpha and Gamma co activation.	Physiology	60 minutes	Lecture	MCQs, SEQs
SYRINGOMYELIA **<u>At the end of this lecture 2nd year MBBS students will be able</u>**	Pathology	60 minutes	Lecture	MCQs

to: • Define Syringomyelia. • Describe the etiopathogenesis of syringomyelia.				
LESIONS OF SPINAL CORD **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the various clinical presentations of spinal cord disorders correlating with its organization, structure and function.	Medicine	60 minutes	Lecture	MCQs
GOLGI TENDON REFLEX-1 **At the end of this lecture 2nd year MBBS students will be able to:** • Define golgi tendon reflex and its function • Explain the Functions of Gamma Efferent System. • Describe the Inverse Stretch Reflex (lengthening reaction).	Physiology	60 minutes	Lecture	MCQs, SEQs
GOLGI TENDON REFLEX-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the types of polysynaptic reflexes & their level of integration. • Describe the Physiological Significance of these reflexes. • List the differences between Muscle spindle & Golgi Tendon Organ.	Physiology	60 minutes	Lecture	MCQs, SEQs
BROWN SEQUARD SYNDROME **At the end of this lecture 2nd year MBBS students will be able**	Physiology	60 minutes	Small Group Teaching	OSPE

to: • Recall the physiology of ascending and descending tracts. • Define Brown sequad syndrome • Discuss the motor and sensory effects in Brown sequad syndrome.				
EXAMINATION OF MOTOR SYSTEM **At the end of this practical 2nd year MBBS students will be able to:** • Recall the components of motor system. • Examine the grading, power, tone of different muscles of upper & lower limbs. • Explain the different deep tendon reflexes and demonstrate with the help of clinical hammer. • Determine the tracts of transmission. • Explain the different types of gait with the underlying lesion. • Identify the abnormalities related with motor system.	Physiology	120 minutes	Practical	OSPE
HEMISECTION OF SPINAL CORD **At the end of this lecture 2nd year MBBS students will be able to:** • Explain the hemi section of spinal cord. • Describe the changes with lesion at the lumbar or thoracic level.	Physiology	60 minutes	Lecture	MCQs, SEQs
HEMISECTION OF SPINAL CORD **At the end of this lecture 2nd year**	Surgery	60 minutes	Lecture	MCQs

MBBS students will be able to: • Define the basic anatomy of spinal cord. • Explain the sensory and motor distribution in spinal cord. • Define hemi section of spinal cord • list the signs and symptoms of hemi section of spinalcord. • Explain the sensory and motor loss in hemi section of spinalcord				
INTRODUCTION OF BRAINSTEM **At the end of this lecture 2nd year MBBS students will be able to:** • List the parts of the brain stem. • Discuss the main anatomical connections of the brain stem.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
ROLE OF BRAINSTEM **At the end of this lecture 2nd year MBBS students will be able to:** • List the nuclei of brain stem. • List the functions of brain stem. • Explain the function of brain stem on anti-gravity muscles • Explain Decerebrate rigidity.	Physiology	60 minutes	Lecture	MCQs, SEQs
EXTERNAL STRUCTURE OF MEDULLA OBLONGATA **At the end of this lecture 2nd**	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

year MBBS students will be able to: cognize the gross appearance of dulla oblongata. scribe the external appearance of dulla oblongata. scribe the origin of different cranial rves from the medulla oblongata. mmarize the function of medulla longata.				
INTERNAL STRUCTURE OF MEDULLA OBLONGATA-1 **At the end of this lecture 2nd year MBBS students will be able to:** cognize the internal appearance of dulla oblongata. velop a three dimensional picture of t section of medulla oblongata.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
PYRAMIDAL AND EXTRA-PYRAMIDAL TRACTS **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss Pyramidal tract and Extrapyramidal tracts. • Discuss the origin, termination and function of Pyramidal tract and Extrapyramidal tracts. • Explain extrapyramidal disorders.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
INTERNAL STRUCTURE OF MEDULLA OBLONGATA-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Describe comparison of the different level of the medulla oblongata. • Summarize the details of medulla oblongata.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
UPPER MOTOR NEURONE LESIONS	Physiology	60 minutes	Lecture	MCQs, SEQs

<u>At the end of this lecture 2nd year MBBS students will be able to:</u> • Define Upper motor neurons • List the features of upper motor neuron syndrome. • Describe the features of upper motor neuron lesion.				
LOWER MOTOR NEURONE LESIONS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define Lower motor neurons. • List the features of lower motor lesion. • Describe the features of lower motor neuron lesions. • Recognize the differences between Upper and Lower motor neuron lesions.	Physiology	60 minutes	Lecture	MCQs, SEQs
EXAMINATION OF DEEP REFLEXES **<u>At the end of this practical 2nd year MBBS students will be able to:</u>** • Understand and define Deep Tendon Reflexes. • Distinguish between hyper and hypo-tonic Deep Tendon Reflexes. • Gain a basic knowledge of Deep Tendon Reflex grading. • Describe the examination for biceps, triceps, supinator reflexes, jaw jerk, Achilles' tendon reflex, and knee jerk. • Identify the signs and lesions of reflex arc of associated reflex.	Physiology	120 minutes	Practical	OSPE
DEMYELINATING DISORDERS	Pathology	60 minutes	Lecture	MCQs

At the end of this lecture 2nd year MBBS students will be able to: • Classify Demyelinating Disorders • Define Multiple Sclerosis. • Describe the etiopathogenesis of multiple sclerosis.				
UPPER AND LOWER MOTOR NEURONE SYNDROMES **At the end of this lecture 2nd year MBBS students will be able to:** • Recall the functional anatomy and physiology of the facial and trigeminal nerves. • Identify the clinical signs and symptoms associated with facial nerve weakness and trigeminal neuropathy.	Medicine	60 minutes	Lecture	MCQs
REGIONAL ANESTHESIA **At the end of this lecture 2nd year MBBS students will be able to:** • Recall the anatomy of spinal cord • Discuss about different types of regional anaesthesia namely spinal anesthesia , Epidural anesthesia, Caudal anesthesia and Nerve blocks	**Anesthesiology**	60 minutes	Lecture	MCQs
DEVELOPMENT OF BRAINS-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the development of fore brain, midbrain, and hindbrain.	Anatomy	60 minutes	Lecture	MCQs, SEQs

PONS-1 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** Describe the pons, its parts, location, and relations.	Anatomy	60 minutes	Lecture	MCQs, SEQs
PONS-II **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List the position of several cranial nerve nuclei, and the paths taken by various ascending and descending nerve tracts. • Describe the different level of the pons.	Anatomy	60 minutes	Lecture	MCQs, SEQs
MID BRAIN -1 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** Describe the midbrain and recognize the cut sections of the midbrain.	Anatomy	60 minutes	Lecture	MCQs, SEQs
MID BRAIN -2 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe comparison of the different levels of the midbrain. • List the position and the paths of several cranial nerve nuclei of the midbrain.	Anatomy	60 minutes	Lecture	MCQs, SEQs
CEREBELLUM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Explain the structure and function of the cerebellum. • Describe the functional areas of the cerebellar cortex.	Anatomy	60 minutes	Lecture	MCQs, SEQs

• List the intracerebellar nuclei. • Discuss the cerebellar cortical mechanism.				
CEREBELLAR PATHWAY **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the cerebellar cortical mechanism. • Describe the functional areas of the cerebellar cortex. • List the Intracerebellar nuclei. • Discuss the cerebellar pathways.	Anatomy	60 minutes	Lecture	MCQs, SEQs
HISTOLOGY OF CEREBELLUM **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the basic micro structure of the cerebellum. • Comparison of structural details in different regions of the cerebellum. • Discuss the transverse sections of cerebellum at different levels. • Develop a three dimensional picture of cut section of cerebellum.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
CEREBELLUM **At the end of this practical 2nd year MBBS students will be able to:** • Identify the slide and adjust under microscope • Visualize the slide by both eyes in binocular lens. • Analyze the slide by low and high magnification.	Anatomy	120 minutes	Practical	OSPE

• Identify the microscopic features of cerebellum. • Discuss the basic micro structure of the cerebellum. • Discuss the cerebellum at different levels.				
FUNCTIONS OF PATHWAY OF CEREBELLUM **At the end of this lecture 2nd year MBBS students will be able to:** • Define the physiological tracts of cerebellum. • List the functions of each part of cerebellum. • State the functions of principle afferent systems to the cerebellum (THE NEURONAL CIRCUIT). • Explain "Turn – O & Turn – Off" mechanism.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
EXAMINATION OF CEREBELLUM **At the end of this practical 2nd year MBBS students will be able to:** • Describe the examination for different lobes of cerebellum • Identify the signs to elicit for cerebellar lesions • Explain the Romberg's sign to differentiate ataxia.	Physiology	120 minutes	Practical	OSPE
EFFECTS OF METABOLIC DISORDERS ON NERVOUS SYSTEM **At the end of this lecture 2nd year MBBS students will be able to:** Describe the effects of following metabolic disorders on the nervous system with reference to their etiology and Clinical	Pathology	60 minutes	Lecture	MCQs

Manifestations and Complications: Vitamin B12 Deficiency, Hepatic Encephalopathy, Hypoglycemia and Hyperglycemia.				
ABNORMALITIES OF CEREBELLUM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Recall the functional division of cerebellum. • Explain physiological role of cerebellum in regulation of movements. • List the abnormalities of cerebellum like ataxia, drunken gait, nystagmus, past pointing, dysdiadochokinesia, and intentional tremors.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
CLINICAL PRESENTATION OF CEREBELLAR DISORDERS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Recall the functional anatomy and physiology of the cerebellum. • Identify common presenting problems in patients with cerebellar disorders. • List and describe key cerebellar signs, such as ataxia, dysmetria, and intention tremor.	Medicine	60 minutes	Lecture	MCQs, SEQs & OSPE
GROSS ANATOMY OF CEREBRAL HEMISPHERE **<u>At the end of this lecture 2nd year MBBS students</u>**	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

will be able to: Describe the cerebrum and its various lobes and surfaces.				
CEREBRAL CORTEX **At the end of this lecture 2nd year MBBS students will be able to:** Describe the various sulci and gyri present in the cerebrum.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
CORTICAL AREA **At the end of this lecture 2nd year MBBS students will be able to:** • Describe different cortical areas. • Describe its blood supply.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
HISTOLOGY OF CEREBRUM **At the end of this lecture 2nd year MBBS students will be able to:** • List the layers of cerebral cortex • Discuss the internal structure of cerebral hemisphere. • Identify the various types of cells of cerebrum	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
CEREBRUM **At the end of this practical 2nd year MBBS students will be able to:** • Identify the slide and adjust under microscope. • Visualize the slide by both eyes in binocular lens. • Analyze the slide by low and high magnification. • Identify the microscopic features of cerebrum. • Discuss the basic microstructure of the cerebrum. • Discuss the cerebrum at different levels.	Anatomy	120 minutes	Practical	OSPE
WHITE MATTER OF CEREBRUM **At the end of this lecture 2nd year**	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

MBBS students will be able to: • Describe the white matter of cerebrum. • Describe the internal capsule and its parts.				
SUPERFICIAL REFLEXES IN HUMAN SUBJECTS **At the end of this practical 2nd year MBBS students will be able to:** • Describe the examination for corneal, conjunctival. • Define Babinski sign with the significance of positive and negative Babinski sign. • Describe pupillary light reflex along with its optic tract. • Differentiate between monosynaptic and polysynaptic reflexes with examples.	Physiology	120 minutes	Practical	OSPE
APPROACH TO A PATIENT WITH FOCAL NEUROLOGICAL DEFICIT-1 **At the end of this practical 2nd year MBBS students will be able to:** • Discuss assessment of neurological weakness • Discuss clinical presentations of sensory and motor disorders.	Family Medicine	60 minutes	Lecture	MCQs
HOME CARE OF DISABLED CHILDREN **At the end of this practical 2nd year MBBS students will be able to:** • Discuss about the care of disable child at home	Pediatrics	60 minutes	Lecture	MCQs

DEVELOPMENT OF BRAIN-III **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe the defects of forebrain, midbrain and hindbrain.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
BASAL GANGLIA **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe the basal ganglia. • Describe the basal nuclei, and their connections. • Describe the functions of basal ganglia and their nuclei. • Analyze the clinical problem relate to basal nuclei.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
BASAL GANGLIA & ITS FUNCTION **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List the components of basal ganglia. • Summarize the functions of basal ganglia (caudate circuit and putamen circuit). • List the disorders of basal ganglia. • Discuss the abnormality in physiologic functions that leads to Parkinson's disease. • Define Huntington's disease.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
SPEECH **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define speech. • List the areas of speech.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE

• List the areas of motor cortex involved in language comprehension. • Explain the mechanism of speech involved in speaking the written & the heard words. • List the abnormalities of speech, sensory and motor aphasia.				
DEGENERATIVE NEUROLOGICAL DISEASES-1 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List the Types of Tremors. • Define Parkinson's Disease. • Describe its Etio-Pathogenesis. • Discuss its Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs
OVERVIEW OF PHARMACOLOGY OF PARKINSONS DISEASE **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Discuss and understand the mechanistic pharmacology of Parkinson's disease.	Pharmacology	60 minutes	Lecture	MCQs
MOVEMENT DISORDERS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Recall the functional anatomy and physiology of the basal ganglia.	Medicine	60 minutes	Lecture	MCQs

• Classify movement disorders as hyperkinetic and hypokinetic, and recognize the clinical • phenomenon associated with each for accurate identification.				
SLEEP-1 **At the end of this lecture 2nd year MBBS students will be able to:** • Define sleep • Classify the types of sleep. • Explain the mechanism of REM and NREM Sleep. • Summarize sleep- wake cycle. • Explain the theories of sleep. • List the abnormalities of sleep.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
SLEEP-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Define sleep apnea. • Explain the difference between stages 3 & 4 of sleep. • Recognize characteristics of sleep deprivation. • Discuss the health_benefits of sleep.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
MENTAL HEALTH **At the end of this lecture 2nd year MBBS students will be able to:** • Define Mental Health • Identify Common Problems prevalent in Pakistan along with their typical signs and symptoms. • Discuss Prevention Strategies to promote mental well-being.	Community Medicine	60 minutes	Lecture	MCQs

SOMNIFEROUS POISONS-2 (OPIOIDS) **At the end of this lecture 2nd year MBBS students will be able to:** • Diagnose the Acute Signs & Symptoms of Opioid poisoning along with Treatment options • Diagnose the Chronic Signs & Symptoms of Opioid poisoning along with Treatment options. • Identify Fatal Dose & Fatal Period with Postmortem Appearances + ML Importance.	Forensic Medicine	• 60 minutes	Lecture	MCQs
DRUG ADDICTION **At the end of this lecture 2nd year MBBS students will be able to:** • Define drug addiction and explain its impact on physical and mental health. • Identify the common causes and risk factors associated with drug addiction. • Discuss strategies for the prevention of drug addiction	Community Medicine	60 minutes	Lecture	MCQs
MEMORY-1 **At the end of this lecture 2nd year MBBS students will be able to:** • Define memory. • List and explain the types of memory. • Discuss the role of synaptic facilitation & inhibition in memory formation. • Summarize papez circuit. • Explain positive & negative memory – sensitization and the habituation.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE

MEMORY-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss molecular mechanism of facilitation. • Describe long term memory • Define coding of memory consolidation • Define declarative and skilled memory • Define dementia. • Explain different types of amnesia.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
AGING **At the end of this lecture 2nd year MBBS students will be able to:** • Define aging • Discuss health problems related to aging • Describe the strategies and interventions that promote healthy aging.	Community Medicine	60 minutes	Lecture	MCQs
DEGENERATIVE NEUROLOGICAL DISORDERS-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Define Alzhiemer's Disease. • Describe its Etio-Pathogenesis. • Discuss its Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs
AWARENESS UNDER ANAESTHESIA **At the end of this lecture 2nd year MBBS students**	Anaesthesiology	60 minutes	Lecture	MCQs

will be able to: • Define awareness • Describe ways of preventing awareness of a patient during anaesthesia • Discuss the management of awareness of a patient				
THALAMUS **At the end of this lecture 2nd year MBBS students will be able to:** • Define thalamus. • Describe the subdivision of thalamus. • List the nuclei of the thalamus.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
THALAMIC CONNECTIONS **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the various connections of thalamus. • Describe the function of connections of thalamus.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
HYPOTHALAMUS **At the end of this lecture 2nd year MBBS students will be able to:** • Identify the location and boundaries of the hypothalamus • Analyze the common clinical problems involving the hypothalamus.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
HYPOTHALAMIC CONNECTIONS **At the end of this lecture 2nd year MBBS students will be able to:** • List the main connections of the nuclei. • Describe the various connections of hypothalamus.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

FUNCTION OF HYPOTHALAMUS-1 **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the function of hypothalamus. • Recall the hormones released from hypothalamus, activating driving system of brain. • List the hypothalamic nuclei with their functions.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
FUNCTION OF HYPOTHALAMUS-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the role of hypothalamus in regulation of body temperature. • Explain the consequences of destruction of hypothalamic nuclei • Explain the feedback control by cerebral cortex.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
THALAMUS & HYPOTHALAMUS **At the end of this practical 2nd year MBBS students will be able to:** • Identify the slide and adjust under microscope • Visualize the slide by both eyes in binocular lens. • Analyze the slide by low and high magnification. • Define thalamus and hypothalamus. • Describe the subdivision of thalamus & hypothalamus. • Identify the microscopic features of thalamus and	Anatomy	120 minutes	Practical	OSPE

hypothalamus.				
RETICULAR FORMATION **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Summarize the structure and function of the reticular formation. • Discuss the parts of the reticular formation and its connecting pathway.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
LIMBIC SYSTEM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Summarize the structure and function of the limbic system. • Discuss the parts of the limbic system and its connecting pathway.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
FUNCTION OF LIMBIC SYSTEM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List the components of limbic system. • Define the physiologic arrangement of limbic cortex. • Summarize the function of limbic areas. • Describe the abnormalities of limbic system.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
VENTRICULAR SYSTEM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Discuss the ventricular system. • Illustrate the locations, functions, the origins and the fate of cerebrospinal fluid. • Recognize the structure and Studyextend of ventricular system.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

LATERAL VENTRICLE **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the boundaries of lateral ventricle. • Discuss its relation. • Describe the applied anatomy of it.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
THIRD VENTRICLE **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the boundaries of 3rd ventricle. • Discuss its relation. • Describe the applied anatomy of it.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
FOURTH VENTRICLE **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the boundaries of 4th ventricle. • Discuss its relation. • Describe the applied anatomy of it.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
FORMATION OF CEREBROSPINAL FLUID **At the end of this lecture 2nd year MBBS students will be able to:** • Name the meninges of the brain. • Discuss the functions of the meninges. • List the ventricles in the brain. • Define Cerebrospinal fluid. • Describe the formation and circulation of cerebrospinal fluid.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
FUNCTION OF CEREBROSPINAL FLUID **At the end of this lecture 2nd year MBBS students will be able to:**	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE

• List the functions of Cerebrospinal fluid. • Name the parts of Circle of Willis and blood flow to the cerebral hemisphere.				
HYDROCEPHALUS **At the end of this lecture 2nd year MBBS students will be able to:** • Define hydrocephalus. • List the causes of hydrocephalus • Discuss the types of hydrocephalus and their pathophysiology. • Explain clinical manifestation in infant, childhood and adult.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
CNS MISCELLANEOUS DISORDER **At the end of this lecture 2nd year MBBS students will be able to:** • Define Cerebral Edema, Herniation and Hydrocephalus. • Describe their Etio-Pathogenesis. • Discuss their Clinical Manifestations & Complications.	Pathology	60 minutes	Lecture	MCQs
HYDROCEPHALUS **At the end of this lecture 2nd year MBBS students will be able to:** • Define Hydrocephalus • Describe the formation and regulation of CSF • Define communicating and non-communicating hydrocephalus • list signs and symptoms of hydrocephalus in children.	Surgery	60 minutes	Lecture	MCQs

• List signs and symptoms of normal pressure hydrocephalus in adults.				
POST-DURAL PUNCTURE HEADACHE **At the end of this lecture 2nd year MBBS students will be able to:** • Define post dural puncture headache • Describe the symptoms of post dural puncture headache. • State treatment of post dural puncture headache.	Anaesthesiology	60 minutes	Lecture	MCQs
CRANIAL NERVES I, II **At the end of this lecture 2nd year MBBS students will be able to:** • Recognize the location of olfactory nerve, its receptors . • Discuss the pathway of olfactory nerve. • Recognize the location of optic nerve, its receptors. • Discuss the pathway of optic nerve.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
CRANIAL NERVES III, IV **At the end of this lecture 2nd year MBBS students will be able to:** • Recognize the location of oculomotor nerve, its cranial nuclei and their connections. • Discuss the pathway of oculomotor nerve. • Recognize the location of trochlear nerve, its cranial nuclei and their connections. • Discuss the pathway of trochlear nerve.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
CRANIAL NERVE V, VI **At the end of this lecture 2nd year MBBS students will be able to:**	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

• Recognize the location of abducent nerve, its cranial nuclei and their connections. • Discuss the pathway of abducent nerve.				
EXAMINATION OF CRANIAL NERVES I, II and III **At the end of this practical 2nd year MBBS students will be able to:** • Identify the correct steps for cranial nerve examination I-III. • Perform clinical examination of these cranial nerves. • Identify common clinical abnormalities. • Report the examination findings. • Explain the nerve type, division and functions. • Explain the nervous pathways of the respective cranial nerves.	Physiology	120 minutes	Practical	OSPE
EXAMINATION OF CRANIAL NERVES IV, V & VI **At the end of this practical 2nd year MBBS students will be able to:** • Explain the nervous pathways of these nerves. • Describe the types of nerves, their origin and functions with practical demonstration. • Discuss the divisions of trigeminal nerve and their functions on defined facial areas. • Describe the facial sensations perceived by trigeminal nerve. • Discuss the symptoms found with trigeminal nerve lesions.	Physiology	120 minutes	Practical	OSPE

• Revise the functional loss due to trochlear and abducent nerve lesions.				
DIPLOPIA **At the end of this lecture 2nd year MBBS students will be able to:** • Recall the anatomy and functions of 3rd, 4th and 6th cranial nerves. • Interpret neurological examination findings in cases of 3rd, 4th and 6th cranial neuropathy • Name common causes of diplopia.	Medicine	60 minutes	Lecture	MCQs
CRANIAL NERVE VII **At the end of this lecture 2nd year MBBS students will be able to:** • Recognize the location of fascial nerve, its cranial nuclei and their connections. • Discuss the pathway of fascial nerve.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
CRANIAL NERVES VIII, IX **At the end of this lecture 2nd year MBBS students will be able to:** • Recognize the location of vestibulocochlear nerve, its	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

cranial nuclei and their connections. • Discuss the pathway of vestibulocochlear nerve. • Recognize the location of glossopharyngeal nerve, its cranial nuclei and their connections. • Discuss the pathway of glossopharyngeal nerve.				
EXAMINATION OF CRANIAL NERVES VII, VIII & IX **At the end of this practical 2nd year MBBS students will be able to:** • Explain the type and pathways of the respective cranial nerves. • Define facial palsy, differentiate between Facial palsy and Bell's palsy. • Explain the difference between upper and lower motor neuronal lesions specifically in facial palsy. • Discuss the facial nerve carrying taste sensation with demonstration.	Physiology	120 minutes	Practical	OSPE
UNDERSTANDING FACIAL & TRIGEMINAL NERVE DYSFUNCTION **At the end of this lecture 2nd year MBBS students will be able to:** • Recall the functional anatomy and physiology of the facial and trigeminal nerves. • Identify the clinical signs and symptoms associated with facial nerve weakness and trigeminal neuropathy.	Medicine	60 minutes	Lecture	MCQs

VESTIBULAR APPARATUS **At the end of this lecture 2nd year MBBS students will be able to:** • Explain the components of vestibular apparatus. • Define synergic pairs. • Explain the three main functions of vestibular apparatus. • Discuss the mechanism of stimulation of vestibular apparatus.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
VESTIBULAR PATHWAY **At the end of this lecture 2nd year MBBS students will be able to:** • Define vestibular pathway • Discuss center for integration of different sensory stimuli to maintain balance. • Explain VOR (Vestibulo-ocular reflex). • Define nystagmus.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
CRANIAL NERVES X **At the end of this lecture 2nd year MBBS students will be able to:** • Recognize the location of vagus nerve, its cranial nuclei and their connections. • Discuss the pathway of vagus nerve.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
CRANIAL NERVES XI & XII **At the end of this lecture 2nd year MBBS students will be able to:** • Recognize the location of accessory nerve, its cranial nuclei and their connections. • Discuss the pathway of accessory nerve. • Recognize the location of hypoglossal nerve, its cranial nuclei and their connections.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

• Discuss the pathway of hypoglossal nerve.				
EXAMINATION OF CRANIAL NERVES X, XI & XII **<u>At the end of this practical 2nd year MBBS students will be able to:</u>** • Describe the pathways and functions of vagus, accessory and hypoglossal nerves. • Demonstrate the palatal reflex & describe the respective nerve lesion. • Discuss the lesion of accessory nerve with practical demonstration. • Discuss the untoward effects seen by the lesion of vagus nerve with practical demonstration. • Differentiate between a supranuclear lesion from an infra nuclear lesion. • Describe the signs and symptoms of hypoglossal nerve lesion and name the muscles involved with practical demonstration.	Physiology	120 minutes	Practical	OSPE
APPROACH TO A PATIENT WITH FOCAL NEUROLOGICAL DEFICIT-1 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Discuss clinical presentation Cranial nerve disorders	Family Medicine	60 minutes	Lecture	MCQs
PAEDS AMBULATORY CARE **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Discuss about the care of disabled child at community level	Pediatrics	60 minutes	Lecture	MCQs

BLOOD SUPPLY OF THE BRAIN **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List the main arteries and veins supplying the brain. • Explain the areas of the cerebral cortex supplied by a particular artery. • Describe the circle of Willis and blood supply to the internal capsule. • Discuss the dysfunction that would result if the artery were blocked.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
CEREBRAL BLOOD FLOW **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe arterial & venous vascular disorders and their clinical manifestations.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
TRAUMA TO BRAIN AND SPINAL CORD **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List Bone Fragmentation / Skull Fractures. • Explain about Diffuse Axonal Injury (DAI), Diffuse Neuronal Injury (DNI), Diffuse Vascular Injury (DVI). • Discuss Intracranial Hemorrhages/Hematomas, & Brain Swelling (Cerebral Edema). • Discuss Penetrating Wounds / Firearm Wounds & Contusion of the Spinal Cord, Railway Spine (Concussion of the spinal cord).	Forensic Medicine	60 minutes	Lecture	MCQs

CEREBROVASCULAR DISEASES **At the end of this lecture 2nd year MBBS students will be able to:** • Describe CerebroVascular accident (CVA). • Define and Classify Stroke. • Describe the Types of Stroke including their Etio-Pathogenesis & Clinical Manifestations.	Pathology	60 minutes	Lecture	MCQs
NEURORADIOLOGY OF BRAIN & SPINAL CORD **At the end of this lecture 2nd year MBBS students will be able to:** • Identify the normal radiological anatomy of the brain and spinal cord using common imaging modalities. • Describe the principles and clinical uses of CT and MRI in the evaluation of neurological structures. • Recognize radiological features of common brain and spinal cord pathologies such as tumors, hemorrhage, trauma, and congenital anomalies. • Correlate neuroradiological findings with clinical presentation of neurological disorders.	Radiology	60 minutes	Lecture	MCQs
AUTONOMIC NERVOUS SYSTEM-1 **At the end of this lecture 2nd year MBBS students will be able to:** • Discuss the organization of the autonomic nervous system. • Describe the autonomic ganglia.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

• Explain the function of autonomic nervous system.				
AUTONOMIC NERVOUS SYSTEM-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the significant autonomic innervations. • Discuss some significant physiological reflexes involving the nervous system.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE
INTRODUCTION TO AUTONOMIC NERVOUS SYSTEM PHARMACOLOGY **At the end of this lecture 2nd year MBBS students will be able to:** • Classify ANS. • List different autonomic neurotransmitters with examples. • Classify cholinergic & adrenergic receptors according to their site of action. • List the steps of synthesis of neurotransmitter at cholinergic neurons. • List the steps of synthesis of neurotransmitter at adrenergic neurons.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
SYMPATHETIC AND PARASYMPATHETIC NERVOUS SYSTEM **At the end of this lecture 2nd year MBBS students will be able to:** • Illustrate important anatomical, differences between the sympathetic and parasympathetic parts. • Explain the function of sympathetic nervous system.	Anatomy	60 minutes	Lecture	MCQs, SEQs & OSPE

• Explain the function of parasympathetic nervous system.				
SYMPATHETIC NERVOUS SYSTEM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Explain the fight-or-flight response. • Discuss the hormones being secreted from the adrenal glands during the fight-or-flight response. • Discuss the common signs and symptoms of sympathetic nervous system problems.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
PARASYMPATHETIC NERVOUS SYSTEM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • List of the components of parasympathetic nervous system. • Discuss the cranial nerves having parasympathetic activity. • Describe the parasympathetic ganglia in the head and neck, their locations and target organs. • Describe the sacral parasympathetic outflow and its target organs with demonstration of examples.	Physiology	60 minutes	Lecture	MCQs, SEQs & OSPE
TUMOURS OF NERVOUS SYSTEM **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Classify the tumours of Central Nervous System.	Pathology	60 minutes	Lecture	MCQs

• Classify the tumours of Peripheral Nervous System.				
CHOLINERGIC AGONISTS **At the end of this lecture 2nd year MBBS students will be able to:** • Classify cholinergic agonists with examples. • Explain the mechanism of action of Bethanechol, Pilocarpine, Nicotine, &Neostigmine. • List the pharmacokinetic properties of these drugs. • List the clinical uses of these drugs • List the adverse effects and contraindications of these drugs	Pharmacology	60 minutes	Lecture	MCQs
CHOLINERGIC ANTAGONISTS **At the end of this lecture 2nd year MBBS students will be able to:** • Classify cholinergic antagonists with examples. • Explain the mechanism of action of Atropine and Pralidoxime. • List the pharmacokinetics properties of these drugs. • List the clinical uses of these drugs • List the adverse effects and contraindications of these drugs	Pharmacology	60 minutes	Lecture	MCQs
ADRENERGIC AGONISTS **At the end of this lecture 2nd year MBBS students will be able to:** • Classify adrenergic	Pharmacology	60 minutes	Lecture	MCQs

agonists. • Explain mechanism of action of Epinephrine, Dobutamine, Amphetamine and Ephedrine. • List the pharmacokinetics properties of these drugs. • List the clinical uses of these drugs • List the adverse effects and contraindications of these drugs				
ADRENERGIC ANTAGONISTS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Classify adrenergic antagonists. • Explain mechanism of action of Phenoxybenzamine, Prazosin and Labetalol. • List the pharmacokinetics properties of these drugs. • List the clinical uses of these drugs • List the adverse effects and contraindications of these drugs	Pharmacology	60 minutes	Lecture	MCQs
MOBILIZATION AND TRANSPORT OF FATTY ACIDS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Recall the chemistry of Fatty acids. • Describe the process of lipolysis.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

• Identify the fate of fatty acids and glycerol after lipolysis.				
BIOCSYNTHESIS OF FATTY ACIDS-1 **At the end of this lecture 2nd year MBBS students will be able to:** • Recognize the importance acetyl CoA as the starting material for fatty acid synthesis • Identify that NADPH is required for the reduction in Fatty acid synthesis • Enumerate the phases of denovo fatty synthesis. • Explain the structure of Fatty acid synthase enzyme.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
BIOSYNTHESIS OF FATTY ACIDS-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the reactions of the 3 phases of denovo fatty acid synthesis. • Discuss the regulation of fatty acid synthesis.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
FATTY ACID MODIFICATION & TRIGLYCERIDE SYNTHESIS **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the modifications of elongation and unsaturation which occur after FA synthesis. • Identify the differences between mitochondrial fatty acid elongation and	Biochemistry	60 minutes	Lecture	MCQs, SEQs

microsomal fatty acid elongation. • Describe the synthesis of triglycerides. • List the fate of triglycerides.				
KETOGENESIS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define ketone bodies • List the ketone bodies • Describe the pathway of ketogenesis and its regulation. • Identify the causes of ketone bodies formation and site of production of ketone bodies.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
KETOLYSIS **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe the utilization of ketone bodies by extra-hepatic tissues. • Discuss the regulation of ketolysis.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
B-COMPLEX VITAMINS-1 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Classify B-Vitamins • Identify the dietary sources and biological active forms of B1, B2 and B3 vitamins. • Discuss the metabolic role of B1, B2 and B3 vitamins. • Recognize the diseases which occur due to deficiencies of B1, B2 and B3 vitamins.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

B-COMPLEX VITAMINS-II **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Identify the dietary sources and biological active forms of B5, B6 and B7 vitamins. • Discuss the metabolic role of B5, B6 and B7. • List the clinical indications for prescribing B6 supplements. • Recognize that consumption of raw eggs can lead to Biotin deficiency.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
INTEGRATIVE METABOLISM-1 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define integration of metabolism. • Describe the 3 stages of energy production from nutrients. • List the metabolic pathways involved in energy production.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
INTEGRATIVE METABOLISM-2 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Discuss the factors controlling rate limiting reactions of energy metabolic pathways. • Describe the interconversion of carbohydrates and lipids and conversion of proteins to fats. • Describe the interconversion of carbohydrates and amino acids.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

METABOLISM OF WELL-FED STATE-1 **At the end of this lecture 2nd year MBBS students will be able to:** • Define the metabolic states of the body i.e. well-fed state, fasting state and starvation state. • Identify the organs involved in maintenance of body fuels in well fed and fasting states. • List the factors involved in regulation of well-fed state.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
METABOLISM OF WELL-FED STATE-2 **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the metabolic changes in carbohydrate metabolism occurring in liver in well fed state. • Describe the metabolic changes in fat and protein metabolism occurring in liver in well fed state. • Describe the metabolic changes in carbohydrate and fat metabolism occurring in adipose tissue in well fed state.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
METABOLISM OF WELL-FED STATE-3 **At the end of this lecture 2nd year MBBS students will be able to:** • Describe the metabolic changes in carbohydrate, fat and protein metabolism occurring in skeletal tissue in well fed state • Describe the metabolic changes in carbohydrate and fat	Biochemistry	60 minutes	Lecture	MCQs, SEQs

metabolism occurring in brain in well fed state. • Discuss the role of insulin and glucagon in regulation of well-fed state.				
METABOLISM OF FASTING STATE-1 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Define fasting state and starvation state • Identify the factors involved in maintenance of fasting state. • List the conditions due to which fasting or starvation state can occur. • Describe the metabolic changes in carbohydrate and fat metabolism occurring in liver and adipose tissue in fasting state.	Biochemistry	60 minutes	Lecture	MCQs, SEQs
METABOLISM OF FASTING STATE-2 **<u>At the end of this lecture 2nd year MBBS students will be able to:</u>** • Describe the metabolic changes in carbohydrate, protein & fat occurring in skeletal muscle in fasting state. • Describe the metabolic changes in carbohydrate and fat metabolism occurring in brain in fasting state. • Identify the role of kidneys in fasting state.	Biochemistry	60 minutes	Lecture	MCQs, SEQs

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