

STUDY GUIDE-4TH YEAR MBBS

URINARY MODULE II

- 19th May - 9th July 2025
- Duration: 4 Weeks

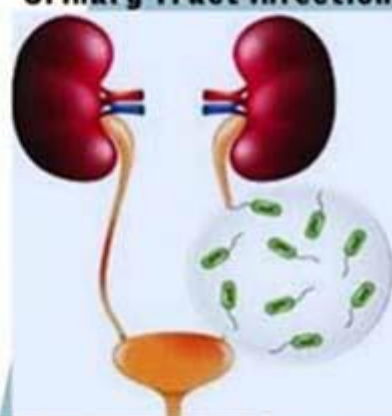
Tumor of Renal System



Diuretics



Urinary Tract Infections



Prevention of Kidney Failure





LIAQUAT NATIONAL HOSPITAL AND MEDICAL COLLEGE

Institute for Postgraduate Medical Studies & Health Science

STUDY GUIDE FOR URINARY II MODULE

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Module name: Urinary System-II

Year: Four

Duration: 7 weeks (May-July 2025)

Timetable hours: Interactive Lectures, Case-Based Learning (CBL), Clinical Rotations, Tutorial, Skills, Practical's, Self-Directed Learning

MODULE INTEGRATED COMMITTEE

MODULE COORDINATOR:	<ul style="list-style-type: none"> Dr. Humaira Howrah Ali
CO-COORDINATORS:	<ul style="list-style-type: none"> Dr. Haya Noor (DHPE)

DEPARTMENT RESOURCE PERSONS

BASIC HEALTH SCIENCES	CLINICAL AND ANCILLARY DEPARTMENTS
COMMUNITY MEDICINE <ul style="list-style-type: none"> Dr. Saima Zainab 	NEPHROLOGY <ul style="list-style-type: none"> Professor Kunwer Naveed
MICROBIOLOGY <ul style="list-style-type: none"> Professor Shaheen Sharafat 	PEDIATRICS <ul style="list-style-type: none"> Professor Mehnaz Atiq Ahmed
PATHOLOGY <ul style="list-style-type: none"> Professor Naveen Faridi 	RESEARCH & SKILLS DEVELOPMENT CENTER Dr. Kahkashan Tahir
PHARMACOLOGY <ul style="list-style-type: none"> Professor Tabassum Zehra 	UROLOGY <ul style="list-style-type: none"> Professor Aziz Abdullah
PHYSIOLOGY <ul style="list-style-type: none"> Professor Syed Hafeezul Hassan 	
DEPARTMENT of HEALTH PROFESSIONS EDUCATION <ul style="list-style-type: none"> Professor Nighat Huda Professor Sobia Ali Dr. Afifa Tabassum Dr. Muhammad Ahsan Dr. Yusra Nasir 	
LNH&MC MANAGEMENT <ul style="list-style-type: none"> Professor K.U. Makki, Principal LNH&MC Dr. Shaheena Akbani, Director A.A & R.T LNH&MC 	
STUDY GUIDE COMPILED BY: Rakiya Zarmeena Khan, Department of Health Professions Education	

INTRODUCTION

WHAT IS A STUDY GUIDE?

It is an aid to:

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

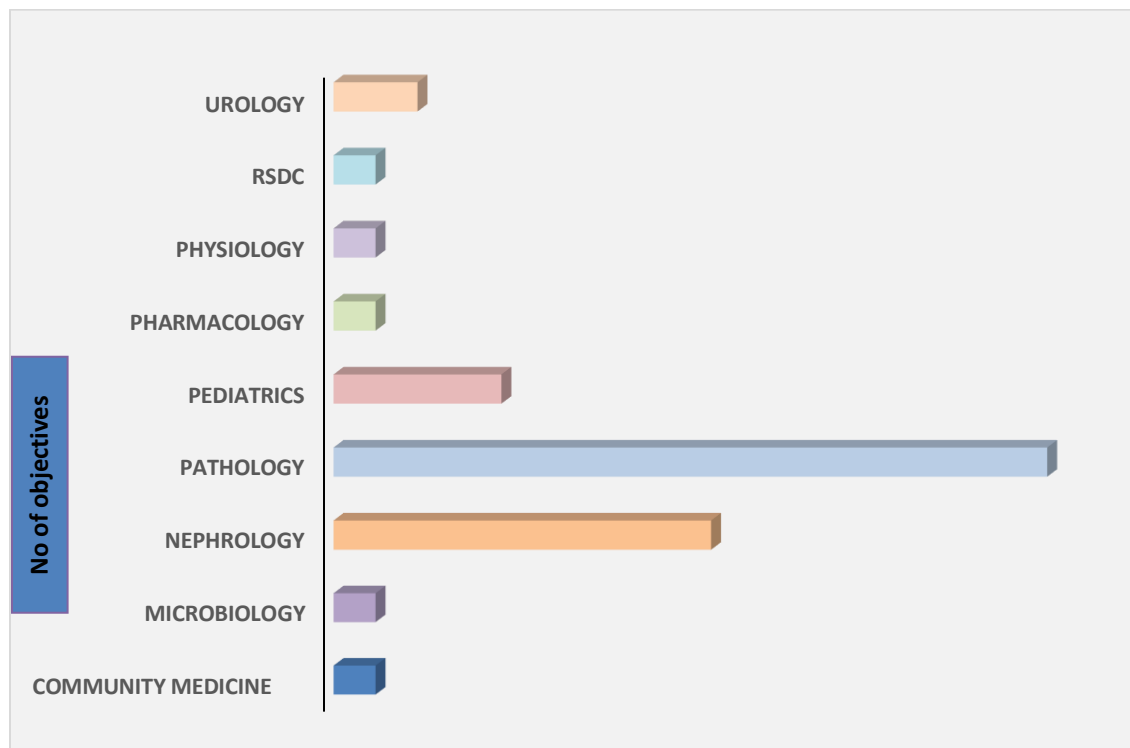
THE STUDY GUIDE:

- Communicate information on the organization and management of the module. This will help the student to contact the right person in case of any difficulty.
- Define the objectives which are expected to be achieved at the end of the module.
- Identify the learning strategies such as lectures, small group teachings, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
- Provide a list of learning resources such as book, computer assisted learning programs, web- links, journals, for students to consult in order to maximize their learning.
- High light information on the contribution of continuous on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's Achievement of objectives.
- Focus on information pertaining to examination policy, rules and regulations.

INTEGRATED CURRICULUM: Comprises system-based modules such as Eye/ENT, Orthopedics, Dermatology, Genetics and Reproductive System-II which links basic science knowledge to clinical problems. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples.

LEARNING EXPERIENCES: Case based integrated discussions, Task oriented learning followed by task presentation, skills acquisition in skills lab, computer-based assignments, learning experiences in clinics, wards.

INTEGRATING DISCIPLINES OF URINARY SYSTEM II MODULE



LEARNING METHODOLOGIES:

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

- Interactive Lectures
- Small Group Discussion
- Case- Based Learning (CBL)
- Clinical Experiences
- Clinical Rotations
- Practical
- Skills session
- Self-Directed Learning

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

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

CASE-BASED LEARNING (CBL): A small group discussion format where learning is focused around a series of questions based on a clinical scenario. Students' discuss and answer the questions applying relevant knowledge gained previously in clinical and basic health sciences during the module and construct new knowledge. The CBD will be provided by the concerned department.

CLINICAL LEARNING EXPERIENCES: In small groups, students observe patients with signs and symptoms in hospital wards, clinics and outreach centers. This helps students to relate knowledge of basic and clinical sciences of the module and prepare for future practice.

- **CLINICAL ROTATIONS:** In small groups, students rotate in different wards like Medicine, Pediatrics, Surgery, Obs & Gynae, ENT, Eye, Family Medicine clinics, outreach centers & Community Medicine experiences. Here students observe patients, take histories and perform supervised clinical examinations in outpatient and inpatient settings. They also get an opportunity to observe medical personnel working as a team. These rotations help students relate basic medical and clinical knowledge in diverse clinical areas.

PRACTICAL: Basic science practical related to pharmacology, microbiology, forensic medicine, and community medicine have been scheduled for student learning.

SKILLS SESSION: Skills relevant to respective module are observed and practiced where applicable in simulated-learning environment such as skills laboratory.

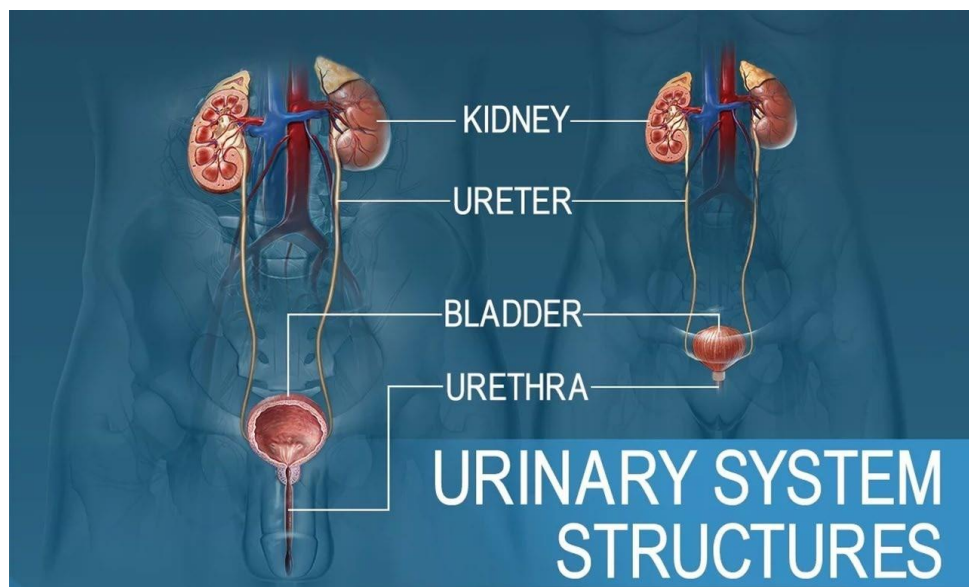
SELF-DIRECTED LEARNING: Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Center, teachers and resource persons within and outside the college. Students can utilize the time within the college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

MODULE: URINARY 2

INTRODUCTION

Kidney disease has an indirect impact on global morbidity and mortality by increasing the risks associated with at least five other major killers: cardiovascular diseases, diabetes, hypertension, infection with human immunodeficiency virus (HIV) and malaria ^[1]. Worldwide, estimated prevalence of Chronic Kidney Disease is 10.4% in men and 11.8% in women ^[2]. In Pakistan common causes of CKD identified in the patients included diabetic nephropathy (28%), glomerulonephritis (22%), hypertension (14.6%), tubule-interstitial disease (13.4%) and renal stone disease (8%)^[3].

This module aims to equip medical undergraduates with the essential knowledge and skills required for dealing with prevalent renal disorders in the local context. This is the second module on renal and excretory system in MBBS course. The basics of renal and excretory system including structure and function have been addressed in the first module. The module will focus on common diseases of the renal and excretory system, including infections, obstructive, genetics and acquired disorders and cancerous and non-cancerous renal and excretory diseases



References:

1. [Luyckx VA, Tonelli M, Stanifer JW. The global burden of kidney disease and the sustainable development goals. Bulletin of the World Health Organization. 2018 Jun 1;96\(6\):414.](#)
2. [Coresh J. Update on the Burden of CKD. Journal of the American Society of Nephrology. 2017 Apr 1;28\(4\):1020-2.](#)
3. [Kifayat Ullah, Ghias Butt, Imtiaz Masroor, Kinza Kanwal, Farina Kifayat](#) (2015) Epidemiology of chronic kidney disease in a Pakistani population. Saudi Journal of kidney diseases and transplant, 2015 Nov;26(6):1307-10. doi: 10.4103/1319-2442.168694.

MODULE OBJECTIVES AND STRATEGIES

By the end of Urinary 2 module students should be able to:

COMMUNITY MEDICINE

TOPICS & OBJECTIVES	LEARNING STRATEGIES
Renal diseases and prevention	Small Group Discussion
<ul style="list-style-type: none"> Describe common renal diseases 	
<ul style="list-style-type: none"> Discuss epidemiology of Renal diseases 	
<ul style="list-style-type: none"> Identify environmental risk factors of renal diseases Explain preventive measures of renal diseases 	
Chronic kidney disease & Kidney failure	
<ul style="list-style-type: none"> Describe Chronic Kidney Diseases & its associated risk factors 	
<ul style="list-style-type: none"> Discuss the Global Burden of Chronic Kidney Diseases 	
<ul style="list-style-type: none"> Describe the diagnostic tests used to assess kidney function. Identify strategies for preventing kidney failure and promoting kidney health 	
Bacterial Zoonotic diseases & prevention	
<ul style="list-style-type: none"> Identify common bacterial pathogens that cause zoonotic diseases 	
<ul style="list-style-type: none"> Describe the various modes of transmission for bacterial zoonotic diseases 	
<ul style="list-style-type: none"> Recognize the potential public health significance of zoonotic diseases 	
<ul style="list-style-type: none"> Discuss prevention and control strategies for zoonotic diseases 	
<ul style="list-style-type: none"> Explain the role of antimicrobial resistance in the context of zoonotic diseases Discuss ethical considerations related to zoonotic disease research and control efforts 	
Parasitic Zoonotic diseases & prevention	
<ul style="list-style-type: none"> Describe the major groups of parasitic organisms that cause zoonotic diseases 	
<ul style="list-style-type: none"> Explain the transmission routes of parasitic zoonotic diseases 	
<ul style="list-style-type: none"> Identify key factors contributing to their emergence and spread 	
<ul style="list-style-type: none"> Explain the importance of the One Health approach in addressing parasitic zoonotic diseases 	
<ul style="list-style-type: none"> Describe the prevention and control strategies for parasitic zoonotic diseases 	
Health Management Information System	
<ul style="list-style-type: none"> Describe HMIS & its essential elements 	
<ul style="list-style-type: none"> Explain the Intelligence Hierarchy Pyramid 	
<ul style="list-style-type: none"> Identify components of HMIS 	
<ul style="list-style-type: none"> List the various sources of health information 	
<ul style="list-style-type: none"> Discuss the importance of HMIS 	

MICROBIOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
Urinary Tract Infections	Small Group Discussion
<ul style="list-style-type: none"> Describe the etiologies and pathophysiology for upper and lower urinary infections. 	

NEPHROLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
For the below mentioned diseases:	Interactive Lecture/ Case Based Learning/SDL
<ul style="list-style-type: none"> Describe etiology, pathophysiology, risk factors and clinical features of below-mentioned list of conditions 	
<ul style="list-style-type: none"> Discuss the differential diagnosis related to the below conditions. 	
<ul style="list-style-type: none"> Discuss related radiological and laboratory investigations (U/S abdomen, x-ray/ CT/ MRI, Urine RE, UCE) 	
<ul style="list-style-type: none"> Explain the management and complications of the listed renal diseases 	
1. Acute kidney injury.	
2. Chronic kidney disease	
3. Nephritis syndrome.	
4. Nephritic syndrome.	
5. Urinary tract infections	
6. Renal tubular acidosis	
7. Introduction to dialysis & renal transplant	Small Group Discussion
8. Polycystic kidneys	
<ul style="list-style-type: none"> Discuss the following clinical features related to kidney and urinary system: 	
<ul style="list-style-type: none"> Pain & fever 	
<ul style="list-style-type: none"> Obstructive symptoms on micturition (urgency, hesitancy, pain, frequency, altered flow of urine) 	
<ul style="list-style-type: none"> Burning sensation on micturition. 	
<ul style="list-style-type: none"> Altered color and appearance of urine. 	

PATHOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Cysts: Congenital and acquired cystic conditions of kidney	Interactive Lecture
<ul style="list-style-type: none"> Classify cystic diseases of the kidneys 	
<ul style="list-style-type: none"> Discuss genetics, pathogenesis, morphology and clinical features of autosomal dominant, autosomal recessive polycystic kidney disease. 	
<ul style="list-style-type: none"> Discuss cystic diseases of renal medulla and acquired (Dialysis associated) cystic disease 	
2. Obstructive Uropathy 1 Urinary out flow Obstruction (Urolithiasis, Hydronephrosis)	
<ul style="list-style-type: none"> Discuss the causes, pathogenesis, morphology and clinical features of Hydronephrosis 	

<ul style="list-style-type: none"> ● Explain the types, pathogenesis and clinical presentation of renal stones 	Interactive Lecture
<ul style="list-style-type: none"> ● Explain the major causes of Ureteral obstruction. 	
3. Obstructive Uropathy 2 Urinary out flow Obstruction (Prostate)	
<ul style="list-style-type: none"> ● Discuss acute and chronic Prostatitis. 	
<ul style="list-style-type: none"> ● Explain the etiology, pathogenesis, morphological and clinical features of Benign Prostatic Hyperplasia. 	
4. Obstructive Uropathy 3: Carcinoma of Prostate	
<ul style="list-style-type: none"> ● Discuss the etiology, genetic alterations, pathogenesis, morphology and clinical features of Prostatic Adenocarcinoma 	
<ul style="list-style-type: none"> ● Explain the grading, staging and laboratory diagnostics of carcinoma of Prostate 	
5. Pathogenesis of glomerular disorders	
<ul style="list-style-type: none"> ● Classify Glomerular Diseases 	
<ul style="list-style-type: none"> ● Name the Glomerular syndromes 	
<ul style="list-style-type: none"> ● Explain various pathological responses to glomerular injury 	
<ul style="list-style-type: none"> ● Discuss pathogenesis of glomerular injury and mediators of glomerular injury 	
<ul style="list-style-type: none"> ● Explain the underlying immune mechanism in development of various glomerular diseases 	
<ul style="list-style-type: none"> ● Discuss mediators of Glomerular injury 	
6. Nephritic syndrome	
<ul style="list-style-type: none"> ● Define nephritic syndrome 	
<ul style="list-style-type: none"> ● Summarize Major Primary Glomerulonephritis's 	
<ul style="list-style-type: none"> ● Discuss the etiology, pathogenesis and clinical features of Acute proliferative (Post streptococcal, Post infectious) Glomerulonephritis, & Rapidly Progressive (Crescent) Glomerulonephritis. 	
7. Nephrotic syndrome	
<ul style="list-style-type: none"> ● Define Nephrotic syndrome 	
<ul style="list-style-type: none"> ● List the common causes of Nephrotic syndrome 	
<ul style="list-style-type: none"> ● Discuss etiology, pathogenesis, morphology (light microscopic, electron microscopic and immunofluorescent microscopic features) of Membranous Nephropathy, Minimal-Change Disease, Focal Segmental Glomerulosclerosis (FSGS), HIV-Associated Nephropathy, Membranoproliferative Glomerulonephritis (MPGN) 	
8. Acute tubular necrosis	
<ul style="list-style-type: none"> ● Define tubule interstitial diseases. 	
<ul style="list-style-type: none"> ● Classify tubulointerstitial diseases 	
<ul style="list-style-type: none"> ● Discuss etiology, pathogenesis, morphology and clinical features of Acute Tubular Injury/Necrosis & Tubulointerstitial Nephritis. 	
9. Glomerular conditions associated with systemic disorders & Isolated Glomerular Abnormalities	
<ul style="list-style-type: none"> ● Discuss the pathophysiology, morphology and clinical features in Glomerular conditions associated with systemic disease (e.g. Diabetic Nephropathy, hypertension, Lupus Nephritis, Henoch-Schönlein Purpura, Glomerulonephritis Associated with Bacterial Endocarditis and Other Systemic Infections, , Fibrillary Glomerulonephritis) 	
<ul style="list-style-type: none"> ● Explain Isolated Glomerular Abnormalities including IgA Nephropathy (Berger Disease), Hereditary Nephritis and Alport Syndrome 	
10. Pyelonephritis	
<ul style="list-style-type: none"> ● Define Pyelonephritis 	
<ul style="list-style-type: none"> ● List the causes and organisms of urinary tract infections. 	
<ul style="list-style-type: none"> ● Discuss the mechanism of ascending infection involving upper urinary tract and kidneys. 	

<ul style="list-style-type: none"> • Discuss pathogenesis, morphological & clinical features of Acute & Chronic Pyelonephritis and Reflux Nephropathy • Describe morphological features and complications of pyelonephritis 	
11. Tumors of renal system I	Interactive Lecture
<ul style="list-style-type: none"> • Classify renal neoplasms. • Discuss benign neoplasms of the kidney. 	
<ul style="list-style-type: none"> • Explain the risk factors, pathogenesis, molecular alterations, morphology & clinical features of malignant renal neoplasm 	
12. Tumors of renal system II	
<ul style="list-style-type: none"> • Classify Urothelial tumors. • Discuss the etiology, pathogenesis, morphology, clinical features and diagnosis of urothelial tumors 	
13. Renal Vascular Diseases	Interactive Lecture
<ul style="list-style-type: none"> • Classify renal vascular diseases • Discuss etiology, pathogenesis, morphology and clinical features of Nephrosclerosis, Malignant Nephrosclerosis, Renal Artery stenosis, Thrombotic Microangiopathies and Other Vascular Disorders 	
14. Urinary Analysis:	SDL
<ul style="list-style-type: none"> • Interpret urine detailed report • Discuss Lab/Dipsticks Method of urine analysis • Identify proteinuria in a given sample of urine by Lab/Dipsticks Method 	
15. Urine C/S	
<ul style="list-style-type: none"> • Discuss the procedure of performing urine C/S • Identify the culture media and growth of different organism of UTI on culture plates. 	
16. Histopathology of Glomerular Diseases	
<ul style="list-style-type: none"> • Discuss morphology (light microscopic, electron microscopic and immunofluorescent microscopic features) of important diseases included in Nephritic and nephritic syndrome. 	

PEDIATRICS

TOPICS & OBJECTIVES	LEARNING STRATEGIES
For the below mentioned diseases	Interactive Lecture
1. Nephritic syndrome	
2. AGN nephritis	
3. Acute renal failure	
4. Urinary tract infections	
<ul style="list-style-type: none"> • Define the conditions • Describe the etiology, risk factors, sign and symptoms, investigations, management and complications • Enumerate & interpret investigations related to the conditions • Interpret results of a urinalysis 	

PHARMACOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Diuretics I&II	Interactive Lecture/Small Group Discussion
• Classify Diuretics	
• Discuss basic & clinical pharmacology of those classes with their clinical uses, side effects & contraindications	
2. Role of Diuretics	
• Justify management of clinical conditions with different classes of diuretics along with the pharmacokinetic and dynamics of those classes of drugs	

PHYSIOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
Review of Kidney Function	Interactive Lecture
• Review the physiology of urinary system	

UROLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Urinary Symptoms and Investigations	Small Group Discussion
• Identify the basis for diagnosing hematuria.	
• List the pigments that may discolor the urine, mimicking hematuria.	
• List the differential diagnosis for hematuria originating in the different anatomical parts of the urinary tract.	
• Justify the significance of the information gathered from the palpation of the prostate rectally.	
• List the radiological investigations available for the assessment of the urinary tract	
• Describe the management plan for the patient with hematuria.	Interactive Lecture
2. Kidneys and ureters	
• Differentiate between obstruction at different levels of the urinary tract based on history, clinical features and diagnostic modalities	
• Discuss the presenting features, signs and symptoms of urological emergencies	
• Classify the urological emergencies based on etiology (excluding trauma)	
• Justify differential diagnosis based on given data	
• Discuss the appropriate investigations leading to a definite diagnosis	
• Devise a management plan according to clinical presentation	
• Interpret KUB, IVP and CT Pyelography (calculi only)	

ANATOMY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Review of anatomy	Interactive Lecture
● Review of gross anatomy and histology of urinary system.	

FAMILY MEDICINE

TOPICS & OBJECTIVES	LEARNING STRATEGIES
1. Family Medicine	Interactive Lecture
● Screening and management of chronic kidney diseases in primary care.	

RADIOLOGY

TOPICS & OBJECTIVES	LEARNING STRATEGIES
	Small Group Discussion
● Radiological investigations and interpretation in renal / bladder diseases.	

RSDC

TOPICS & OBJECTIVES
Cathetrization
● Pass a Foley's catheter in male and female mannequins according to the given protocols

Apart from attending daily scheduled sessions, students too should engage in self-study to ensure that all the objectives are covered



LEARNING RESOURCES

SUBJECT	RESOURCES
NEPHROLOGY	<u>TEXT BOOKS</u> <ol style="list-style-type: none"> 1. Davidson's Principles and Practice of Medicine 2. Kumar and Clark's Clinical Medicine, Edited by Parveen Kumar, 9th Edition
COMMUNITY MEDICINE	<u>TEXT BOOKS</u> <ol style="list-style-type: none"> 1. Community Medicine by Parikh 2. Community Medicine by M Ilyas 3. Basic <i>Statistics</i> for the Health Sciences by Jan W Kuzma
PEDIATRICS	<u>TEXT BOOK</u> <ol style="list-style-type: none"> 1. Nelson Textbook of Pediatrics, 19th Edition 2. Textbook of Pediatrics by PPA, preface written by S. M. Haneef 3. Clinical Pediatrics by Lakshmanaswamy Aruchamy, 3rd Edition
PATHOLOGY/MICROBIOLOGY	<u>TEXT BOOKS</u> <ol style="list-style-type: none"> 1. Robbins & Cotran, Pathologic Basis of Disease, 9th edition. 2. RapidReviewPathology, 4th edition by Edward F. Goljan MD
	<u>WEBSITES:</u> <ol style="list-style-type: none"> 1. http://library.med.utah.edu/WebPath/webpath.html 2. http://www.pathologyatlas.ro/
PHYSIOLOGY	<u>TEXTBOOKS</u> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 2. Ganong's Review of Medical Physiology 3. Human Physiology by Lauralee Sherwood 4. Berne & Levy Physiology 5. Best & Taylor Physiological Basis of Medical Practice



ASSESSMENT METHODS:

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

Internal Evaluation

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

Formative Assessment

Individual department may hold quiz or short answer questions to help students assess their own learning.

The marks obtained are not included in the internal evaluation

For JSMU Examination Policy, please consult JSMU website!

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



LNH&MC EXAMINATION RULES & REGULATIONS

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

SCHEDULE:

WEEKS	4TH YEAR	MONTH
8 WEEKS	NEUROSCIENCES II MODULE	January 23, 2025
		March 8, 2025
6 WEEKS	REPRODUCTIVE II MODULE	March 10, 2025
		April 26, 2025
Mid Term Examination		
4 WEEKS	URINARY II MODULE	May 13, 2024
		June 8, 2024

*Final dates will be announced later

