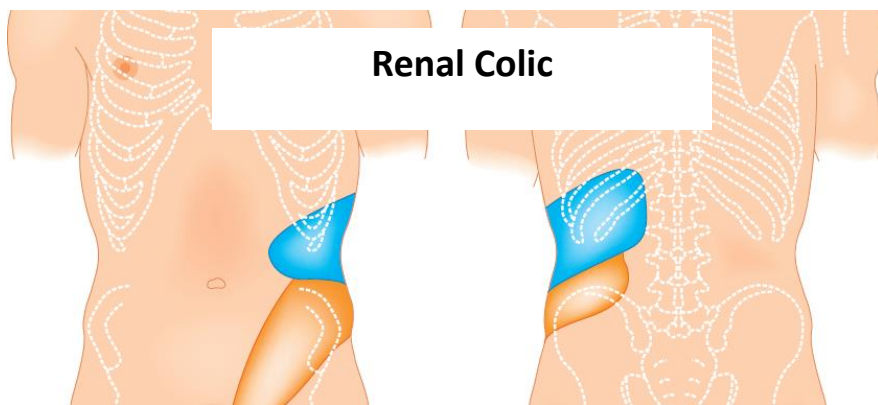
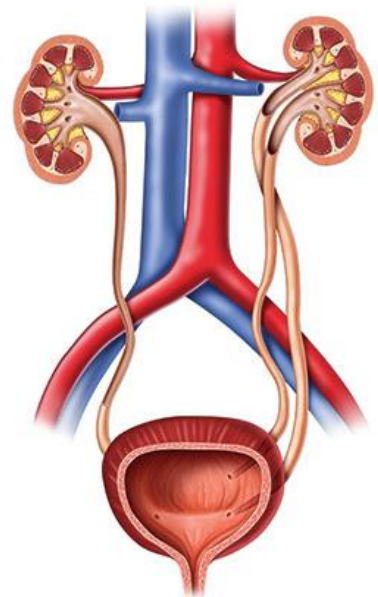
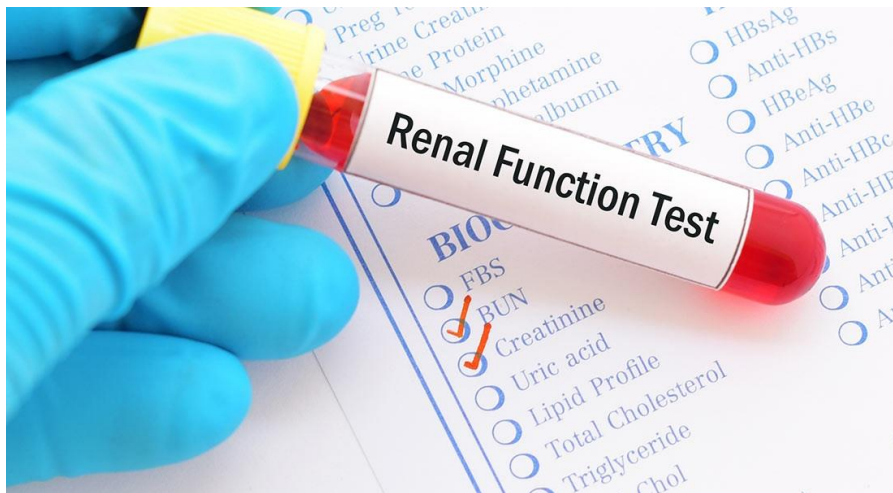


# STUDY GUIDE

## RENAL & EXCRETORY MODULE-I

### SECOND YEAR MBBS

20<sup>th</sup> May – 25<sup>th</sup> June 2019



**LIAQUAT NATIONAL HOSPITAL  
& MEDICAL COLLEGE**



**STUDY GUIDE FOR RENAL AND EXCRETORY MODULE-I**

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Module name: Renal & Excretory System-I

Year: Two

Duration: 4 weeks (May 2019 – June 2019)

Timetable hours: Interactive Lectures, Case-Based Learning (CBL), Self-Study, Practicals, Skills, Demonstrations, Visit to Wards & Laboratory

### MODULE INTEGRATED COMMITTEE

<b>MODULE COORDINATOR:</b>	<ul style="list-style-type: none"> <li>Dr. M. Kashif Nisar (Biochemistry)</li> </ul>
<b>CO-COORDINATORS:</b>	<ul style="list-style-type: none"> <li>Prof. Nighat Huda (DHCE)</li> <li>Dr. Saima Zainab (Community Medicine)</li> </ul>

### DEPARTMENTS' & RESOURCE PERSONS' FACILITATING LEARNING

BASIC HEALTH SCIENCES	CLINICAL AND ANCILLARY DEPARTMENTS
<b>ANATOMY</b> <ul style="list-style-type: none"> <li>Professor Zia-ul-Islam</li> </ul>	<b>NEPHROLOGY</b> <ul style="list-style-type: none"> <li>Prof. Kunwer Naveed Mukhtar</li> </ul>
<b>PHYSIOLOGY</b> <ul style="list-style-type: none"> <li>Professor Syed Hafeezul Hassan</li> </ul>	<b>RESEARCH AND SKILLS DEVELOPMENT CENTER</b> <ul style="list-style-type: none"> <li>Dr. Kahkashan Tahir</li> </ul>
<b>BIOCHEMISTRY</b> <ul style="list-style-type: none"> <li>Professor Naheed Qadir</li> </ul>	
<b>PHARMACOLOGY</b> <ul style="list-style-type: none"> <li>Professor Nazir Ahmad Solangi</li> </ul>	
<b>COMMUNITY MEDICINE</b> <ul style="list-style-type: none"> <li>Dr. Saima Zainab</li> </ul>	
<b>MICROBIOLOGY</b> <ul style="list-style-type: none"> <li>Professor Syed Khursheed Hasan Hashmi</li> </ul>	
<b>PATHOLOGY</b> <ul style="list-style-type: none"> <li>Professor Naveen Faridi</li> </ul>	
<b>DEPARTMENT of HEALTHCARE EDUCATION</b>	
<ul style="list-style-type: none"> <li>Professor Nighat Huda</li> <li>Dr. Sobia Ali</li> <li>Dr. Afifa Tabassum</li> <li>Dr. Mehnaz Umair</li> <li>Dr. Muhammad Suleman</li> </ul>	
<b>LNH&amp;MC MANAGEMENT</b>	
<ul style="list-style-type: none"> <li>Professor Karimullah Makki, Principal LNH&amp;MC</li> <li>Dr. Shaheena Akbani, Director A.A &amp; R.T LNH&amp;MC</li> </ul>	
<b>STUDY GUIDE COMPILED BY:</b> <b>Department of Health Care Education</b>	Dr. Mehnaz Umair

## **INTRODUCTION**

### **WHAT IS A STUDY GUIDE?**

It is an aid to:

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

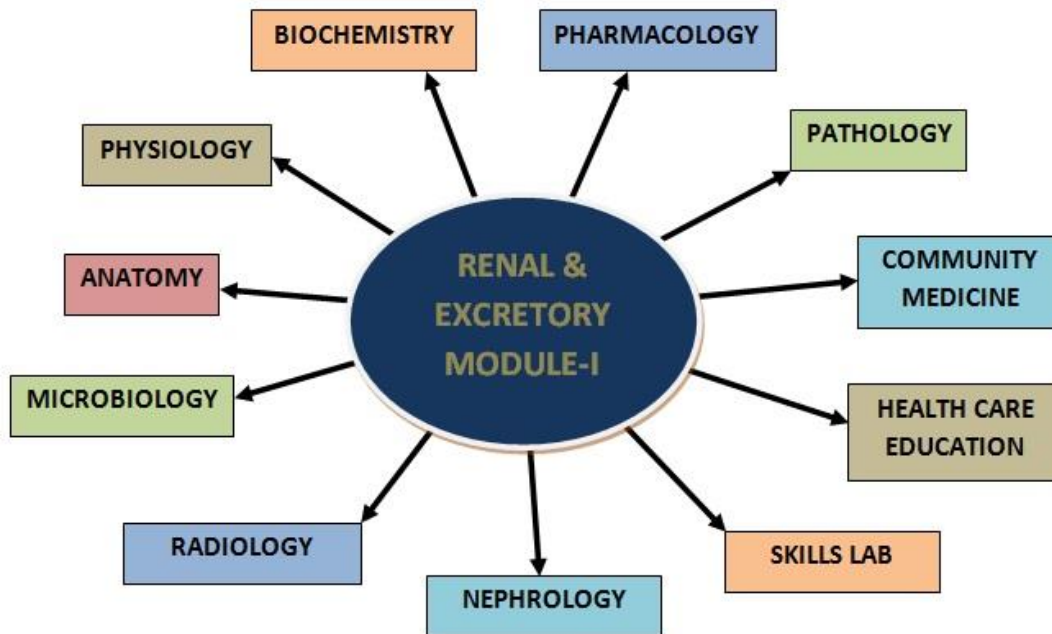
### **THE STUDY GUIDE:**

- Communicates information on organization and management of the module.  
This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as Interactive Lectures, small group teachings, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
- Provides a list of learning resources such as books, computer assisted learning programs, web- links, journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's achievement of objectives.
- Focuses on information pertaining to examination policy, rules and regulations.

### **CURRICULUM FRAMEWORK**

Students will experience *integrated curriculum* in 4<sup>th</sup> semesters at LNMC in accordance with the JSMU guidelines and most recent developments that have an impact on individual health.

**INTEGRATED CURRICULUM** comprises of system-based modules such as GIT & Liver-I, **Renal & Excretory System-I** and Reproduction-I which links basic science knowledge to clinical problems. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples. Case-based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab and physiotherapy department are characteristics of integrated teaching program.

**INTEGRATING DISCIPLINES OF RENAL & EXCRETORY MODULE-I****LEARNING METHODOLOGIES**

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

- Interactive Lectures
- Hospital / Clinic visits
- Small Group Discussion
- Case- Based Learning
- Practicals
- Skills session
- E-Learning
- Self-Directed Learning
- TBL

**INTERACTIVE LECTURES**

In large group, the Interactive 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.

**HOSPITAL VISITS:** In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical sciences of the relevant module.

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

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

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

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

**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.

**TEAM BASED LEARNING:** Team-based learning (TBL) is a structured form of small-group learning that emphasizes student preparation out of class and application of knowledge in class. Students are organized strategically into diverse teams of 5-7 students that work together throughout the class. Before each session/class, students prepare by reading prior to class. In class students are given different tasks or test where they work as team.

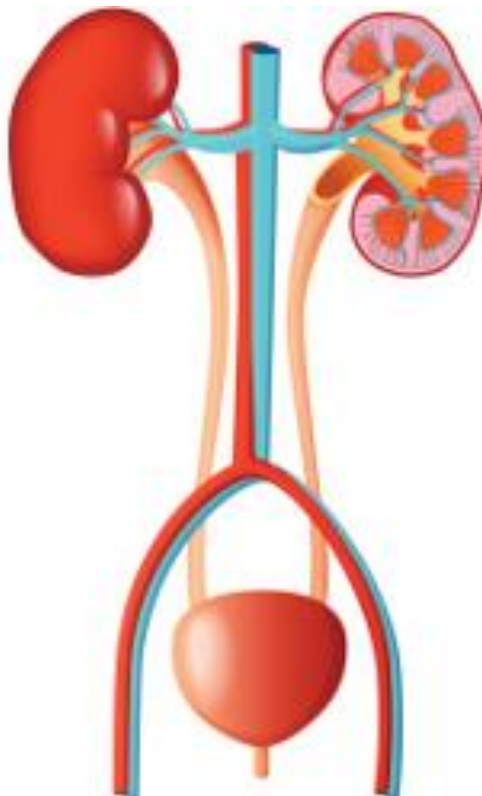


***Apart from attending daily scheduled sessions, students too should engage in self-study to ensure that all the objectives are covered.***

**MODULE 2: RENAL & EXCRETORY SYSTEM-I****Rationale:**

Renal system and excretory system is responsible for the body to get rid of waste and toxic substances. In this module the renal and excretory system will be examined in detail with emphasis on how the renal system develops and functions on a cellular level as well as the mechanisms that underlie renal diseases such as electrolyte imbalance, dehydration, renal hypertension, renal failure, polycystic kidney, nephrotic and nephritic syndrome.

This module will enable the students of second year to recognize the clinical presentations of common renal diseases and relate clinical manifestations to basic sciences. It will be further revisited in the following years.



**COURSE TOPICS, OBJECTIVES AND STRATEGIES**

<b>TOPICS &amp; OBJECTIVES</b>	<b>FACULTY</b>	<b>LEARNING STRATEGY</b>
<b>1. Overview of Kidney</b>		
a. Explain the gross & clinical anatomy of kidneys with neurovascular supply and lymphatic drainage	Anatomy	Small Group Discussion
b. Identify the histological features of kidney	Anatomy	Practical
c. Define renal pain d. Name the relevant disorders of renal pain e. Discuss the causes and clinical presentation of renal pain f. List the relevant investigations of renal pain	Nephrology	Small Group Discussion
g. Describe Body fluid compartments with its composition and edema	Physiology	Small Group Discussion
<b>2. Function of kidney</b>		
a. Explain functions of different segments of kidney	Physiology	Interactive Lecture
b. Discuss Glomerular Filtration Rate (GFR) and the factors regulating it		Interactive Lecture
c. Discuss secretion and absorption at Proximal convoluted tubules		Interactive Lecture
d. Discuss loop of Henle with regard to secretion and absorption at different segments		Interactive Lecture
e. Discuss processing of tubular fluid at Distal Convolved Tubules and collecting tubules		Interactive Lecture
f. Discuss role of kidney in regulation of arterial blood pressure		Interactive Lecture
g. Discuss dehydration, over hydration and composition and use of ORS along with various intravenous infusions such as normal saline, ringer lactate, 5%, 10%, 25% glucose, amino acids solutions, hemaxcel		Small Group Discussion
h. Describe mechanisms of concentration and dilution of urine	Physiology	Interactive Lecture
i. Discuss the acidification of urine		
j. Describe micturition reflex		
k. Discuss the role of urea in urine formation	Physiology	Interactive Lecture
<b>3. Development of kidney and congenital anomalies</b>		
a. Describe the development of kidneys	Anatomy	Interactive Lecture
b. Recognize the congenital anomalies of kidneys		Interactive Lecture
c. Describe Congenital anomalies of kidney and lower urinary system	Pathology	Interactive Lecture



d. Classify cystic diseases of kidney e. Discuss the Pathogenesis and morphology of important cystic diseases of kidney		Interactive Lecture
<b>4. Development of Excretory System and congenital anomalies</b>		
a. Describe the development of ureter, urinary bladder and urethra.	Anatomy	Interactive Lecture
b. Recognize the congenital anomalies of ureters, urinary bladder and urethra.		Interactive Lecture
<b>5. Gross, microscopic &amp; clinical anatomy of Excretory System</b>		
a. Demonstrate the histological features of ureter, urinary bladder and urethra	Anatomy	Practical
b. Explain the gross & clinical anatomy of ureters & urinary bladder with neurovascular supply and lymphatic drainage	Anatomy	Small Group Discussion
c. Describe the structure, parts and location of male and female urethra		Small Group Discussion
<b>6. Normal and abnormal constituents of urine</b>		
a. Detect the normal and abnormal constituents of urine and its biochemical significance	Biochemistry	Practical
b. Estimate the urea in the given sample		
c. Estimate the Creatinine in the given sample		
d. Estimate the Uric acid in the given sample		
<b>7. Hematuria</b>		
a. Define hematuria b. Discuss the clinical presentation and causes of hematuria c. Name the relevant investigations of hematuria d. Discuss the complications of hematuria	Nephrology	Interactive Lecture
<b>8. Renal failure and dialysis</b>		
a. Define renal failure b. Discuss the clinical presentation of renal failure c. List the common investigations for renal failure d. Identify the complications of renal failure		Interactive Lecture
e. Define dialysis f. Identify signs and symptoms of dialysis g. List the possible indications of dialysis h. Recognize the importance of dialysis and its types in case of renal failure i. Discuss the complications of dialysis		Interactive Lecture
<b>9. Imaging of urinary tract</b>		
a. Explain the radiographs and other imaging techniques of	Radiology	Interactive Lecture

urinary system		
b. Discuss the images of urinary tract		
<b>10. Surface anatomy / urinary catheterization</b>		
a. Discuss the surface anatomy of kidney, ureter and urinary bladder	Anatomy	Small Group Discussion
b. Perform Foleys catheterization on a manikin using correct aseptic techniques	Skills Lab	Small Group Discussion with hands-on
<b>11. Role of kidney in water metabolism</b>		
a. Discuss the role of water and pH	Biochemistry	Interactive Lecture
b. Describe regulation of water balance through hormones acting on kidney	Physiology	Interactive Lecture
<b>12. Role of kidney in maintaining acid base balance</b>		
a. Discuss the role of renal system in acid base balance	Biochemistry	Interactive Lecture
<b>13. Role of minerals (Na, Cl &amp; K) in maintaining metabolism &amp; role in water &amp; electrolyte balance</b>		
a. Explain electrolyte metabolism that are sodium & chloride and their disturbances	Biochemistry	Interactive Lecture
b. Explain electrolyte metabolism that are potassium & phosphate and their disturbances		Interactive Lecture
c. Explain the evaluation of electrolytes	Nephrology	Interactive Lecture
<b>14. Renal function tests</b>		
a. Discuss the renal function test and its role in diagnosis of renal disorders	Biochemistry	Interactive Lecture
b. Explain the importance of renal function and other important laboratory test in case of chronic kidney disease	Nephrology	Interactive Lecture
<b>15. Purine and Pyrimidine metabolism and related disorders</b>		
a. Discuss the purine metabolism-I	Biochemistry	Interactive Lecture
b. Discuss the purine metabolism-II and its disorders		Interactive Lecture
c. Discuss the pyrimidine metabolism and its disorders		Interactive Lecture
<b>16. Renal diseases, Uremia and Glomerular diseases</b>		
a. Discuss clinical manifestations of renal diseases and uremia	Pathology	Interactive Lecture
b. Describe the Pathological responses to glomerular injury		Interactive Lecture

c. Discuss Pathogenesis of glomerular diseases and mediators of glomerular injury		Interactive Lecture
<b>17. Nephrotic syndrome</b>		
a. Define nephrotic syndrome	Pathology	Interactive Lecture
b. Describe various glomerulonephritis in this context with clinical and morphological features of each	Pathology	Small group discussion
<b>18. Nephritic syndrome</b>		
a. Define nephritic syndrome	Pathology	Interactive Lecture
b. Describe various glomerulonephritis in this context with clinical and morphological features of each	Pathology	Small group discussion
<b>19. Pyelonephritis</b>		
a. Define Pyelonephritis b. Describe the various Etiological factors c. Differentiate between different types of Pyelonephritis d. Discuss the types of Pyelonephritis	Pathology	Interactive Lecture
<b>20. Tubulo-interstitial disease</b>		
a. Define tubulointerstitial diseases b. Classify tubulointerstitial diseases c. Describe various types of tubulointerstitial diseases	Pathology	Interactive Lecture
<b>21. Urinary Tract Infections (UTI)</b>		
a. List the causative organism of UTI in various age groups b. Describe the clinical and morphological features of UTI	Microbiology	Small group discussion
<b>22. Role of diuretics and Nephrotoxic Drugs</b>		
a. Diuretic drugs <ul style="list-style-type: none"> <li>Classify diuretic drugs</li> <li>Explain the site of action and mechanism of action of different classes of diuretics</li> <li>Discuss the therapeutic uses of different classes of diuretics</li> <li>Explain the systemic effects and adverse effects of diuretics</li> <li>Compare the thiazide diuretics, loop diuretics and potassium sparing diuretics</li> </ul>	Pharmacology	Interactive Lecture
b. Nephrotoxic drugs <ul style="list-style-type: none"> <li>Classify drug induced renal disorders and causes</li> <li>List the risk factors for nephrotoxicity</li> <li>Discuss manifestations of nephrotoxicity and diagnosis</li> <li>Explain some common drug induced nephrotoxicity</li> </ul>		Case-Based Learning

<p>caused by – Aminoglycosides, NSAIDs, Amphotericin B, Sulphonamides, ACE inhibitors, Methicillin and radiographic contrast media.</p> <ul style="list-style-type: none"> <li>Describe drug-induced renal failure</li> </ul>			
<b>23. Introduction to Biostatistics</b>			
<p>a. Define Biostatistics, measures of central tendency &amp; Measures of dispersion</p> <p>b. List the uses &amp; importance of biostatistics</p> <p>c. Describe the concept of frequency, cumulative frequency</p>		Interactive Lecture	
<b>24. Data and its type</b>			
<p>a. Classify data with examples</p> <p>b. Describe the process of measurement of various types of data</p> <p>c. Discuss techniques and procedure to deal with data collection</p>		Interactive Lecture\ Small group discussion	
<b>25. Vital Statistics</b>			
<p>a. Discuss the role of vital statistics in health status of country</p> <p>b. Describe Vital statistics registration in developing countries</p> <p>c. Discuss the situation of vital statistics in Pakistan</p>		Interactive Lecture	
<b>26. Measure of Central tendency</b>			
<p>a. Discuss the Advantages and disadvantages of measures of central tendency</p>	Community Medicine	Interactive Lecture/ Small group discussion	
<b>27. Measure of dispersion</b>			
<p>a. Discuss the Advantages and disadvantages of measures of dispersion</p>		Interactive Lecture/ Small group discussion	
<b>28. Method of data presentation</b>			
<p>a. Describe the type of data presentation</p> <p>b. List the advantages of tabular &amp; graphic presentations</p>		Interactive Lecture	
<b>29. Interpretation of data</b>			
<p>a. Evaluate criteria of interpretation of data</p> <p>b. Discuss the steps of data interpretation</p> <p>c. Differentiate between association and causation</p>		Interactive Lecture	

**LEARNING RESOURCES**

<b>SUBJECT</b>	<b>RESOURCES</b>
<b>ANATOMY</b>	<p><b>A. <u>GROSS ANATOMY</u></b></p> <ol style="list-style-type: none"> <li>1. K.L. Moore, Clinically Oriented Anatomy</li> <li>2. Neuro Anatomy by Richard Snell</li> </ol> <p><b>B. <u>HISTOLOGY</u></b></p> <ol style="list-style-type: none"> <li>1. B. Young J. W. Health Wheather's Functional Histology</li> </ol> <p><b>C. <u>EMBRYOLOGY</u></b></p> <ol style="list-style-type: none"> <li>1. Keith L. Moore. The Developing Human</li> <li>2. Langman's Medical Embryology</li> </ol>
<b>BIOCHEMISTRY</b>	<p><b>A. <u>TEXTBOOKS</u></b></p> <ol style="list-style-type: none"> <li>1. Harper's Illustrated Biochemistry</li> <li>2. Lehninger Principle of Biochemistry</li> <li>3. Biochemistry by Devlin</li> </ol>
<b>COMMUNITY MEDICINE</b>	<p><b>A. <u>TEXT BOOKS</u></b></p> <ol style="list-style-type: none"> <li>1. Community Medicine by Parikh</li> <li>2. Community Medicine by M Ilyas</li> <li>3. Basic <i>Statistics</i> for the Health Sciences by Jan W Kuzma</li> </ol>
<b>PATHOLOGY/MICROBIOLOGY</b>	<p><b>A. <u>TEXT BOOKS</u></b></p> <ol style="list-style-type: none"> <li>1. Robbins &amp; Cotran, Pathologic Basis of Disease, 9th edition.</li> <li>2. Rapid Review Pathology, 4th edition by Edward F. Goljan MD</li> </ol>
	<ol style="list-style-type: none"> <li>1. <a href="http://library.med.utah.edu/WebPath/webpath.html">http://library.med.utah.edu/WebPath/webpath.html</a></li> <li>2. <a href="http://www.pathologyatlas.ro/">http://www.pathologyatlas.ro/</a></li> </ol>
<b>PHARMACOLOGY</b>	<p><b>A. <u>TEXT BOOKS</u></b></p> <ol style="list-style-type: none"> <li>1. Lippincot Illustrated Pharmacology</li> <li>2. Basic and Clinical Pharmacology by Katzung</li> </ol>
<b>PHYSIOLOGY</b>	<p><b>A. <u>TEXTBOOKS</u></b></p> <ol style="list-style-type: none"> <li>1. Textbook Of Medical Physiology by Guyton And Hall</li> <li>2. Ganong ' S Review of Medical Physiology</li> <li>3. Human Physiology by Lauralee Sherwood</li> <li>4. Berne &amp; Levy Physiology</li> <li>5. Best &amp; Taylor Physiological Basis of Medical Practice</li> </ol> <p><b>B. <u>REFERENCE BOOKS</u></b></p> <ol style="list-style-type: none"> <li>1. Guyton &amp; Hall Physiological Review</li> <li>2. Essentials Of Medical Physiology by Jaypee</li> <li>3. Textbook Of Medical Physiology by InduKhurana</li> <li>4. Short Textbook Of Physiology by Mrthur</li> <li>5. NMS Physiology</li> </ol>

**OTHER LEARNING RESOURCES**

<b><u>Hands-on Activities/ Practical</u></b>	Students will be involved in Practical sessions and hands-on activities that link with the renal and excretory module to enhance the learning.
<b><u>Labs</u></b>	<ul style="list-style-type: none"> <li>Utilize the lab to relate the knowledge to the specimens and models available.</li> </ul>
<b><u>Skill Lab</u></b>	<ul style="list-style-type: none"> <li>A skills lab provides the simulators to learn the basic skills and procedures. This helps build the confidence to approach the patients.</li> </ul>
<b><u>Videos</u></b>	Video familiarize the student with the procedures and protocols to assist patients.
<b><u>Computer Lab/CDs/DVDs/Internet Resources:</u></b>	To increase the knowledge students should utilize the available internet resources and CDs/DVDs. This will be an additional advantage to increase learning.
<b><u>Self Learning</u></b>	Self Learning is scheduled to search for information to solve cases, read through different resources and discuss among the peers and with the faculty to clarify the concepts.

**ASSESSMENT METHODS:****Theory:**

- **Best Choice Questions (BCQs)** also known as MCQs (Multiple Choice Questions) are used to assess objectives covered in each module.
  - A BCQ has a statement or clinical scenario followed by four options (likely answer).
  - Students after reading the statement/scenario select ONE, the most appropriate response from the given list of options.
  - **Correct answer carries one mark, and incorrect 'zero mark'. There is no negative marking.**
  - Students mark their responses on specified computer-based/OMR sheet designed for LNHMC.

**OSPE/OSCE: Objective Structured Practical/Clinical Examination:**

- Each student will be assessed on the same content and have same time to complete the task.
- Comprise of 12-25 stations.
- Each station may assess a variety of clinical tasks, these tasks may include history taking, physical examination, skills and application of skills and knowledge
- Stations are observed, unobserved, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Unobserved will be static stations in which there may be an X-ray, Labs reports, pictures, clinical scenarios with related questions for students to answer.
- Rest station is a station where there is no task given and in this time student can organize his/her thoughts.

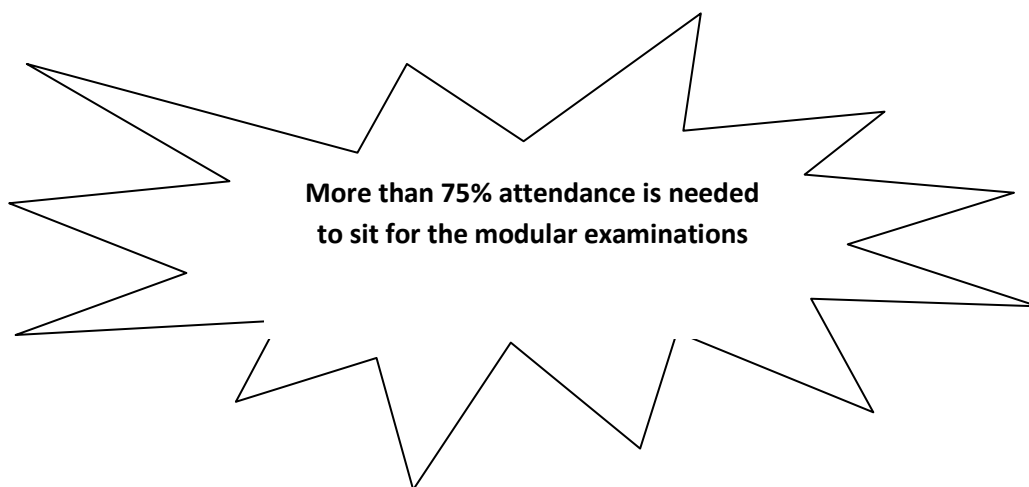
**Internal Evaluation**

- Students will be assessed to determine achievement of module objectives through the following:
  - **Module Examination:** will be scheduled on completion of each module. The method of examination comprises theory exam which includes BCQs and OSPE (Objective Structured Practical Examination).
  - **Graded Assessment of students by Individual Department:** Quiz, viva, practical, assignment, small group activities such as CBL, TBL, TOL, online assessment, ward activities, examination, and log book.
- Marks of both modular examination and graded assessment will constitute 20% weightage.
- As per JSMU policy, this 20% will be added by JSMU to Final Theory Examination.

Example : Number of Marks allocated for Final Theory and Internal Evaluation			
	Final Examination Theory Marks	Internal Evaluation (Class test + Assignments + Modular Exam)	Total (Theory)
	80%	20%	100%

### 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





**MODULAR EXAMINATION RULES & REGULATIONS (LNH&MC)**

- 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.

**JSMU Grading System**

- It will be based on GPA – 4 system

Marks obtained in Percentage range	Numerical Grade	Alphabetical Grade
80-100	4.0	A+
75-79	4.0	A
70-74	3.7	A-
67-69	3.3	B+
63-66	3.0	B
60-62	2.7	B-
56-59	2.3	C+
50-55	2.0	C
<50 Un-grade-able	0	U

- A candidate obtaining GPA less than 2.00 (50%) is declared un-graded (fail).
- Cumulative transcript is issued at the end of clearance of **all** modules.

**SCHEDULE:**

WEEKS	2nd YEAR	MONTH
WEEK 1	GIT & LIVER MODULE-I	1 <sup>st</sup> April 2019
WEEK 2		MODULAR EXAM
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		14 <sup>th</sup> May 2019
	MODULAR EXAM	17 <sup>th</sup> & 18 <sup>th</sup> May 2019*
WEEK 1	RENAL & EXCRETORY SYSTEM MODULE-I	20 <sup>th</sup> May 2019*
WEEK 2		MODULAR EXAM
WEEK 3		
WEEK 4		21 <sup>st</sup> June 2019*
	MODULAR EXAM	24 <sup>th</sup> & 25 <sup>th</sup> June 2019*
WEEK 1	REPRODUCTIVE SYSTEM MODULE-I	27 <sup>th</sup> June 2019*
WEEK 2		MODULAR EXAM
WEEK 3		
WEEK 4		20 <sup>th</sup> July 2019*
	MODULAR EXAM	22 <sup>nd</sup> & 23 <sup>rd</sup> July 2019*
PREPARATORY LEAVE		

\*Final dates will be announced later.