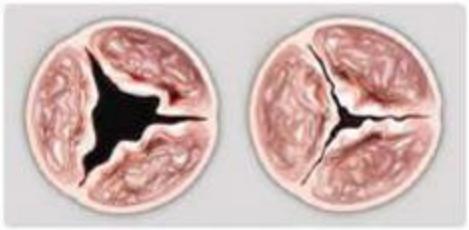
STUDY GUIDE

CARDIOVASCULAR SYSTEM II MODULE

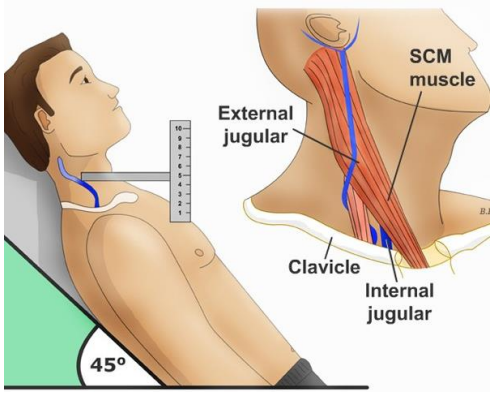
THIRD YEAR MBBS SEMESTER 5

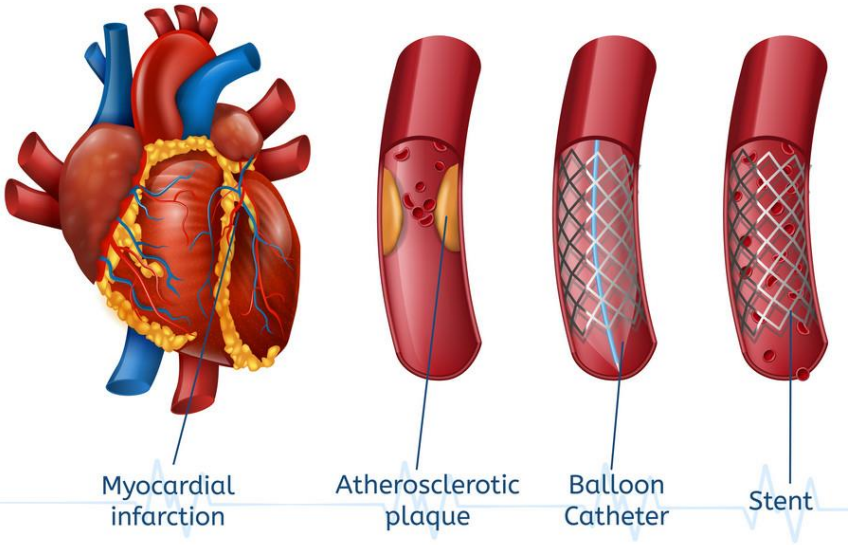
Duration: 4 Weeks

4th Mar – 30th Mar 2019



Aortic Valve Stenosis





LIAQUAT NATIONAL HOSPITAL & MEDICAL COLLEGE

STUDY GUIDE FOR CARDIOVASCULAR SYSTEM II MODULE

Module name: **CVS II**

Semester: **Five** *Year:* ***Three*** *Duration:* ***4 weeks (March 2019)***

Timetable hours: **Lectures, Case-Based Integrated Learning (CBIL), Clinical Rotations, learning experience in LNH outreach centers, Laboratory, Practical, Demonstrations, Skills, Self-Study**

Credit hours: **3 credit hours in theory and 1.5 credit hours in practical**

MODULE INTEGRATED COMMITTEE

MODULE COORDINATOR:	• Dr. Faisal Ahmed (Cardiology)
CO-COORDINATORS:	• Dr. Syeda Nosheen Zehra (Medicine) • Dr. Imran Sandeelo (Cardiology)

DEPARTMENTS' & RESOURCE PERSONS' FACILITATING LEARNING

BASIC HEALTH SCIENCES	CLINICAL AND ANCILLARY DEPARTMENTS
ANATOMY • Professor Zia-ul-Islam	***CARDIOLOGY*** • Dr. Faisal Ahmed • Dr. Imran Sandeelo
PHYSIOLOGY • Professor Syed Hafeez-ul-Hassan	***MEDICINE*** • Prof. KU Makki • Dr. Syeda Nosheen Zehra
FORENSIC MEDICINE • Professor Murad Zafar	***RESEARCH & SKILLS DEVELOPMENT CENTER*** • Dr Kahkashan Tahir
PATHOLOGY • Professor Naveen Faridi • Dr. Hanna Naqvi	***RESEARCH*** • Dr. Shaheena Akbani
PHARMACOLOGY • Professor Nazir Ahmad Solangi	
COMMUNITY MEDICINE • Professor Rafiq Soomro	
DEPARTMENT of HEALTHCARE EDUCATION Professor Nighat Huda Dr. Sobia Ali Dr Afifa Tabassum Dr Muhammad Suleman Sadiq Dr Mehnaz Umair	
LNH&MC MANAGEMENT • Professor Karimullah Makki, Principal LNH&MC • Dr. Shaheena Akbani, Director A.A & R.T LNH&MC	
STUDY GUIDE COMPILED BY: Department of Health Care Education	Dr. Afifa Tabassum

INTRODUCTION

WHAT IS A STUDY GUIDE?

It is an aid to:

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

THE STUDY GUIDE:

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

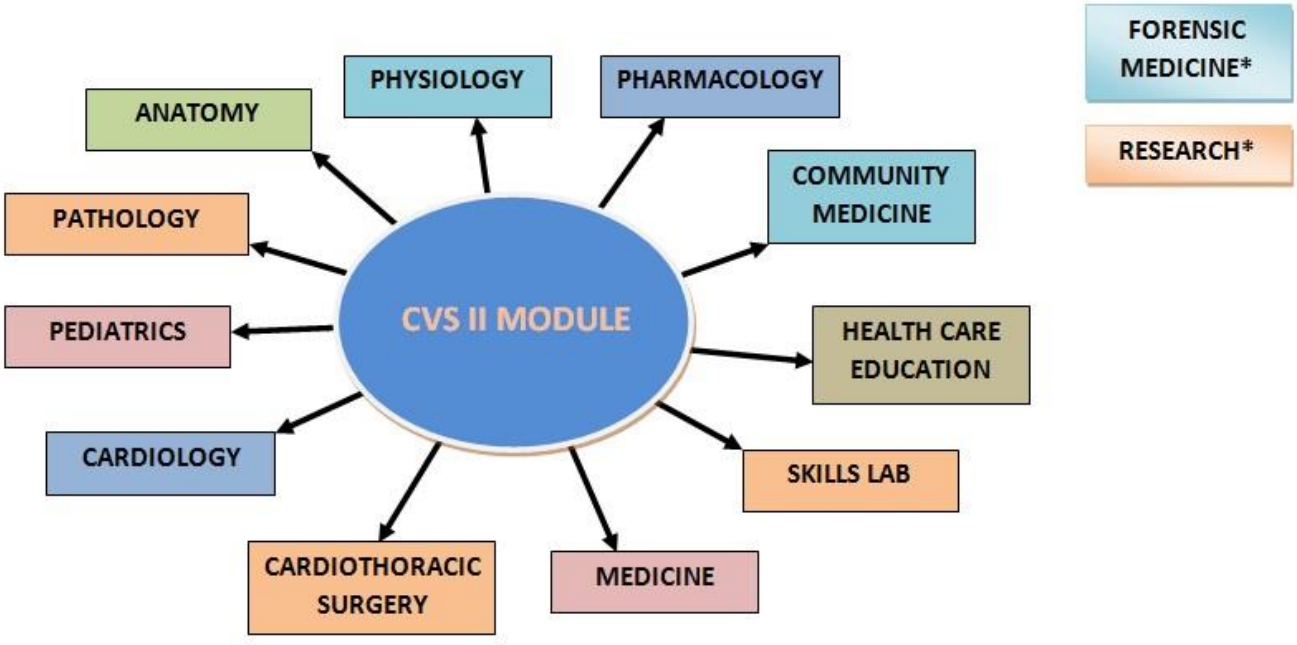
CURRICULUM FRAMEWORK

Students will experience *integrated curriculum* similar to previous modules of all 4 semesters**.**

INTEGRATED CURRICULUM comprises of system-based modules such as Infectious Diseases, Hematology, Respiratory system-II and CVS-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, skills acquisition in skills lab. computer-based assignments, learning experiences in clinics, wards, and outreach centers

INTEGRATING DISCIPLINES OF CARDIOVASCULAR SYSTEM II MODULE



Note: *Forensic Medicine Curriculum & Research will run parallel in 5th and 6th Semester

LEARNING METHODOLOGIES

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

- Interactive Lectures
- Small Group Discussion
- Case- Based Integrated Learning (CBIL)
- Clinical Experiences
  - Clinical Rotations
  - Experience in LNH outreach centers
- Practicals
- Skills session
- Self-Directed Study

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 INTEGRATED LEARNING (CBIL): 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 CBIL will be provided by the concern 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 & Gyne, 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.
- **EXPERIENCE IN LNH OUTREACH CENTERS:** Learning at outreach centers of LNH have been organized and incorporated as part of training of third year medicinal students. The objective of these visits is to provide clinical training experiences for students in primary care settings.

PRACTICAL: Basic science practicals related to pharmacology, microbiology, pathology, forensic medicine, and community medicine have been schedule for student learning.

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

SELF-DIRECTED STUDY: 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.

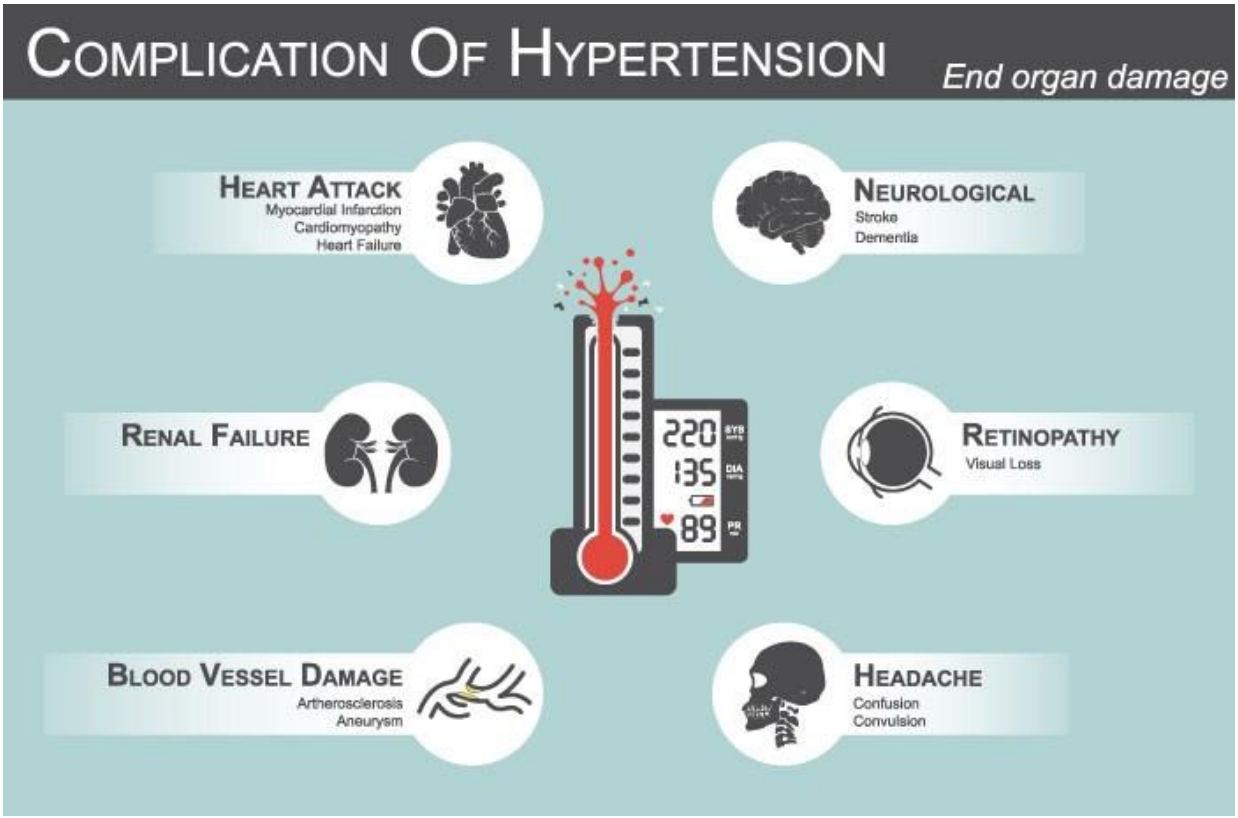
SEMESTER 5 MODULE 4 : CVS II

INTRODUCTION

Cardiovascular module(I) in Semester 2 covered basic medical sciences concepts for understanding the causes and treatment of diseases.

CVS (II) will now focus on common clinical presentations along with treatment options, relevant investigations and prevention. Students will have opportunities to relate their knowledge on the diseases such as congenital heart diseases, hyperlipidemia, hypertension, diseases of vessel wall, ischemic heart diseases, valvular heart diseases, arrhythmias, cardiac failure and infections. Sessions on preventive medicine and healthy life style will have significant importance. Students will be engaged in CVS history taking and physical examination both in adults and children to enhance the clinical examination skills of the students. The module will enable students to relate their theoretical learning through case-based learning, interactive lectures, patient, simulated-based experiences and video-based learning.

Forensic Medicine, family medicine clinics and research will run parallel with the module.



http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/LearnHowHBPHarmsYourHealth/Health-Threats-From-High-Blood-Pressure_UCM_002051_Article.jsp#.WmwFXZKGPIU

COURSE OBJECTIVES AND STRATEGIES

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

TOPICS & OBJECTIVES	*FACULTY*	*LEARNING STRATEGY*
History, Examination, Lab investigation and epidemiology related to CVS		
• Demonstrate history taking relevant to CVS disorders	Medicine	Small Group Discussion
• Demonstrate all the steps of CVS examination	Skills Lab + Cardiology	
• Interpret the imaging modalities used for the diagnosis of cardiovascular diseases	Cardiology	
• Explain the incidence and prevalence of CVS diseases and their effects such as obesity, diabetes, life style, cigarette smoking, sedentary life etc • Discuss Risk Factors of Cardiovascular Diseases • Identify New Emerging Cardiovascular Risk Factors • Describe the guidelines for cardiovascular disease prevention including those involving lifestyle behavioral changes, nutritional counseling	Community Medicine	Small Group Discussion
Valvular Heart Diseases VHD		
• Define Rheumatic fever • Discuss etiology, pathogenesis & clinical features of Rheumatic heart disease • Discuss the features of valvular heart disease	Pathology	Small Group Discussion
• Describe the clinical features, diagnostic evaluation and workup of the patient with rheumatic fever/heart disease • Discuss control and prevention of rheumatic heart diseases	Cardiology	Interactive Lectures
• Explain the clinical features, diagnosis and workup of the patients with Mitral Valve Diseases	Cardiology	
• Explain the clinical features, diagnosis and workup of the patients with Aortic Valve Diseases		
Diseases of Vessels wall		
• Mark borders and areas of auscultation of the heart • Distinguish between the various chambers of heart in context to their functional anatomy • Discuss the arterial supply and venous drainage of Heart	Anatomy	Interactive Lectures
• Discuss the physiological anatomy of cardiac muscle • Describe the role of heart as a pump • Explain the functions of the heart valves along with their abnormalities	Physiology	

• Describe the pathogenesis of atherosclerosis • Define and explain arteriosclerosis • Explain the complications of atherosclerosis	Pathology	
Hypertension		
• Explain the pathogenesis of hypertension and recognize the vascular pathology associated with hypertension • Discuss the consequence of hypertension, pressure overload on the heart and its progression to heart failure	Pathology	Interactive Lectures
• List major groups of antihypertensive drugs along with examples of drugs in each • List the major antihypertensive vasodilator drugs and describe their effects • List the major toxicities of the prototype antihypertensive agents • Discuss the treatment of hypertensive crisis	Pharmacology	
• Explain the factors causing, clinical features, diagnosis and treatment of hypertension	Cardiology	
• Discuss the approaches and life style useful in preventing hypertension		Case-Based Discussion
• Describe hypertension • Classify Hypertension • Explain the rule of half in hypertension • Discuss prevention of Hypertension	Community Medicine	Interactive Lecture
Hyperlipidemias		
• Disucss hyperlipidemia • Discuss the laboratory investigation of hyperlidemia	Pathology	Small Group discussion
• Explain the role of cholesterol and lipoproteins in the development of atheromas (dyslipedemia)	Cardiology	Interactive Lecture
Ischemic Heart Diseases IHD		
• Discuss the pathogenesis of ischemic heart disease • Correlate the type of angina pectoris with the pathology of coronary arteries • Describe the pathology of myocardial infarction (MI) including: types, morphological changes, main clinical features and complications • Discuss the role of cardiac enzymes CK, LDH and AST in the diagnosis of heart disease	Pathology	Interactive Lectures
• Classify the drugs used in angina and acute coronary syndrome • List the strategies and drug targets for relief of anginal pain • Discuss the therapeutic uses and adverse effects of nitrates, β blockers and calcium channel blockers	Pharmacology	

• Describe the therapy for acute coronary syndromes • Explain the treatment of angina and myocardial infarction		
• Correlate different wave forms in an ECG to the physiologic changes in cardiac cycle • Calculate rate, rhythm, PR interval and duration of QRS complex • Identify common types of tachyarrhythmia and bradyarrhytmia • Differentiate supra ventricular tachycardia, ventricular tachycardia and ventricular fibrillation	Skills Lab	Small Group Discussion/Skills
• Discuss different types of angina and myocardial infarction • Describe the complications of acute myocardial infarction	Cardiology	Interactive Lectures
• Discuss the clinical manifestation, evaluation, diagnosis, management and complication of acute coronary syndrome		
• Discuss the benefits of cardiac interventions in various CVS diseases		
Arrhythmias and cardiac arrest		
• Discuss the clinical manifestation, diagnosis and treatment of arrhythmias and cardiac arrest	Cardiology	Interactive Lecture
• Classify anti-arrhythmic drugs • Discuss the general pharmacology use and primary side effects of antiarrhythmic drugs	Pharmacology	Case-Based Discussion
• Discuss the clinical features, diagnosis and management of atria fibrillation	Cardiology	
Cardiac Failure		
• Describe the strategies and list the major drug groups used in the treatment of acute heart failure and chronic failure • Discuss the mechanism of action of digoxin, its adverse effects and treatment of digoxin overdose • List positive inotropic drugs other than digitalis that have been used in heart failure • Explain the beneficial effects of diuretics, vasodilators, ACE inhibitors and other drugs	Pharmacology	Interactive Lectures
• Discuss the causes of congestive heart failure along with its effect on the left sided and right sided heart failure	Cardiology	
• Discuss the clinical presentation and management of heart failure	Medicine	Case-Based Learning
Infections		
• Explain the etiological agents, pathogenesis & morphology of Infective endocarditis. • Explain the diagnostic criteria of Infective Endocarditis	Pathology	Interactive Lecture
• Describe the salient features of infective endocarditis including diagnostic criteria, mirco-organisms typically	Cardiology	Interactive Lectures

involved, pathological findings and effects on heart functions		
• Discuss the types and etiologies of pericardial disease and cardiomyopathies		
• Discuss the common cardiac tumors along with their clinical features , diagnosis and treatment		
• Define cardiomyopathy & discuss its types • Enumerate the conditions associated with cardiomyopathy • Explain the morphology and clinical features cardiomyopathy • List the causes and discuss the morphology of myocarditis	Pathology	Interactive Lectures
• Define vasculitis and discuss its primary forms. • Explain in detail the pathogenesis and morphology of clinically important vasculitis.		
• Define pericardial effusion & Hemopericardium • Discuss Pericarditis , its types, causes and morphology • Explain cardiac tumors		Small group discussion
• Define aneurysm and dissection of vessel wall • Explain the pathogenesis, morphology & clinical features of aneurysms. • Discuss Aortic dissection with relation to pathogenesis, morphology & clinical features. • Classify and explain benign borderline and malignant vascular tumors		
Genomics in Cardiovascular disease		
• Describe Genomic • Explain the role of genomic in cardiovascular disease • Identify diagnostic methods in genetic disease	Molecular Pathology	Interactive Lecture
Forensic Medicine		
<u>Injury Classification</u> • Classify different types of injuries • Define Injury, Hurt, Trauma, Wound, Assault and Battery	Forensic Medicine	Interactive Lectures
<u>Traumatic death</u> • Describe the cause of death due to wounds		

Firearm injury Mechanism (I & II) • Classify firearms • Describe the different parts of a firearm & mechanism of fire in firearm weapon • Describe in detail the characteristics of shotgun injuries • Describe in detail the characteristics of rifled firearm injuries in varying range	Forensic Medicine	Interactive Lectures
Firearm injury Investigation (I & II) • Describe the differences between the wound of entry and wound of exit by a bullet • Explain the differentiating features of suicide, homicide and accident by firearm • Describe estimation of distance or range / direction/angle of firearm injuries • Discuss fabricated firearm injuries • Describe the autopsy procedure in case of death from firearm injury		
Blast and Explosives (I & II) • Describe the types & mechanism of Explosive weapons • Describe explosion and blast injury pattern • Describe the forensic postmortem examination of the blast injuries • Explain terrorism related injuries		
Pattern of Injuries • Describe kinds of hurt under English law designated as "grievous' or "simple" • Describe diagnostic features of fabricated/self-inflicted wound. • Describe the types, mechanism of production and medico-legal significance of Lacerated wound • Sharp weapon injuries incised wounds, stab wounds with medicolegal significance • Classify hurt according to Qisas and Diyat Law • Describe pattern of weapon used and nature of inflicted injuries caused by: o Hard and blunt objects o Sharp force objects		
Ballistics/Structure of Firearm • Describe types of firearm including range, action, bore, projectile, gun powder, dermal nitrate test, abraded collar, ricochet, crime bullet, ammunition		
Inorganic irritants poisons: • Discuss the non metallic poison including phosphorous and iodine • Discuss the metallic poisons such as arsenic , lead, mercury and copper		Small Group Discussion

Common house hold poisons • Describe the signs, symptoms, diagnosis, treatment and postmortem findings of poisoning by common household poisons including domestic household poisons and garden poisons		
How to write medico-legal report • Write the medico-legal report of injured person.		

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

LEARNING RESOURCES

SUBJECT	RESOURCES
COMMUNITY MEDICINE	**TEXT BOOKS** 1. Preventive and Social Medicine by K Park 2. Community Medicine by M Illyas 3. Basic *Statistics* for the Health Sciences by Jan W Kuzma
FORENSIC MEDICINE	**TEXT BOOKS** 1. Nasib R. Awan. Principles and practice of Forensic Medicine 1st ed. 2002. 2. Parikh, C.K. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology. 7th ed.2005. **REFERENCE BOOKS** 3. Knight B. Simpson's Forensic Medicine. 11th ed.1993. 4. Knight and Pekka. Principles of forensic medicine. 3rd ed. 2004 5. Krishan VIJ. Text book of forensic medicine and toxicology (principles and practice). 4th ed. 2007 6. Dikshit P.C. Text book of forensic medicine and toxicology. 1st ed. 2010 7. Polson. Polson's Essential of Forensic Medicine. 4th edition. 2010. 8. Rao. Atlas of Forensic Medicine (latest edition). 9. Rao.Practical Forensic Medicine 3rd ed ,2007. 10. Knight: Jimpson's Forensic Medicine 10th 1991,11th ed.1993 11. Taylor's Principles and Practice of Medical Jurisprudence. 15th ed.1999 **CDs:** 1. Lectures on Forensic Medicine. 2. Atlas of Forensic Medicine. **WEBSITES:** www.forensicmedicine.co.uk
GENERAL MEDICINE	**REFERENCE BOOKS:** 1. Hutchison's Clinical Methods, 23rd Edition 2. MacLeod's clinical examination 13th edition 3. Davidson's Principles and Practice of Medicine 4. Kumar and Clark's Clinical Medicine 5. HCAI guidelines CDC 6. WHO TB guidelines
PATHOLOGY/MICROBIOLOGY	**TEXT BOOKS** 1. Robbins & Cotran, Pathologic Basis of Disease, 9th edition. 2. Rapid Review Pathology, 4th edition by Edward F. Goljan MD

	WEBSITES: 1. http://library.med.utah.edu/WebPath/webpath.html 2. http://www.pathologyatlas.ro/
PEDIATRICS	**TEXT BOOK:** 1. Textbook of Pediatrics by PPA, preface written by S. M. Haneef 2. Basis of Pediatrics (8th Edition Pervez Akbar)
PHARMACOLOGY	**A. TEXT BOOKS** 1. Lippincot Illustrated Pharmacology 2. Basic and Clinical Pharmacology by Katzung

ADDITIONAL LEARNING RESOURCES

Hands-on Activities/ Practical	Students will be involved in Practical sessions and hands-on activities that link with the CVS II module to enhance learning.
Labs	Utilize the lab to relate the knowledge to the specimens and models available.
Skills Lab	Provides the simulators to learn the basic skills and procedures. This helps build confidence when approaching patients in real settings.
Videos	Familiarize the student with the procedures and protocols to assist patients.
Computer Lab/CDs/DVDs/Internet Resources:	To increase knowledge and motivation of students through the available internet resources and CDs/DVDs. This will be an additional advantage to meaningful learning.
Self Learning	Self Learning is when students seek information to solve cases, read through different resources and discuss among peers, and with the faculty to clarify the concepts.

ASSESSMENT METHODS:

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

BCQs:

- A BCQ has a statement or clinical scenario of four options (likely answers).
- **Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.**
- Students mark their responses on specified computer-based sheet designed for LNHMC.

OSCE:

- All students rotate through the same series of stations in the same allocated time.
- At each station, a brief written statement includes the task. Student completes the given task at one given station in a specified time.
- Stations are observed, unobserved, interactive or rest stations.
- In unobserved stations, flowcharts, models, slide identification, lab reports, case scenarios may be used to cover knowledge component of the content.
- Observed station: Performance of skills /procedures is observed by assessor
- Interactive: Examiner/s ask questions related to the task within the time allocated.
- In Rest station, students in the given time not given any specific task but wait to move to the following station.

Internal Evaluation

- Students will be assessed comprehensively through multiple methods.
- 20%marksofinternalevaluationwillbeaddedintheoryofsemesterexam.That20%may include class tests, assignment, journals, and the modular exam which will all have specific marks allocation.

Example: Number of Marks allocated for Semester Theory and Internal Evaluation			
JSMU Examination	**Theory Marks**	**Internal Evaluation (Class tests +Journals + Assignments + Modular Exam)**	**Total(Theory)**
	80%	**20%**	100%

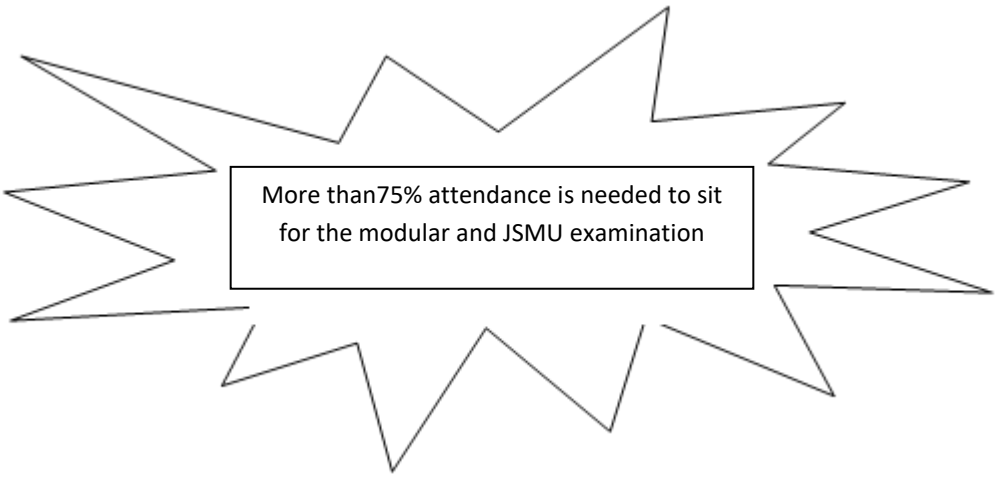
Formative Assessment

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

For JSMU Examination Policy, please consult JSMU website!

MODULAR EXAMINATION RULES &REGULATIONS (LNH&MC)

- Student must report to examination hall/venue, 30minutes 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 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.
- In discipline in the exam hall/venue is not acceptable. Students must not possess any written material or communicate with their fellow students.



SCHEDULE:

WEEKS	3rd Year SEMESTER 5	MONTH
WEEK 1	INFECTIOUS DISEASES MODULE	3rd Dec, 2018
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		2nd Jan, 2019
	MODULAR EXAM	Jan, 2019
WEEK 1	HEMATOLOGY MODULE	7th Jan, 2019
WEEK 2		
WEEK 3		
WEEK 4		29th Jan, 2019
	MODULAR EXAM	Feb, 2019
WEEK 1	RESPIRATORY II MODULE	4th Feb, 2019
WEEK 2		
WEEK 3		
WEEK 4		28th Feb, 2019
	MODULAR EXAM	Mar, 2019
WEEK 1	CVS II MODULE	4th Mar, 2019
WEEK 2		
WEEK 3		
WEEK 4		30th March, 2019
	MODULAR EXAM	Mar-Apr, 2019*

*Final dates will be announced later