

MOHI-UD-DIN ISLAMIC MEDICAL COLLEGE MIRPUR

DEPARTMENT OF MEDICAL EDUCATION



CARDIOVASCULAR -I Module

1ST YEAR MBBS (BATCH-17)

BLOCK: C

DURATION: 5 WEEKS

FROM: 6TH AUG TO 4 SEP 2026

MODULE CODE: MB1-C-CVS-I-04

2025-26

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List Of Abbreviation

Anat-SGD	Small Group Discussion in Anatomy	Med-L	Medicine Lecture
Bio-L	Biochemistry Lecture	OSPE	Objectively Structured Practical Examination
Bio-P	Biochemistry Practical	Paeds-L	Pediatrics Lecture
Bio-SGD	Small Group Discussion in Biochemistry	Patho-L	Pathology Lecture
C.Med-L	Community Medicine Lecture	Phar-L	Pharmacology Lecture
DSL	Directed Self Learning	Phy-L	Physiology Lecture
FDT	Film/Demonstration/Tutorial	Phy-P	Physiology Practical
F.Med-L	Forensic Medicine Lecture	Phy-SGD	Small Group Discussion in Physiology
G.Anat-L	Gross Anatomy Lecture	PBL	Problem Based Learning
Histo-P	Histology Practical	SDL	Self-Directed learning
LGIS	Large Group Interactive Session.	SAQs	Short Answer Questions
MCQs	Multiple Choice Questions	SEQs	Short Essay Questions
Med.Edu-L	Medical Education Lecture	SGDs	Small Group Discussions
PRIME	Professionalism and communication skills, Research, Identity formation, Management and leadership, Ethics		

1. Instructions:

1. Maintain a minimum attendance of 85% in all scheduled academic activities otherwise will not be allowed to sit in annual exam.
2. Always adhere strictly to the prescribed college uniform and professional dress code.
3. Demonstrate professionalism and respect toward peers, faculty, staff, and patients.
4. Uphold academic integrity and ethical conduct in all learning and assessment activities.
5. Comply with all institutional policies regarding conduct, use of facilities, and digital etiquette.

2. Module Committee:

s.no	Name	Department	Role
1.	Prof..Dr.Col Shafqat Ali	Anatomy	HOD
2.	Prof. Dr. M. Naqib	Biochemistry	HOD
3.	Prof. Dr. Ayyaz Ahmed	Physiology	HOD
4.	Dr. M Junaid Khan	DME	HOD

OUR VISION STATEMENT

To be a renewed nationwide and world class academia maintaining a prominent role in medical education, innovative research and delivery of best health care services of international standards.

OUR MISSION STATEMENT

To take this medical college to the international ranking by providing healthcare professional's excellent knowledge, extraordinary skill sets, leadership in research and empathy with Islamic Sprit.

MODULE MAPPING (MBBS PROGRAM)

Tentative

YEAR	BLOCKS	MODULES			HORIZONTAL MODULE			
1 ST YEAR (FOUNDATION)	A	Foundation-I (5-weeks)		Blood & Immunology-I (5-weeks)		Quran Kareem	PRIME <i>(Professionalism, Research, Identity formation, Management & leadership, Ethics)</i>	
	B	Locomotor/MSK-I (8-weeks)						
	C	CVS – I (4-weeks)		RES – I (4-weeks)				
2 ND YEAR (PRE-CLINICAL)	D	Gastrointestinal, Hepatobiliary and Metabolism Module -I (9-weeks)		Renal-I (3-weeks)				Pak. Study/ Islamite
	E	Neurosciences 1A (6-weeks)		Neurosciences 1B (5-weeks)				
	F	Endocrine – I (4-weeks)		Repro – I (3-weeks)				
3 RD YEAR (PARA-CLINICAL & EARLY CLINICAL)	G	Foundation – II		Infection & Inflammation-II		English Expository Writing		
	H	Multisystem-I	Blood & Immunology-II		Locomotor/MSK-II			
	I	CVS – II		RES – II				
4 TH YEAR (CLINICAL)	J	Neurosciences-II				M1 = ENT M2 = EYE	Arts & Humanities	
	K	GIT & Hepatobiliary – II						
	L	Renal-II		Endo & Repro – II				
PRIME YEAR (PROFESSIONAL TRAINING)	N	Foundation-III	Blood & Immunology-III	Locomotor/MSK-III		Clerkship, Electives, /Capstone/ Observer ship		
	O	Cardiorespiratory-III						
	P	Renal-III		Endo & Repro-III				
	Q	Neurosciences-III	GIT & Hepatobiliary-III	Multisystem-III				



- 1st Year MBBS: 3 blocks, 5 Modules – 27 weeks (945 Hours/AY)
- 2nd Year MBBS: 3 blocks, 6 Modules – 30 weeks (1050 Hours/AY)

Per week teaching hours = 35
Total weeks/hours are tentative



PRIME Year: Year of Professionals Ready for Innovative Medical Excellence
PRIME: Professionalism, Research, Identity formation, Management & leadership, Ethics.



1st Year
(Foundation)



2nd Year
(Pre-Clinical)



3rd Year
(Para-Clinical &
Early Clinical)



4th Year
(Clinical)



PRIME Year
(Professional
Training)



Horizontal
Modules

3. What Is A Study Guide?

The Purpose and Structure of a Study Guide

A study guide serves as the central contract and roadmap between the educational program and the student. Its primary purpose is to demystify the learning process by clearly communicating how a module is organized, managed, and assessed. It empowers students to take ownership of their learning by providing all necessary information to plan their studies, identify appropriate resources and support, and understand precisely how their performance will be evaluated.

Core Components of an Effective Study Guide:

Module Administration & Overview

This section provides the essential framework for the module. It includes:

- **Module Identification:** Code, title, teaching hours, and placement within the curriculum.
- **Personnel & Coordination:** Clear points of contact (Module Coordinator, teaching faculty) with roles and responsibilities defined, enabling students to seek the right help efficiently.
- **Timetable & Schedule:** A structured overview of the teaching sequence, including dates, topics, and formats (e.g., lectures, practicals).
- **Learning Objectives & Instructional Strategy**
This is the academic core of the guide, aligning intent with action.
- **Module & Theme Objectives:** A precise list of what students are expected to know, understand, and be able to do by the module's end, directly mapped to program and PMDC competencies.
- **Teaching-Learning Methods:** A description of the instructional strategies employed (e.g., interactive lectures, small group discussions, lab sessions, case-based learning) and their role in achieving the objectives.
- **Learning Resources & Support**
This component directs students to the tools for successful learning.
- **Curated Resource List:** A categorized list of essential and recommended resources, including core textbooks, key journal articles, vetted online links, and specific software or simulation tools.
- **Assessment Strategy:** A detailed breakdown of all formative (continuous) and summative assessments, including their format, weighting, schedule, and how they contribute to the final grade.
- **Rules and Policies:** Clear statements on examination rules, grading criteria, policy on late submissions, academic integrity, and the appeals process.

In summary, a well-constructed study guide transforms a module from a series of disjointed events into a coherent, transparent, and manageable learning journey. It is a fundamental tool for achieving constructive alignment and enhancing the student learning experience.



4. Recommended List Of Icons



Introduction To Case



For Objectives



Critical Questions



Assessment



Resource Material

5. Organization of Module

Introduction:

By the end of this module the student of Mohi-ud-Din Islamic Medical College should be able to build adequate knowledge, attitude and skills to learn to manage (Diagnose, Investigate, Treat, Refer, Prevent and Counsel) common cardiovascular diseases. Cardiovascular system (CVS) module is designed to develop an understanding of the basic concepts of the cardiovascular system and electrocardiograph along with abnormalities through an integrated course.

CVS consist of the heart, lungs and blood vessels. In this system the heart functions as a pump whereas blood vessels act as pipes, carrying blood through the body and the lungs supply the blood with oxygen and remove its carbon dioxide.

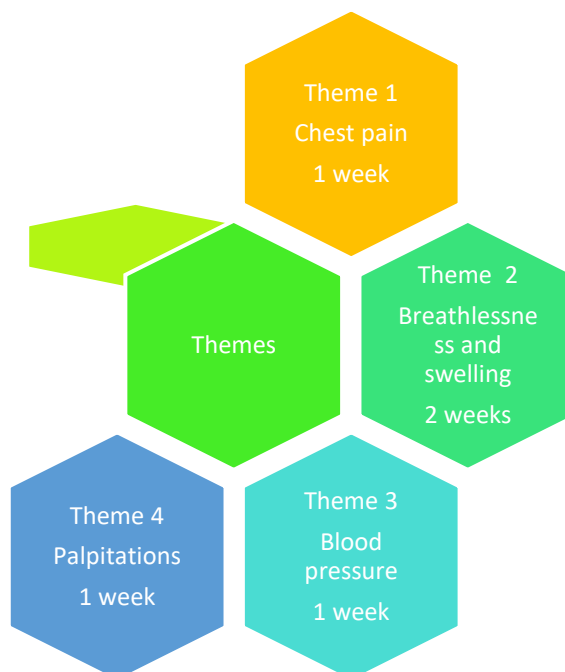
Rational

A perfectly functioning cardiovascular system is so important for the human body, that if it stops for a minute, rapid death may occur. Cardiovascular health is very important in maintaining overall health and wellness. This module will teach how heart and cardiovascular system works when healthy, and what happens when diseased.

Themes & duration

CVS module is a 5-week theme-based module which will be taught through LGIS, SGDs, DSL, SDL and practicals in Anatomy, Physiology and Biochemistry. Each theme has clear learning objectives.

Themes included in CVS-I module:





6. Teaching and learning strategies

How You Will Learn: A Message from Your Study Guide

This guide outlines the diverse learning methods you will experience, each carefully chosen to help you grow from a student of science into a capable, independent future clinician. Think of this as your map to not only *what* you will learn, but *how* you will learn most effectively.

Part 1: Learning Together – Facilitated Sessions

These sessions provide the foundation, context, and interactive space to build knowledge with your peers and faculty.

- a. **Interactive Lectures:** These are not passive events. In lecture hall, your teacher will introduce core concepts and clinical principles using slides, animations, and real patient stories. We encourage you to engage—ask questions, respond to polls, and connect the dots live. This is where the roadmap for each topic is drawn.
- b. **Small-Group Sessions:** This is where knowledge becomes skill. In smaller classrooms, you will roll up your sleeves with a facilitator and a group of peers.
 - In **Tutorials**, you'll dissect clinical cases, clarify challenging concepts from lectures, and learn through discussion and debate.
 - In **Problem-Based Learning (PBL)**, your group will encounter a complex, real-world patient problem from the very first day. Your mission is to identify what you need to learn, research it, and come together to solve it—mirroring the very essence of clinical reasoning.
 - **Practical Demonstrations** in labs will bring the textbook to life, allowing you to see, touch, and understand the human body and its functions.
 - **Journal Club** sessions will train you to critically evaluate new medical research, a skill vital for a lifetime of evidence-based practice.

Part 2: Learning on Your Own – The Engine of Mastery

True expertise in medicine requires you to become the director of your own learning. These are your key tools.

- **Directed Self-Learning (DSL):** Consider this structured, independent practice. For specific modules, you will be given clear tasks, objectives, and a list of resources. Your job is to work through them independently. This builds the disciplined study habits and foundational understanding you need. Faculty are there to guide you if you hit a roadblock.
- **Self-Directed Learning (SDL):** This is the ultimate goal of your professional development in which you take full responsibility. You will identify your own learning gaps (“I don’t understand heart murmurs well enough”), set your own goals, seek out your own resources, and assess your progress. The college provides the support—the library, online databases, and faculty office hours—but you drive the process. This is the skill that will sustain your clinical competence for decades.

How It All Fits Together

The lectures give you the map and highlight the landmarks. The small-group sessions are the guided practice tours where you learn to use the compass and navigate terrain with a team. **DSL and SDL are the journeys you take on your own to truly know the land.** One method prepares you for the next, building your confidence and capability step-by-step.

We are here to guide you in this transition from learning what we teach, to learning what you need to know. Embrace each method—the collaborative and the independent—as essential parts of your growth into a physician.

7. Learning Objectives

General Learning Outcomes

By the end of this module the students would be able to;

Knowledge

1. Describe the normal structure and function of the different parts of the heart, conducting system, the aorta and large elastic arteries, arteries, arterioles and capillaries, venules and veins.
2. Recognize and identify the changes in structure and/or functioning of the cardiovascular system in the following disease states: valvular heart disease, dysrhythmias, atherosclerosis and ischemic heart disease, congenital heart disease, hypertension and common syndromes like heart failure, stroke and shock that arise as complications.
3. Correlate etiology with the pathogenesis of different types of shock
4. Correlate the etiology with the pathogenesis of different thromboembolic phenomenon.
5. Describe the embryology of the heart and correlate it with various developmental anomalies
6. Describe the development of arterial, venous and lymphatic system
7. Describe the microscopic structure of myocardium, and blood vessels
8. Describe the cardiac cycle, cardiac output, and venous return
9. Discuss blood pressure and its regulation
10. Describe the mechanisms and types of circulatory shock and associated compensatory mechanisms
11. Describe the anatomy and common pericardial diseases
12. Describe the cardiac enzymes
13. Describe the mechanisms of impulse generation, conduction and excitation of myocardium
14. Discuss the normal ECG and common ECG abnormalities
15. Enlist the drugs used in ischemic heart disease and hyperlipidemias
16. Describe preventive strategies of cardiovascular diseases

Skills

1. Demonstrate the use of Stethoscope for Auscultation.
2. Identify normal and abnormal findings in the heart and blood vessels on gross, microscopic and radiologic examination
3. Interpret circulation physics
4. Interpret normal and distinguish abnormal ECGs
5. Record blood pressure and observe the effects of posture and exercise on blood pressure.
6. Elicit clinical history in a patient suspected of cardiovascular disease
7. Auscultate the heart sounds and differentiate between the normal and abnormal sounds on physical examination
8. Perform a focused physical examination of the CVS and recognize abnormalities in common disorders in the disease
9. Examine/ palpate all peripheral pulses and recognize alteration in volume, rate and rhythm
10. Examine JVP
11. Demonstrate systematic analysis of ECG.
12. Identify the position of borders and valves of the heart by surface marking on model / simulator.

13. Palpate and find apex beat, and auscultatory areas in the chest of the subject provided and describe their significance.
14. Differentiate between normal and displaced apex beat
15. Perform basic life support.
16. Interpret the cardiac enzymes
17. Detect lipids in a given sample

Attitude

1. Must be aware of the importance of lifestyle modification in the prevention and control of heart diseases
2. Describe increasing morbidity and mortality associated with cardiovascular disorders and its psycho-social impact on the individual and family
3. Demonstrate ability to give and receive feedback, respect for self and peers.
4. Develop respect for the individuality and values of others - (including having respect for oneself) patients, colleagues and other health professionals
5. Organize& distribute tasks

Specific learning objectives

THEME-1 CHEST PAIN					
S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
GROSS ANATOMY					
1.	Gross anatomy of the heart-I	- Describe the anatomical position, borders, surfaces, external and internal features of the atria and ventricles of the heart - Explain the role of muscles bundles present in the ventricles in drawing the valvular cusps together during ventricular systole.	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
2.	Gross anatomy of the heart-II	- Explain role of skeleton of heart in preventing the incompetence of heart valves. - Explain the location and structure of all four valves of heart. - Explain the structure of interatrial and interventricular septum	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE
3.	Coronary circulation	- Describe the coronary arteries - Enlist the branches of each main artery - Describe the anastomosis of coronaries - Identify the area of the heart supplied by a coronary artery and its branches - Describe the venous drainage of the heart - Describe the lymphatic drainage of the heart	LGIS-3	1	MCQs/ SAQs/ VIVA/ OSPE
4.	Pericardium	- Define pericardium - Describe different reflections of pericardium - Identify entry & exit of vessels of heart via pericardium - Define Pericarditis, Pericardial effusion and - Cardiac Tamponade	LGIS-4	1	MCQs/ SAQs/ VIVA/ OSPE
EMBRYOLOGY					
5.	Development of	Explain the formation of heart	LGIS-5	1	MCQs/

	heart tube and its subdivisions	tube with special reference to primary & secondary heart fields - Enlist the subdivisions of heart tube & their fate - Appraise the mechanism of cardiac looping and enlist its abnormalities. - Explain different methods of septal formation - Describe division of atrioventricular canal. - Describe the formation of right and left atrium and pulmonary veins - Describe the embryological steps involved in formation of interatrial and interventricular septum. - Explain the process of development and fusion of aorticopulmonary septum in primitive heart. - Discuss the contribution of neural crest cells in the developing heart.			SAQs/ VIVA/ OSPE
HISTOLOGY					
6.	Histology of heart muscles	- Explain the characteristics of cardiac muscle cell - Explain the Structure of Intercalated disc - Define the junctional specializations making up the intercalated disk - Describe identification of different microscopic views of Cardiac muscle and its ultra-structures - Differentiate histologically between cardiac and skeletal muscle and smooth muscles - Enumerate histological layers of heart wall	LGIS-6	1	MCQs/ SAQs/ VIVA/ OSPE
PHYSIOLOGY					
7.	Cardiac muscles	- Explain the physiologic anatomy of the cardiac muscle - Describe the properties of the cardiac muscle	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
8.	Overview of	Describe the physiologic basis	LGIS-2	1	MCQs/

	Coronary circulation-I	coronary circulation 2. Explain the determinants of coronary blood flow, including perfusion pressure, vascular resistance, and metabolic regulation. 3. Discuss the factors affecting myocardial oxygen supply and demand and their physiological significance.			SAQs/ VIVA/ OSPE
9.	Overview of Coronary circulation-II	1. Explain the mechanisms of coronary auto regulation and the role of neural and local factors in controlling coronary circulation. 2. Relate changes in coronary blood flow during the cardiac cycle to the functional requirements of the myocardium. 3. Interpret the physiological basis of coronary circulation in maintaining normal cardiac function and meeting increased metabolic demands.	LGIS-3	1	MCQs/ SAQs/ VIVA/ OSPE
BIOCHEMISTRY					
10.	Cardiac enzymes	1. Define the cardiac enzymes. 2. List Cardiac Biomarkers used in diagnosis of myocardial injury. 3. Explain the location of cardiac enzymes in cell.	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
11.	Lipids -I	1. Define and Classify lipids 2. Describe the functions of lipids in the body	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE
12.	Lipids -II	1. Describe the structure and functions of complex lipids. 2. Explain role of lipids in biological membrane and cardiovascular health.	LGIS-3	1	MCQs/ SAQs/ VIVA/ OSPE
13.	Cholesterol	1. Describe the Chemical Structure and function of cholesterol 2. Describe the chemical source of cholesterol in body 3. Classify cholesterol as a derived lipid 4. Describe the fate of cholesterol in the body	LGIS-4	1	MCQs/ SAQs/ VIVA/ OSPE
14.	Lipoproteins	1. Classify lipoproteins and their functions	LGIS-5	1	MCQs/ SAQs/

		- Describe general structure of lipoproteins - Explain clinical significance in cardiovascular diseases			VIVA/ OSPE
15.	Cardiac Manifestations of Vitamin B1 deficiency	- Define Vit B1 & its active form. Describe the cardiac manifestations of vit B1 deficiency - Describe the Cardiovascular features of wet beri beri.	LGIS-6	1	MCQs/ SAQs/ VIVA/ OSPE
PHARMACOLOGY					
16.	Drug Treatment of CAD	- Classify drugs used in the treatment of CAD. - Explain the mechanisms of action of major anti-CAD drugs. - Discuss the therapeutic uses and adverse effects of CAD medications.	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
17.	Lipid Lowering Drugs	- Classify lipid-lowering drugs. - Explain the mechanisms of action of major lipid-lowering agents. - Discuss the therapeutic uses and adverse effects of lipid-lowering drugs.	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE
PATHOLOGY					
18.	Coronary circulation	- Describe the steps of coronary thrombosis - Describe the etiology of coronary thrombosis	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
19.	Coronary Artery Disease	- Define coronary artery disease (CAD). - Describe the pathogenesis and risk factors of CAD. - Discuss the morphological changes seen in coronary arteries in CAD. - Explain the pathological consequences of CAD, including myocardial ischemia and infarction.	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE
20.	Atherosclerosis	- Define atherosclerosis and describe its epidemiology. - Explain the pathogenesis of atherosclerotic plaque formation. - Identify the risk factors associated with atherosclerosis. - Discuss the morphological	LGIS-3	1	MCQs/ SAQs/ VIVA/ OSPE

		features and complications of atherosclerosis.			
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DIRECTED SELF LEARNING

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
PHYSIOLOGY					
1.	Cardiac muscles	1. Explain the physiologic anatomy of the cardiac muscle 2. Describe the properties of the cardiac muscle	DSL-1	1	MCQs/SAQs

DISSECTION

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Surface anatomy	1. Describe the surface marking of the heart 2. Describe the surface marking of the heart valves 3. Illustrate the surface marking of the aorta on models / x-rays 4. Describe the surface marking of the superior vena cava 5. Describe the surface marking of the inferior vena cava 6. Describe the gross structure of the heart	Dissection-1	1.5	OSPE/VIVA

LAB WORK

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Histology of Cardiac Muscle	1. Identify the Cardiac Muscle under the microscope	Demonstration / Practical	1.5	OSPE
MEDICINE/SKILL LAB					
2.	Basic Life Support	1. Perform basic life support.	Demonstration / Practical	1.5	OSPE
BIOCHEMISTRY					
3.	Microscopic study of cholesterol crystal	1. Detection of cholesterol crystal in a given sample	Demonstration / Practical	1.5	OSPE

THEME-2 BREATHLESSNESS AND ANKLE SWELLING

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
EMBRYOLOGY					
1.	Fetal circulation	1. Describe the physiological changes in circulation after birth	LGIS-7	1	MCQs/ SAQs/ VIVA/ OSPE
2.	Cardiac developmental anomalies	1. Enlist the developmental anomalies of heart. 2. Describe the congenital anomalies of the heart: a. ASD b. VSD c. PDA d. Tetralogy of Fallot e. Transposition of the great vessels f. Hemangiomas and g. Telangiectasia	LGIS-8	1	MCQs/ SAQs/ VIVA/ OSPE
PHYSIOLOGY					
3.	Cardiac cycle-I	1. Describe the Cardiac cycle 2. Describe the concept of systole and diastole, 3. Describe the role of atria and ventricles as pumps, 4. Describe the functions of heart valves, 5. Correlate the cardiac cycle events with ECG 6. Describe the mechanism of production of normal and abnormal heart sounds 7. Relate heart sounds with cardiac cycle, 8. Describe the metabolism and oxygen utilization of cardiac muscle 9. Describe the regulation of cardiac cycle	LGIS-4	1	MCQs/ SAQs/ VIVA/ OSPE
4.	Cardiac cycle-II	1. Define preload and after load 2. Describe Frank Starling mechanism for intrinsic regulation of heart pumping 3. Describe the effect of following on Cardiac Performance: a. Potassium ions	LGIS-5	1	MCQs/ SAQs/ VIVA/ OSPE

		b. Calcium ions c. Temperature			
5.	Cardiac output	1. Describe pressure volume loop (end-systolic volume / end-diastolic volume / ejection fraction / systolic volume / systolic work output) 2. Explain the Frank-Starling mechanism of the heart for the control of cardiac output by venous return 3. Describe the methods for measuring of cardiac output 4. Describe normal cardiac output and venous return during rest and during activity 5. Enlist the causes of abnormally high and abnormally low cardiac output 6. Explain the mechanisms of normal cardiac contractility and the role of calcium ion/ ATPase pumps 7. Explain cardiac output (regulation/measurement) and peripheral resistance and its regulation 8. Explain the factors regulating cardiac output and venous return.	LGIS-6	1	MCQs/ SAQs/ VIVA/ OSPE
6.	Blood flow I	1. Describe the Biophysics and Interrelationships of Pressure, Flow, and Resistance in terms of Ohm's law and Poiseuille's Law 2. Describe starling forces 3. Describe regulation of blood flow 4. Define basal tone. 5. List several substances potentially involved in local metabolic control of vascular tone. 6. State the local metabolic vasodilator hypothesis. 7. Describe physiological Vasodilators and Vasoconstrictors and their mechanisms	LGIS-7	1	MCQs/ SAQs/ VIVA/ OSPE

7.	Blood flow II	1. Describe the factors affecting the local blood flow including auto-regulation. 2. Describe the function of capillaries 3. Describe circulatory changes during exercise 4. Describe blood flow to different organs like brain, heart, liver and skin during exercise	LGIS-8	1	MCQs/ SAQs/ VIVA/ OSPE
8.	Lymphatic system	1. Describe the function of lymphatic system in the maintenance of interstitial fluid volume. 2. Describe the effects of Interstitial Fluid Pressure on Lymph Flow. 3. Describe how changes in capillary hydrostatic pressure, plasma oncotic pressure, capillary permeability, and lymphatic function can lead to tissue edema	LGIS-9	1	MCQs/ SAQs/ VIVA/ OSPE
9.	Microcirculation	1. Explain structure of microcirculation and capillary system 2. Define vasomotion 3. Describe process of fluid filtration with respect to hydrostatic and colloid osmotic pressure 4. Discuss Starling equilibrium for capillary exchange	LGIS-10	1	MCQs/ SAQs/ VIVA/ OSPE
GENERAL MEDICINE					
10.	Valvular Heart Diseases	1. Define and Classify Valvular heart diseases 2. Identify common etiologies 3. Recognize clinical manifestations	LGIS-1	1	MCQs/ SAQs/ VIVA/ OSPE
11.	Heart failure	1. Define Heart failure 2. Differentiate between right-sided Heart failure and left-sided heart failure	LGIS-2	1	MCQs/ SAQs/ VIVA/ OSPE

DIRECTED SELF LEARNING

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Fetal Circulation	1. Describe the fetal circulation	DSL-1	1	MCQs/ SAQs
PHYSIOLOGY					
2.	Cardiac Cycle	1. Describe the Cardiac Cycle, correlate the cardiac cycle events with ECG, relate heart sounds with cardiac cycle & describe the regulation of cardiac cycle	DSL-2	1	MCQs/ SAQs

LAB WORK					
S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Heart Model	1. Identify the position of borders and valves of the heart by surface marking on model / simulator	Demonstration / Practical	1.5	OSPE
PHYSIOLOGY					
2.	GPE & CVS Examination	1. Palpate and find apex beat, and auscultatory areas in the chest of the subject provided and describe their significance. 2. Demonstrate the use of Stethoscope for Auscultation. 3. Differentiate between normal and displaced apex beat	Demonstration / Practical	1.5	OSPE
3.	JVP	1. Define the Jugular Venous Pulse (JVP) and explain its physiological basis. 2. Identify the anatomical location of the internal jugular vein and justify why it is preferred for JVP examination. 3. Describe the normal waveform components of JVP: a wave c wave x descent v wave y descent 4. Correlate each JVP waveform component with specific events of the cardiac cycle. 5. Demonstrate the correct clinical	Demonstration / Practical	1.5	OSPE

		method for examination of JVP in a patient.			
		6. Measure jugular venous pressure and interpret normal versus elevated values.			
		7. Differentiate the jugular venous pulse from the carotid arterial pulse on clinical examination. Explain the physiological factors affecting venous return and their influence on JVP.			

MEDICINE/RADIOLOGY

4.	Chest Radiographs	1. Identify normal cardiac shadow, borders and cardiomegaly on chest radiographs.	Demonstration / Practical	1.5	OSPE
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SMALL GROUP DISCUSSIONS

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Study of CVS Models	1. Identify the structures on gross heart models 2. Identify the structures on embryo heart models	SGDs	1.5	MCQs/SAQs
BIOCHEMISTRY					
2.	Cardiac muscles contractility	1. Describe the role of Na, K, Ca and Mg in cardiac muscles contractility.	SGDs	1.5	MCQs/SAQs

THEME-3 BLOOD PRESSURE

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
HISTOLOGY					
1.	Histology of blood vessels	1. Describe the histological composition of vessel 2. Describe the microscopic structure of artery and vein 3. Differentiate histologically between artery and vein under light microscope 4. Describe the histological composition of lymphatic channels	LGIS-9	1	MCQs/SAQs/VIVA/OSPE
EMBRYOLOGY					
2.	Development of arteries and veins	1. Describe the development of arterial system 2. Describe the development of	LGIS-10	1	MCQs/SAQs/VIVA/

		venous system 3. Describe the congenital abnormalities in the vessels. 4. Coarctation of Aorta			OSPE
PHYSIOLOGY					
3.	Blood Pressure-I	1. Define blood pressure 2. Describe the causes of High / low BP 3. Discuss the mechanisms for rapid control of blood pressure (including Renin Angiotensin system)	LGIS-11	1	MCQs/ SAQs/ VIVA/ OSPE
4.	Blood Pressure-II	1. Discuss the mechanisms for long term control of blood pressure (including Renin Angiotensin system) 2. Describe the effects of sympathetic and parasympathetic stimulation on the heart and circulation	LGIS-12	1	MCQs/ SAQs/ VIVA/ OSPE
5.	Venous Return	1. Describe value of Right Atrial pressure and its physiological role in venous return. 2. Describe mean systemic filling pressure and mean circulatory pressure. 3. Appraise concept of resistance to blood flow 4. Outline the plateau, transitional zone and downslope of venous return curve 5. Correlate changes in mean circulatory filling pressure and mean systemic filling pressure with venous return 6. Describe changes in venous return and its relation with Cardiac output in Heart Failure	LGIS-13	1	MCQs/ SAQs/ VIVA/ OSPE
6.	Shock-I	1. Define shock 2. Enlist types of shock 3. Enlist causes of shock 4. State stages of shock 5. Describe different stages of hypovolemic shock	LGIS-14	1	MCQs/ SAQs/ VIVA/ OSPE
7.	Shock-II	1. Narrate factors causing compensated stage of shock. 2. Discuss progressive and	LGIS-15	1	MCQs/ SAQs/ VIVA/

		irreversible stage of shock 3. Describe septic shock and its treatment 4. Discuss physiology of treatment of shock.			OSPE
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BIOCHEMISTRITY

8.	Fatty acids	1. Define Fatty acids 2. Describe and classify Fatty acids 3. Describe the major biological functions of Fatty acids	LGIS-7	1	MCQs/ SAQs/ VIVA/ OSPE
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PHARMACOLOGY

9.	Antihypertensive Drugs	1. Describe the mechanisms of drugs used in the treatment of Hypertension	LGIS-3	1	MCQs/ SAQs/ VIVA/ OSPE
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DIRECTED SELF LEARNING

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
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ANATOMY

1.	Pericardium	1. Define pericardium 2. Describe different reflections of pericardium 3. Identify entry & exit of vessels of heart via pericardium	DSL-2	1	MCQs/ SAQs
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PHYSIOLOGY

2.	Blood Pressure	1. Discuss the mechanisms for rapid and long term control of blood pressure including Renin Angiotensin system	DSL-3	1	MCQs/ SAQs
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DISSECTION

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
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ANATOMY

2.	Blood Vessels	1. Describe the histological composition of blood vessels.	Dissection-2	1.5	OSPE/VIVA
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LAB WORK

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
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ANATOMY

1.	Histology of blood vessels	1. Identify salient features of a medium sized artery & vein in a cross-section under microscope. 2. Identify the histological	Demonstration / Practical	1.5	OSPE
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		differences between medium size artery & vein under microscope.			
PHYSIOLOGY					
2.	Blood pressure measurement	1. Measure the blood pressure. 2. Measure the effect of posture and exercise on blood pressure. 3. Examine the arterial pulses. 4. Auscultate the heart sounds.	Demonstration / Practical	1.5	OSPE
BIOCHEMISTRY					
3.	Salvoski test	1. Detection of sterol in given sample 2. Correlate the test with quality analysis of lipids	Demonstration / Practical	1.5	OSPE

SMALL GROUP DISCUSSIONS					
S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
PHYSIOLOGY					
1.	Acute and Long term BP regulation	1. Explain the role of autonomic nervous system in regulation of circulation. 2. Explain the role of sympathetic vasoconstrictor system by CNS 3. Describe role of nervous system in rapid control of arterial pressure 4. Explain baroreceptor arterial control system 5. State CNS ischemic response 6. Discuss renal body fluid system for arterial pressure control. 7. Discuss two key determinants of arterial pressure control 8. Explain the process of long term blood flow regulation	SGDs	1.5	MCQs/SAQs
BIOCHEMISTRY					
2.	Lipoproteins	1. Define & classify lipoproteins 2. Describe the functions of lipoproteins	SGDs	1.5	MCQs/SAQs

THEME-4 PALPITATIONS					
S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
GROSS ANATOMY					
1.	Conduction	1. Describe the different	LGIS-11	1	MCQs/

	system of the heart	components of conduction system - SA Node - AV Node - Bundle of His - Purkenje Fibers - Bundle branches - Describe the sympathetic innervation of heart - Describe the parasympathetic innervation of the heart			SAQs/ VIVA/ OSPE
PHYSIOLOGY					
2.	Excitation and contraction of cardiac muscles I	- Describe the excitation–contraction process in cardiac muscle. - Describe Chronotropic, Inotropic and Dromotropic Effects - Describe Chronotropic, Inotropic and Dromotropic Effects - Differentiate excitation–contraction process in cardiac and skeletal muscle cells - Describe gap junctions and the significance of functional syncytium - Explain phases of cardiac muscle action potential - Describe the characteristics of cardiac action potentials and the role of “slow calcium” channels in causing plateau and its significance.	LGIS-16	1	MCQs/ SAQs/ VIVA/ OSPE
3.	Excitation and contraction of cardiac muscles II	- Define Pacemaker and explain why SA node is the normal pacemaker of the heart - Describe the significance of AV nodal Delay - Define Ectopic Pacemaker and describe its causes - Describe the effects of sympathetic and parasympathetic stimulation on the heart rate and conduction of cardiac action potentials - Define various types of refractory periods - Differentiate the refractory period of cardiac muscle with	LGIS-17	1	MCQs/ SAQs/ VIVA/ OSPE

		that of skeletal muscle 7. Describe the significance of prolonged action potential in cardiac muscle 8. Describe the physiological anatomy of the sinus node 9. Define automaticity and rhythmicity and conductivity 10. Describe the specialized excitatory and conductive pathway of the cardiac muscle tissue			
4.	ECG-I	1. Enumerate components of normal ECG 2. Describe the significance of each components of (normal) ECG 3. Describe the time calibration of electrocardiogram 4. Determination of heart rate in normal ECG 5. Describe the conduction of electric current during recording of normal ECG 6. Draw normal ECG 7. Define bipolar limb leads	LGIS-18	1	MCQs/ SAQs/ VIVA/ OSPE
5.	ECG-II	1. Enumerate the organization of bipolar limb leads 2. Define Einthoven's triangle 3. Define Einthoven's law 4. Enumerate chest (precordial) leads 5. Explain significance of chest leads 6. Define augmented unipolar limb leads	LGIS-19	1	MCQs/ SAQs/ VIVA/ OSPE
GENERAL MEDICINE					
6.	ECG	1. Describe the characteristics of normal ECG, time duration of waves, segments and voltages 2. Explain how to record ECG 3. Describe the AV nodal, ventricular impulse conduction 4. Interpret ECG paper and its calibration	LGIS-3	1	MCQs/ SAQs/ VIVA/ OSPE
COMMUNITY MEDICINE					
7.	Prevention of CVD and	1. Describe the primordial, primary, secondary and tertiary	LGIS-1	1	MCQs/ SAQs/

	Hypertension	prevention of CV diseases in community 2. Describe the preventive strategies of hypertension 3. Identify the major risk factors which contribute to common diseases of the cardiovascular system 4. Enumerate modifiable and non-modifiable risk factors of CV diseases 5. Apply primordial, primary, secondary and tertiary prevention of CV diseases in community			VIVA/OSPE
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FORENSIC MEDICINE

8.	Medico legal aspects of sudden death due to cardiovascular diseases	1. Describe the Medico legal aspects of sudden death due to cardiovascular diseases	LGIS-1	1	MCQs/SAQs/VIVA/OSPE
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DIRECTED SELF LEARNING

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Conduction system of the heart	1. Describe the different components of conduction system	DSL-3	1	MCQs/SAQs
PHYSIOLOGY					
2.	ECG	1. Describe the characteristics of normal ECG and explain how to record ECG. 2. Interpret ECG paper and its calibration	DSL-4	1	MCQs/SAQs

DISSECTION

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
ANATOMY					
1.	Innervation of the Heart	1. Describe the sympathetic & parasympathetic innervation of heart	Dissection-3	1.5	OSPE/VIVA

LAB WORK

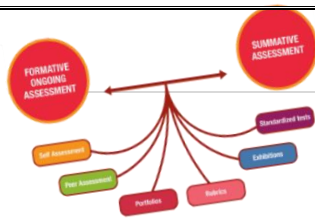
S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
PHYSIOLOGY					
1.	ECG	1. Perform systematic analysis of ECG	Demonstration / Practical	1.5	OSPE

SMALL GROUP DISCUSSIONS

S.No	Topic	Learning objectives	Teaching strategies	Hours	Assessment
PHYSIOLOGY					
1.	Cardiac Arrhythmias	1. Describe different types of abnormal sinus rhythms and their ECG interpretation. 2. Define premature contraction 3. Enlist causes of premature contractions 4. Explain premature atrial contractions 5. Explain premature ventricular contraction 6. Describe long QT syndrome 7. Discuss atrial and ventricular paroxysmal tachycardia. 8. Explain the phenomenon of ventricular fibrillation 9. Describe reentry phenomenon as basis for ventricular fibrillation 10. Discuss chain reaction mechanism of fibrillation 11. Discuss atrial fibrillation with ECG interpretation	SGDs	1.5	MCQs/SAQs

Subject	LGIS	Practical/Demo	SGD	DSL	Dissection	Total Hours
ANATOMY (Histology, Embryology)	11	4.5	1.5	3	3	23
PHYSIOLOGY	19	6	3	4	-	32
BIOCHEMISTRY	7	3	3	-	-	13
PATHOLOGY	3	-	-	-	-	3
PHARMACOLOGY	3	-	-	-	-	3
GENERAL MEDICINE	3	1.5	-	-	-	4.5
COMMUNITY MEDICINE	1	-	-	-	-	1

FORENSIC MEDICINE	1	-	-	-	-	1
RADIOLOGY	-	1.5	-	-	-	1.5
PRIME (Leadership)	1	-	-	-	-	1
PRIME (Communication Skills)	2	-	-	-	-	2
PRIME (Research)	3	-	-	-	-	3
Islamiat	6	-	-	-	-	6
MEDICAL EDUCATION	1	-	-	-	-	1
TOTAL	61	16.5	7.5	7	3	95



1. Examination and Methods of Assessment:

Assessments within the MBBS program at the MIMC consist of both formative and summative evaluations. These assessments are crucial for monitoring student progress and academic performance.

1. Formative Assessment:

Formative assessments, accounting for 20% of the total marks assigned to each block, serve as ongoing evaluations designed to provide feedback and promote learning. Formative assessments are conducted after the completion of each module, ensuring students receive timely feedback to enhance their understanding and performance.

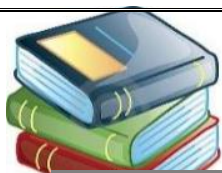
2. Summative Assessment:

Summative assessments, comprising 80% of the total assessment weighting, are conducted and overseen by constituent university as part of the annual examination process. This summative assessment evaluates students' comprehensive understanding of the curriculum and constitutes a significant portion of their final scores.

3. Assessment Tools:

Various assessment tools are employed to measure students' knowledge and competencies. These tools include:

4. **Written Examinations:** These include Multiple Choice Questions (MCQs) and Short Answer Questions (SAQs) that assess students' theoretical knowledge.
5. **Performance Assessments:** Objective Structured Practical Examinations (OSPE) and Objective Structured Clinical Examinations (OSCE) are used to evaluate practical skills and clinical competence.



2. Learning Opportunities and Resources

Books:

Anatomy
• Clinical Anatomy by Regions by Richard S. Snell (Latest Edition) • Gray's Anatomy for Students (Latest Edition) • K.L. Moore, Clinically Oriented Anatomy (Latest Edition) • Netter's "Atlas of Human Anatomy (Latest Edition) • Last's Anatomy (Latest Edition)
Histology
• Textbook of Histology by Junqueira (Latest Edition) • diFiore's ATLAS of Histology with Functional Correlations (Latest Edition) • Atlas of Human Histology by Wheaters. (Latest Edition) • Textbook of Histology by Laiq Hussain (Latest Edition)
Embryology
• Langman's Medical Embryology (Latest Edition) • The Developing Human "by Keith L Moore" (Latest Edition)
Physiology
• Textbook of Medical Physiology by Guyton and Hall (Latest Edition) • Ganong's "Review of Medical Physiology" (Latest Edition)
Biochemistry
• Harper's Illustrated Biochemistry (Latest Edition) • Lippincott's Illustrated Review: Biochemistry (Latest Edition)
Pharmacology
• Katzung's Basic and Clinical Pharmacology (Latest Edition)
Pathology
• Robbin's Basic Pathology (Latest Edition)
Community Medicine
• Essential Community Medicine (Latest Edition) • K Park Textbook of Preventive and Social Medicine (Latest Edition)
Forensic Medicine
• Parikh's Textbook of Medical Jurisprudence, Forensic Medicine & Toxicology (Latest Edition)
General Medicine
• Davidson's Principles and Practice of Medicine (Latest Edition)

Website:

1. Anatomy:
 - a. <http://files.readmedbooks.com/anatomy/netter-atlas-7.pdf>

- b. <https://worldofmedicalsaviours.com/cunninghams-manual-of-practical-anatomy/>
- c. https://ia802606.us.archive.org/16/items/pdfy-dPFUmAhPcw_n7EV/snell%20clinical%20anatomy%20by%20regions%209th%20ed%202012_2.pdf Page | 26
- d. <http://med-mu.com/wp-content/uploads/2018/06/Snell-Neuroanatomy-7th-Edition.pdf> 6. <http://files.readmedbooks.com/anatomy/lasts-anatomy.pdf>

2. Embryology

- a. <https://bhumikapalrocks.files.wordpress.com/2016/02/langmans-medical-embryology-12th-ed.pdf>
- b. <https://mymedicallibrary.files.wordpress.com/2016/08/the-developing-human-edition-8th.pdf>

3. Physiology:

- a. <https://med-mu.com/wp-content/uploads/2018/06/Guyton-and-Hall-Textbook-of-MedicalPhysiology-12th-Ed-PDFtahir99-VRG.pdf>
- b. <https://medicostimes.com/guyton-medical-physiology-pdf/>
- c. https://ia903208.us.archive.org/23/items/GanongsReviewOfMedicalPhysiology25thEdition/Ganon_gs%20Review%20of%20Medical%20Physiology_%2025th%20Edition.pdf
- d. <https://worldofmedicalsaviours.com/medical-books/mbbs/physiology/sherwood-humanphysiology.pdf>

4. Biochemistry:

- a. <http://repository.stikesrpadgs.ac.id/69/1/Principles%20of%20Medical%20Biochemistry%20Meisenberg%20Simmons-635hlm.pdf>

3. For inquiry and troubleshooting



Please contact
D.M.E

4. Course Feedback Form

Course Title: _____

Semester/Module _____ Dates: _____

Please fill the short questionnaire to make the course better.

Please respond below with 1, 2, 3, 4 or 5, where 1 and 5 are explained.

THE DESIGN OF THE MODLUE

- | | | | |
|--|----------------------------|----------------------------|--------------------------|
| A. Were objectives of the course clear to you? | Y ☐ | N ☐ | |
| B. The course contents met with your expectations | | | ☐ |
| 1. Strongly disagree | 5. Strongly agree | | |
| C. The lecture sequence was well-planned | | | ☐ |
| 1. Strongly disagree | 5. Strongly agree | | |
| D. The contents were illustrated with | | | ☐ |
| 1. Too few examples | 5. Adequate examples | | |
| E. The level of the course was | | | ☐ |
| 1. Too low | 5. Too high | | |
| F. The course contents compared with your expectations | | | ☐ |
| 1. Too theoretical | 5. Too empirical | | |
| G. The course exposed you to new knowledge and practices | | | ☐ |
| 1. Strongly disagree | 5. Strongly agree | | |
| H. Will you recommend this course to your colleagues? | | | ☐ |
| 1. Not at all | 5. Very strongly | | |

THE CONDUCT OF THE MODLUE

- | | | |
|--|----------------------------|----------------------------|
| A. The lectures were clear and easy to understand | | ☐ |
| 1. Strongly disagree | 5. Strongly agree | |
| B. The teaching aids were effectively used | | ☐ |
| 1. Strongly disagree | 5. Strongly agree | |
| C. The course material handed out was adequate | | ☐ |
| 1. Strongly disagree | 5. Strongly agree | |
| D. The instructors encouraged interaction and were helpful | | ☐ |
| 1. Strongly disagree | 5. Strongly agree | |
| E. Were objectives of the course realized? | Y ☐ | N ☐ |

F. Please give overall rating of the course

90% - 100% ()

60% - 70% ()

80% - 90% ()

50% - 60% ()

70% - 80% ()

below 50% ()

Please comment on the strengths of the course and the way it was conducted.

Please comment on the weaknesses of the course and the way it was conducted.

Please give suggestions for the improvement of the course.

Optional – Your name and contact address:

Thank you!!

5. Students Diary/Notes

[illegible]

PROGESS:

ACHIEVEMENT: