

FIVE YEAR CURRICULAR ORGANIZATION

Spiral	year	Modules				
First Spiral	I	FND1- Foundation Cell, Genetics & Cell Death (Basics of Anatomy, Physiology, Biochemistry, Gen. Pathology, Gen. Pharmacology, Community Medicine & Behavioral Sciences, 9 Weeks		HEM1- Blood Module Immunity, Inflammation, Tissue repair, Antimicrobials & Neoplasia 9Week		
		LCM1- Locomotion Bones, Joints, Nerves & Muscles, 9weeks		RSP1- Respiratory System 6 weeks	CVS1- Cardiovascular System 4 weeks	
	II	NEU1- Nervous System 8 weeks		HNN1- Head & Neck & Special 6 weeks	END1- Endocrinology 5weeks	
		GIL 1-GIT and Liver 8 weeks		EXC1- Renal and Excretory System 5 weeks	REP1- Reproductive System 5 weeks	
Second Spiral	III	IDD 1- Infectious diseases 5 weeks	HEM2- Hematology 5 weeks		RSP2- Respiratory System 5 weeks	CVS2- Cardiovascular System 5 weeks
		GIL 2-GIT and Liver (including Nutritional Disorders) 8weeks		EXC2- Renal & Excretory System 5 weeks	END2- Endocrinology 5 weeks	
	IV	ORT2- Orthopedics, Rheumatology, Trauma 7 weeks		REP2- Reproductive System 8 Weeks	PMR-Physical Medicine & Rehabilitation DPS-Dermatology Plastic Surgery / Burns GEN-Genetics 6 weeks	
		NEU2- Neurosciences and Psychiatry 8 weeks		OPH / ENT* 4 weeks	ENT/OPH * 4 weeks	
Third Spiral	V	Clinical Rotation 9:30 to 3:00 (with Ambulatory, Emergency, Intensive care) In Medicine, Pediatrics, Cardiology and Neurology units <ul style="list-style-type: none"> ▪ Lecture on problem based approach, twice a week ▪ Ward tutorial twice a week ▪ Student research presentation once a week 		Clinical Rotation 9:30 to 3:00 (Inpatient, Ambulatory, Emergency, Intensive care and Operation Theatres) In Surgery, Gynecology & Obstetrics, Orthopedics and Neurosurgery. <ul style="list-style-type: none"> ▪ Lecture on problem based approach, twice a week ▪ Ward tutorial twice a week ▪ Student research presentation once a week 		

RATIONALE:

Cardiovascular diseases are common in the community. Understanding the structure and function of cardiovascular system and its relationship to disease process is essential for diagnosis and management of cardiovascular disorders.

TERMINAL OBJECTIVES:

Medical graduate after completion of 5 years training program should be able to:

1. Discuss the clinical presentations of common cardiovascular diseases in community.
2. Differentiate various cardiovascular disorders on the basis of history, examination and investigations.
3. Describe pathophysiology of cardiovascular order.
4. Describe the importance of various radiological investigations in relation to CVS.
5. Discuss various preventive measures and prognosis of cardiovascular disorders in order to counsel the patients.

LEARNING OBJECTIVES

1. Describe the normal structure of heart including development, topographical anatomy, blood supply, nerve supply and histology.
2. Review the arrangement of arteries, veins, lymphatics of entire body
3. Define the congenital anomalies of CVS (ASD, VSD, PDA, TOF, TGA) with reference to normal development and early circulation
4. Define functions of cardiac muscle along with its properties
5. Interpret pressure changes during cardiac cycle along with regulation of cardiac pumping.
6. Interpret normal & abnormal ECG, ST-T changes and its abnormalities
7. Identify the risk factors and role of lipids in coronary blockage and atherosclerosis (hyperlipidemia/ dyslipidemia).
8. Define cardiac output and factors modulating/ controlling COP.
9. Differentiate left and right sided heart failure and correlate it with the importance of pressure differences.
10. Enumerate different types of arrhythmias and describe the electrical events that produce them.
11. Enlist the components of circulation & microcirculation.

MODULE CONTENTS

ANATOMY

GROSS ANATOMY:

1. **CVS:1 Ang 1 Overview of CVS**
2. **CVS:1 Ang 2 Heart: covering (pericardium) and external features**
3. **CVS:1 Ang 3 Heart: Internal-features 1**
4. **CVS:1 Ang 4 Heart: Internal-features 2**
5. **CVS:1 Ang 5 Conducting system of heart, Blood Supply, Nerve supply 6.**
6. **CVS:1 Ang 6 Overview of Coronary blood vessels.**
7. **CVS:1 Ang 7 Overview of principle arteries of CVS**
8. **CVS:1 Ang 8. Overview of principle veins of CVS**
9. **CVS:1 Ang 9. Heart, (surface marking of heart and valves, great vessels).**

HISTOLOGY:

1. **CVS:1 Anh 1 Histology of blood vessels**
2. **CVS:1 Anh 2 Histology of Heart including myocardium**
3. **CVS:1 Anh 3 Histology of Heart (Practical)**

EMBRYOLOGY:

1. **CVS:1 Ane 1 Early Development of heart.**
2. **CVS:1 Ane 2 Late Development of heart & partitioning of heart.**
3. **CVS:1 Ane 3 Development of Arterial & Venous System.**
4. **CVS:1 Ane 4 Anomalies Heart, arteries and vein.**
5. **CVS:1 Ane 5 Fetal circulation**

BIOCHEMISTRY

1. **CVS: 1 Bio 1 Lipid Digestion & Absorption.**
2. **CVS: 1 Bio 2 Lipoprotein metabolism**
3. **CVS: 1 Bio 3 Fatty acid**
4. **CVS: 1 Bio 4 Oxidants and antioxidants**
5. **CVS: 1 Bio 5 Role of Nutrition and antioxidants in CVS Disorders**
6. **CVS: 1 Bio 6 Cholesterol Metabolism**
7. **CVS: 1 Bio 7 Diagnostic significance of enzymes in cardio vascular disorder**
8. **CVS: 1 Bio 8 Role of Na & Cl in Hypertension.**
10. **CVS: 1 Bio 9 Lipid Profile (Lab)**

PHYSIOLOGY

1. **CVS:1 Phy 1** Properties of cardiac muscle.
2. **CVS:1 Phy 2** Specialized Excitatory and Conductive system of heart and action potential in cardiac muscle.
3. **CVS:1 Phy 3** Mechanism of cardiac muscle contraction.
4. **CVS:1 Phy 4** Cardiac Cycle & Heart sounds.
5. **CVS:1 Phy 5** ECG1: Normal ECG Recording and lead system.
6. **CVS:1 Phy 6** ECG 2: Rate and Rhythm and vector analysis.
7. **CVS:1 Phy 7** ECG 3: Abnormalities, Hypertrophy and ischemia/myocardial infarction.
8. **CVS:1 Phy 8** ECG 4: Interpretation of Arrhythmias + mechanism of development.
9. **CVS:1 Phy 9** Cardiac output, its Regulation & measurement
10. **CVS:1 Phy 10** Principles of Hemodynamics (Blood Flow, Pressure and Resistance)
11. **CVS:1 Phy 11** Local Control of Blood Flow.
12. **CVS:1 Phy 12** Fetal Circulation & readjustment at birth
13. **CVS:1 Phy 13** Nervous regulation of circulation, Rapid & long term regulation of arterial Pressure
14. **CVS:1 Phy 14** Micro circulation, Lymphatic System and edema
15. **CVS:1 Phy 15** Special Circulation (Cerebral and Coronary)
16. **CVS:1 Phy 16** Circulatory Shock and its types
17. **CVS:1 Phy 17** Cardio vascular system adaptation during exercise
18. **CVS:1 Phy 18** Cardiac Failure
19. **CVS:1 Phy 19** To calculate the heart rate by examination of arterial pulse. (Practical)
20. **CVS:1 Phy 20** Cardiac Cycle. (Tutorial)
21. **CVS:1 Phy 21** To record human ECG by using standard bipolar and unipolar chest leads (Practical)
22. **CVS:1 Phy 22** To demonstrate the auscultation of heart sounds using stethoscope and human blood pressure using sphygmomanometer or power lab (Practical)
23. **CVS:1 Phy 23** ECG normal and abnormal. (Tutorial)

PATHOLOGY

1. **CVS: 1 Pth 1** Atherosclerosis
2. **CVS: 1 Pth 2** Ischemic Heart Diseases I
3. **CVS: 1 Pth 3** Ischemic Heart Diseases II
4. **CVS: 1 Pth 4** Pathophysiology of congenital Heart Disease
5. **CVS: 1 Pth 5** Hypertensive heart disease and cardiac hypertrophy
6. **CVS: 1 Pth 6** Slides of atherosclerosis and IHD (Lab)
7. **CVS: 1 Pth 7** Vascular heart disease (Tutorial)

BEHAVIORAL SCIENCES

1. **CVS: 1 Beh 1** Crisis Intervention
2. **CVS: 1 Beh 2** Conflict Resolution

COMMUNITY MEDICINE

1. **CVS: 1 Com 1** Epidemiology and control measures of obesity
2. **CVS: 1 Com 2** Epidemiology and control measure of coronary heart disease
3. **CVS: 1 Com 3.** Epidemiology Control measure of Hypertension

RADIOLOGY

1. **CVS: 1 Rad 1** X-ray chest in relation to CVS

CARDIOLOGY/ MEDICINE

1. **CVS: 1 Med 1** Introduction to heart disease
2. **CVS: 1 Med 2** Sign and symptoms of heart diseases.
3. **CVS: 1 Med 3** Investigation of heart disease

CBL

1. **CVS: 1 Cbl 1** Ischemic Heart Disease
2. **CVS: 1 Cbl 2** Congenital Heart Disease
3. **CVS: 1 Cbl 3** Hypertension

LEARNING OBJECTIVE OF SKILL LAB CURRICULUM

I. Introduction To Cardiovascular System Examination:

Introduction/Rationale:

Diseases of cardiovascular system are one of the most common causes of morbidity and mortality, both in adults and children. **Cardio vascular system examination** is performed as an integral part of physical examination, or when a patient presents with cardio vascular problems (for example: chest pain).

Learning Objectives:

At the end of the session students should be:-

- Enumerate the steps of examination of the cardiovascular system (CVS)
- To demonstrate correct technique of auscultation of heart.

CASE BASED LEARNING

CBL 1:

- Discuss the pain sensitive structures of heart and characteristics of pain originating from heart
- Describe the blood supply of heart and results of its occlusion, pathophysiology of occlusion
- Describe the biochemical changes associated with myocardial injury
- Interpret the ECG changes associated with myocardial injury
- Identify the risk factors and role of lipids in the pathogenesis of coronary artery disease.

CBL 2:

- Discuss different types of congenital heart diseases
- Describe the mechanism of cyanosis.
- Differentiate the differences between cyanotic and acyanotic heart diseases

CBL 3:

- Define Hypertension, high & normal blood pressures.
- Describe the mechanism of control of blood pressure.
- Describe the role of different organs for the control of blood pressure.

ASSESSMENT PLAN

	WEIGHTAGE
ANNUAL EXAM	80%
MODU LE EXAM (Internal Evaluation)	
Theory	10%
Practical	10%

CREDIT HOURS	
CARDIOVASCULAR MODULE	
	4.5
Cardiovascular	

CONTACT HOURS	
Discipline	Contact Hours
Anatomy	17.5
Biochemistry	10.5
Physiology	25.5
Pathology	08 02
Community Medicine	02 02
Behavioral Sciences	01
Cardiology	4.5
Radiology	1.5
CBL	
Skill Lab	

BOOKS

ANATOMY

- **CLINICALLY ORIENTED ANATOMY**
KEITH.L.MOORE, Arthur F. Dalley, Anne M.R. Agur
7th or Latest EDITION
- **GRAY'S ANATOMY FOR STUDENTS**
Drake & Vogl & Mitchell
3rd or Latest EDITION
- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**
Richard S. SNELL
9th EDITION
- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**
Chummy S. Sinnatamby
12th or Latest EDITION
- **ATLAS OF HUMAN ANATOMY**
FRANK H.NETTER
6th EDITION

EMBRYOLOGY

- **LANGMAN'S MEDICAL EMBRYOLOGY**
T.W.SADLER
13th EDITION
- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**
MOORE & PERSAUD & TORCHIA
10th EDITION

HISTOLOGY

- **MEDICAL HISTOLOGY**
LAIQ HUSSAIN SIDDIQUI
5TH or Latest EDITION

- **WHEATERS FUNCTIONAL HISTOLOGY**
[BARBARA YOUNG](#)
5th EDITION
- **BASIC HISTOLOGY(TEXT AND ATLAS) (REFERENCE BOOK)**
[LUIZ JUNQUEIRA, JOSE CARNEIRO](#)
11th or Latest EDITION

PHYSIOLOGY

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY**
[GUYTON AND HALL](#)
13th EDITION
- **GANONGS REVIEW OF MEDICAL PHYSIOLOGY**
25TH EDITION

BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES**
[DENISE R. FERRIER](#)
6th EDITION
- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK)**
[VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY, P. ANTHONY WEIL](#)
28th EDITION

PATHOLOGY

- **ROBBINS BASIC PATHOLOGY**
[KUMAR & ABBAS](#)
9TH EDITION
- **ROBBINS & COTRAN PATHOLOGIC BASIS OF DISEASE (REFERENCE BOOK)**
[KUMAR & ABBAS & ASTER](#)
9th EDITION

COMMUNITY MEDICINE

- **PUBLIC HEALTH AND COMMUNITY MEDICINE**
[SHAH, ILYAS, ANSARI](#)
7th EDITION

MICROBIOLOGY

**REVIEW OF MEDICAL MICROBIOLOGY AND IMMUNOLOGY WARREN
LEWINSON
14th EDITION**
