Seth G.S Medical College & KEM Hospital

Department Of Cardiology

Attendance dated : 14.02.2025

Name	Designation	Sign
Dr. Ajay Mahajan	Professor & Head	
Dr. Charan Lanjewar	Professor	
Dr. Hetan Shah	Professor	Hetan G Shah
Dr. Girish Sabnis	Professor (Additional)	
Dr. Dheeraj More	Associate Professor	Posted at R. N Cooper Hospital
Dr. Dhiraj Kumar	Assistant Professor	
Dr. Ankita Kulkarni	Assistant Professor (Contract Basis)	On Leave
Dr. PunyaPratap Kujur	Assistant Professor (Contract Basis)	

Dr. Ajay U. Mahajan
Professor & Head
Department of Cardiology
SETH, GSMC & KEM
Parel, Mumbai - 400 012

DR. Bhavik Shah	Assistant Professor (Bonded)	
Dr. Keyur Rathod	Assistant Professor (Bonded)	
Dr. Aditi Parimoo	DM Resident	
Dr. Keerti Kori	DM Resident	
Dr. Kadappa Hukkeri	DM Resident	
Dr. Naveed Juvale	DM Resident	
Dr. Mohit Goyal	DM Resident	
Dr. Khawar Nissar	DM Resident	
Dr. Ambuj Kumar	DM Resident	
Dr. Ashish Gokhale	DM Resident	
Dr. Yagnesh Doshi	DM Resident	
Dr. Arjun Chakra Gaur	DM Resident	

Dr. Ajay U. Mahajan
Professor & Head
Department of Cardiology
SETH, GSMC & KEMH,
Parel, Mumbai - 400 012.

Dr. Ruhail Qadir	DM Resident	
Dr. Zulqar Nain	DM Resident	
Dr. Dipesh Soni	DM Resident	
Dr. Pooja Londhe	DM Resident	
Dr. Jayprakash Mishra	DM Resident	
Dr. Praveen Pawar	DM Resident	
Dr. Aditya Khandekar	DM Resident	
Dr. Yash Agrawal	DM Resident	
Dr. Mahima Hasija	HO	
Dr. Smriti Ayaathan	HO	

To

Date: 1/12/2024

Dr. Ajay U. Mahajan

Professor and head,

Department of cardiology,

Seth G. S. Medical college and K.E.M hospital

Parel, Mumbai-400012

Respected Sir,

Sub- Regarding availing Maternity leave

I, Dr. Ankita Ajay Kulkarni, working as assistant professor in your department form October 2022 – till date, am under confinement and due to deliver in first week of December. In view of the above and I appeal to your kind self to sanction maternity leave to me with effect from 1st December 2024 to 28th of February 2025. This is for the preventive cautionary care of my child and myself.

Thanking you in anticipation.

Your faithfully,

Dr. Ankita Kulkarni

Assistant Professor,

Department of cardiology.

Dr. Ajay U. Mahajan
Professor & Head
Department of Cardiology
SETH, GSMC & KEMH,
PAREL - 400 012.

बृहन्मुंबई महानगरपालिका

गान्य टिळक वैद्यकीय महाविदयालय व रुग्णालय, शीव, मुंबई - २२.

क्रमांक - लोटिरु/ ३५४२० / विप्र, दिनांक- ३०/०३/२०२३

सुधारित कार्यालयीन आदेश

संदर्भ - १. क्र. लोटिरु / २०५८९ / विप्र दिनांक २७.०९.२०२२
२. क्र. प्रशासक (महानगरपालिका) ठराव क्र. १०७५ दिनांक ११ नोव्हेंबर २०२२
३. क्र. लोटिरु / २८४२५ / विप्र दिनांक २७.१२.२०२२

न्मुंबई महानगरपालिकेच्या प्रमुख वैद्यकीय महाविद्यालयाच्या आस्थापनेवर अतिविशेषकृत
। विविध विषयाच्या निम्नलिखित तक्त्यातील अध्यापकांची परिपत्रक क्रमांक एमपीएम / २ / २९८
.११.२०२१ अन्वये, पदोन्नती समितीमध्ये पात्र ठराविल्याचा दिनांक किंवा पदोन्नतीच्या पदाचा प्रशासक
ालिका) यांच्या मंजुरीपर्यंत सलग पूर्णकालिक / अतिरिक्त कार्यभार स्विकारल्याच्या दिनांकापासून
नंतर घडेल त्या दिनांकापासून नियमित तत्वावर सहयोगी प्राध्यापक पदी उपरोक्त संदर्भ क्र. १ नुसार
ुक्ती करण्यात आली आहे.

रिपत्रक क्रमांक एमपीएम / २ / २९८ दिनांक २५.११.२०२१ अन्वये, प्राप्त झालेल्या निदेशाननुसार, संदर्भ क्र. २ मधील प्रशासक (महानगरपालिका) यांच्या मंजुरीनुसार, खालील तक्त्यातील नमूद संबधित ना पूर्णकालिक / अतिरिक्त कार्यभार देण्यात आलेल्या दिनांकापासून त्यांना त्यांच्या नावासमोर नमूद भागात सहयोगी प्राध्यापक पदावर नियमित तत्वावर पदोन्नतीने नियुक्त करण्यात येत आहे.

अध्यापकांचे नाव	विभाग	सहयोगी प्राध्यापक (नियमित तत्वावर) पदी नियुक्त करण्यात आलेले महाविद्यालय
भव पंकज शाह	हृदयउरोशल्यचिकित्साशास्त्र	लो.टि.वै. महाविद्यालय
खिल आनंद बोरीकर	हृदयरोगचिकित्साशास्त्र	टो.रा.वे. महाविद्यालय
रज भागचंद मोरे	हृदयरोगचिकित्साशास्त्र	गो.सु.वै. महाविद्यालय (हि.बा.ठा.वै. महाविद्यालय - कामगिरी तत्वावर)

र. पदोन्नती सहा महिन्यांच्या कालावधीनंतर महाराष्ट्र लोकसेवा आयोगाच्या मान्यतेसापेक्ष पुढे यास, तसेच नैमित्तिक रजेव्यतिरिक्त इतर रजा वगळता एक वर्षाच्या परिविक्षाधीन कालावधीकरिता, ेत आहेत.

रोक्त बाब वगळता अन्य कोणताही बदल उपरोक्त संदर्भ क्र. १ अन्वये निर्गमित करण्यात आलेल्या ा आदेशामध्ये करण्यात आलेला नाही.

15/2/23

डॉ. मोहन जोशी
धिष्ठाता (लोटिवैम)

1/3/23

डॉ. निलम अंद्राडे
संचालक (वै.शि. व प्र.रु.)

संचालक (वै.शि.व प्र.रु) / सह आयुक्त(सा.आ.खा.) / अधिष्ठाता(गोसुवै)/ अधिष्ठाता (टोरावै) / अधिष्ठाता(लोटिवै) / पर) / सहप्रमुख कर्मचारी अधिकारी(मावक) / प्रमुख कर्मचारी अधिकारी

MaharashtraUniversityofHealthSciences,Nashik

LocalInquiryCommitteeReport

ForAcademicYear.....--.....

(For Grant of Continuation / Extension of Affiliationfor affiliated B.Sc. in Paramedical TechnologyColleges

College Code: 1101 Date of Inspection :14/02/2025

Name of College : Seth G.S. Medical Collge & KEM Hospital

Sr. No.	Particularstobeverified	RemarkoftheLIC
1	CourseConducted	Bsc. PMT
2	Numbersof StudentsEnrolled	5 Per Year
3	SeparateClassavailable/Notavailable	Available
4	CurriculumFollowed/NotFollowed	Yes Followed List attached
5	Timetable/Duty/Theory/PracticalConductedYearly	List Attached
6	SeparateListofBooksforBPMT	List Attached
7	LibraryReadingArea:Available/NotAvailable	Available
8	HostelFacility:Available/NotAvailable	Not Available

DataVerifiedbythe Committee members:

Member **Member** **Member** **Chairman**

Dr. Ajay U. Mahajan
Professor & Head
Department of Cardiology
SBTH, GSMC & KEMH
Parel, Mumbai - 400 012.

BACHELOR OF PARA MEDICAL TECHNOLOGY (BPMT)

Course Name:- Cardiology

Learning Objectives

By the end of the course, the student should be able to:

1st Year

Anatomy:

1. Describe the anatomy of heart, lungs and great vessels in detail Physiology:
2. Describe the physiology of cardiovascular system
3. Describe the physiology of respiratory system
4. Describe what is Heart rate
5. Describe Blood pressure
6. Take accurate blood pressure measurements on a patient

Biochemistry

7. Describe the role of different Cardiac enzymes, KFT, Blood Sugar
8. Describe the coagulation system
9. Describe electrolyte imbalance

Cardiology

10. Record and monitor vital signs of patient
11. Describe the steps of ECG recording

2nd Year

Pathology:

12. Describe the pathophysiology of common heart diseases
13. Describe the pathophysiology of common lung diseases
14. Describe the pathology of heart
15. Describe the pathology of lungs

Pharmacology:

16. Enumerate common drugs used for cardiac and respiratory conditions
17. Collect samples for various blood tests
18. Collect blood sample for ABG analysis

Forensic Medicine:

1. Understand legal aspects in cardiology
2. Take informed consent from the patient

Cardiology

Introduction to Cath Lab:

1. Identify different equipments in the cathlab
2. Identify equipments used during administering anesthesia
3. Provide proper Pre and post operative patient care
4. Perform routine maintenance of the cathlab

3rd Year

Medicine:

5. Describe changes happening in : IHD, Hypertension, Congestive cardiac failure, cardiomyopathies, Rheumatic Heart diseases, congenital heart diseases, arrhythmias

Cardiology:

6. Describe TMT, Echo, Radiology, CT, MRI
7. Understand Nuclear Cardiology
8. Understand the use of catheters and balloon
9. Do cardiac monitoring in invasive and non-invasive procedures.
10. Operate cathlab C-arm
11. Arrange trolley and assist in angiography
12. Assist the cardiologist in putting lines and in endotracheal intubation
13. Able to perform Cardiac resuscitation
14. Arrange for TMT
15. Able to sterilise equipments
16. Able to take ECG
17. Assist during cathlab procedures

Cardiac Surgery:

18. Understand the various cardiac surgical procedures

महाराष्ट्र आरोग्य विज्ञान विद्यापीठ, नाशिक
MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
MUHS

BACHELOR OF PARA MEDICAL TECHNOLOGY (BPMT)

Course Name:- Cardiology

1st Year: Assessment System & Syllabus

Sr. No	Paper	Subject	Subject Code	Theory			Practical			Total Marks
				IA	Final	Total	IA	Final	Total	
1	Paper – I	Basic Sciences		30	60	90	30	80	110	200
2	Paper – II	Applied Basics		30	60	90	30	80	110	200
3	Paper - III	Introduction to cath lab & Cath lab maintenance		30	60	90	30	80	110	200

Paper – I
Subject: - Basic Sciences

Sr. No.	Topics	Theory	Practical
1	Introduction to human body as a whole.	2	2
2	Bone (Only nomenclature)	2	2
3	Study of cell with special reference to cardiac cells, conduction tissue, pericardium.	1	1
4	Blood cells, groups, transfusion reactions.	1	1
5	Joints and their types, names (eg. Elbow, hip etc.)	2	1
6	Muscles- Identification of major groups related to applied anatomy,	2	2
7	GIT (oesophagus, stomach, small and large intestines, liver, gall bladder, pancreas) and functions.	2	2
8	Sense organs (Brief anatomy of eye, nose, ear, skin related to sensations).	2	2
9	Respiratory system- nose, pharynx, trachea, bronchi, lungs	2	2
10	Cardio vascular system- heart (chambers, valves), aorta, vena cava, artery and veinsidentification.Pulse- rate, rhythm, volume, Blood pressure- how to measure, normal and abnormal	6	4
11	Kidney- ureter, bladder, urethra	2	1

Paper – II
Subject: - Applied Basics

Sr. No.	Topics	Theory	Practical
	Section A		
	Gross anatomy and structural features of heart		
1	Location, size, surface features, venous area, septum and atrial appendage.	1	1
2	Right atrium structural features, venous area, septum and appendage.	1	1
3	Left atrium structural features venous area, septum and appendage.	2	1
4	Right ventricle structural features inflow and outflow characteristics.	2	1
5	Left ventricle structural features inflow and outflow characteristics.	2	2
6	Valves location, structure and functions of each valve.	2	2
7	Blood supply of Heart in brief: Coronary arteries.	2	2
8	Innovation: Sympathetic and parasympathetic sensory.	2	1
9	Mediastinum and its divisions	2	2
10	Great vessels	2	2
11	Major Arteries and their branches	2	2

12	Major veins and their tributaries	2	1
13	Concepts of coronal, sagital and oblique sections	1	1
14	Cross sectional Anatomy of Heart	1	1
	Section B		
1	Introduction to CVS physiology	1	1
2	Functions of CVS and blood circulation. Tissue perfusion and microcirculation	1	2
3	Cardiac output definition, measurements, regulation and control	1	1
4	Stroke volume, Arterial pressure and its regulation	1	1
5	Peripheral resistance, Venous return, Heart rate	1	1
6	Cardiac cycle with special reference to waveforms of pressure tracing	1	1
7	Heart as a pump physical characteristics of atria, ventricles and valves	1	1
8	Mechanism of contraction	1	1
9	Description and organization of pacemaker and conduction system	1	1
10	Specialized conduction tissues, Sinus node, Inter nodal tracts	1	1
11	Atrioventricular node, His bundle, Bundle branches	1	1
12	Nodal electricity	1	1
13	Nervous control of heart rate	1	1
14	Cardiovascular regulatory mechanism.	1	1
15	Vasodilation, Auto regulation (myogenic theory)	1	1
16	Baro and chemo receptors	1	1
17	Physics of ventilation- principles of elasticity compliance and airway resistance.	1	1
18	Mechanism and regulation of respiration, Principles of gaseous exchange	1	1
19	Pulmonary function studies, lung volumes and capacities by use of spirometry	1	1
20	Brief concept of artificial ventilation	1	1
21	Components of blood-their normal values and function	1	1
22	Blood groups and briefly procedures involved in blood transfusion	1	1
23	Briefly coagulation factors and coagulation cascade	1	1
24	Renal function tests	1	1
25	Routine biochemical investigations	2	1
26	Cardiac profiles – biochemical markers of myocardial infarction, basic principles, evaluation and application	2	1
27	Basic principles and estimation blood gas and PH	2	1
28	Basic principles and estimation of electrolytes	2	1

Paper – III
Introduction to Cath lab & Cath lab Maintenance

Sr. No	Topics	Theory	Practical
1	Identification and use of resuscitation equipments available on trolley. (Ambu bag, endotracheal tubes size, tracheostomy tray)	1	1
2	Description and working of machines and appliances like airway, endotracheal tubes, laryngoscopes, cathlab, ventilators, C arm, cardiac table.	1	1
3	Their component parts, cleaning, sterilization, care, maintenance, assembly and dismantling.	1	1
4	Drugs in cathlab- premedication (oxygen, Glycopyrrolate, atropine, ondansetron, ranitidine, midazolam, pentazocine, fentanyl, diclofenac), IV beta blockers, heparin, angiography dyes,	2	2
5	Types of anaesthesia. (Local, sedation, epidural, general, regional blocks)	1	1
6	Local anaesthetics (Lignocaine, Bupivacaine),	1	1
7	Pre Procedure evaluation, consent for procedure, Preparation,	1	1

	position of patient, required drugs, doses, side effects.		
8	Epidural anaesthesia- Preparation, position of patient, required drugs, doses, side effects.	1	1
9	Lay out of trolley for all types of cath lab procedures.	1	1
11	O2 cylinders, Central gas pipeline, Manifold system, Liquid O2,	1	1
12	Central suction, electrical, foot suction.	2	1
13	Explosion risks. Fire-fighting.	2	1
15	Pre procedure protocols	1	1
16	Post procedure care.	1	1
18	Legal aspects	1	1
19	Consent	1	1
20	Communicating with patients and relatives	2	1
	Cath Lab Maintenance		
1	Cleanliness and sterilization of cathlab.	1	1
2	Lighting facility.	2	1
3	Helping cardiologists and others to wash up and drape for operation.	2	1
4	Handling of sterilized articles.	1	1
5	Washing, cleaning, testing recyclable disposables and preparing them for sterilization and packing.	1	1
7	Lay out of instruments trolley,	-	1
9	Application of bandages, dressings, tourniquets.	2	1
10	Reception and preparation of patients for cathlab, removing sheath	1	4
11	Observation of patients during operation, post operative period, recording pulse and BP, urine output, ECG recording,	1	8
12	Attaching patient to multi para monitor	1	1
13	Universal safety precautions	1	1

ROTATIONAL POSTING :

Each day student will remain in the Cath Lab for 4 hours in the morning for practicals and theory classes will be held in the afternoon

महाराष्ट्र आरोग्य विज्ञान विद्यापीठ, नाशिक
MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

BACHELOR OF PARA MEDICAL TECHNOLOGY (BPMT)

Course Name:- Cardiology

2nd Year : Assessment System & Syllabus

Sr. No	Paper	Subject	Subject Code	Theory			Practical			Total Marks
				IA	Final	Total	IA	Final	Total	
1	Paper – I	Basic Sciences as applicable to cardiology, anatomy, pathology, Physiology		30	60	90	30	80	110	200
2	Paper – II	Cardiac Disease principle of Medical & Non medical Management		30	60	90	30	80	110	200
3	Paper - III	Investigations and equipments in Non Invasive Cardiology		30	60	90	30	80	110	200

Paper – I
Subject: - Basic sciences as applicable to Cardiology, Anatomy, Pathology, Physiology

Sr. No.	Topics	Theory	Demo / Practical
1	Introduction to paramedical Training in cardiology	2	2
2	Anatomy of Heart , general , Valves ,coronary , anatomy of conduction system.	3	3
3	Function of heart, Cardiac cycle , Perfusion , haemodynamics .	3	3
4	Circulatory system Systemic arterial and venous Pulmonary	2	2
5	Pathophysiology in common heart diseases	5	5
6	Physical examination of cardiovascular system	2	2

Paper – II
Subject: - Cardiac Disease Principle of Medical & Non-Medical Management

Sr. No.	Topics	Theory	Demo / Practical
1	General principles of patient care in ward and intensive cardiac units	2	2
2	Diagnosis in cardiology general principles	4	4
3	Classification of Rheumatic heart disease , congenital and coronary artery disease.	5	5
4	Principles and management of Common Heart Disease	5	5
5	Cardiology ward documentation and procedures	2	2
6	Patient education andRehabilitation in Cardiology	2	2
7	Cardiology Prescriptions General Principles	5	5
8	Cardiopulmonary Resuscitation	4	4

Paper – III
Subject: - Investigations and Equipment in Non Invasive Cardiology

Sr. No.	Topics	Theory	Demo/ Practical
1	Electrocardiography	4	4
2	Stress testing	4	4
3	Echocardiography	8	8
4	Radiology of heart and Blood vessels, Cardiac CT, Cardiac MRI, CT/ MR angiography	8	8
5	Nuclear Cardiology	3	3
6	Defibrillator	2	2
	Cath Lab and Maintenance		
1	Use of cath lab table and C arm,	2	4
2	Maintenance of cath lab equipments, records and charts.	1	1
3	Recording video of procedure and labelling of procedure done, taking print outs and dictation of cardiologist, To prepare CD of procedure.	2	2
4	Identification use, care, maintenance and sterilisation of common types of instruments, needles, stents, guide wires, balloons used in cath-lab	1	1
5	Procedures like angiography, angioplasty, balloon dilatation of valves, pacemakers (temporary, permanent), device closures.	4	4
6	Operating C-arm	2	4

ROTATIONAL POSTING :

Each day student will remain in the Cath Lab for 4 hours in the morning to assist in procedures like maintenance of cath lab equipments, records and charts

महाराष्ट्र आरोग्य विज्ञान विद्यापीठ, नाशिक
MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

BACHELOR OF PARA MEDICAL TECHNOLOGY (BPMT)

Course Name:- Cardiology

3rd Year : Assessment System & Syllabus

Sr. No	Paper	Subject	Subject Code	Theory			Practical			Total Marks
				IA	Final	Total	IA	Final	Total	
1	Paper – I	Cardiac intensive care and emergencies		30	60	90	30	80	110	200
2	Paper – II	Cardiac diseases and principals of invasive management		30	60	90	30	80	110	200
3	Paper - III	Investigations and equipments in invasive Cardiology		30	60	90	30	80	110	200

Paper – I

Subject: - Cardiac Intensive Care and Emergencies

Sr. No.	Topics	Theory	Demo/ Practical
1	Introduction to intensive cardiac care	4	4
2	Monitoring in intensive care – non invasive & invasive	6	6
3	Acute coronary syndrome including clinical presentation & principles of management	8	8
4	Cardiac failure (Clinical Presentations & principles of management	6	6
5	Drugs in intensive care unit including thrombolytics (formulations, administration & adverse effects)	8	8
6	Cardiac arrhythmias (Clinical Presentations & principle of management)	6	6
7	Circulatory and ventilatory assistance in intensive care	3	3

Paper – II

Subject: - Cardiac Diseases and invasive management

Sr. No.	Topics	Theory	Demo / Practical
1	Introduction to invasive cardiology & cardiac catheterisation	3	3
2	Radiation safety	1	1
3	Coronary angiography	2	2
4	Coronary angioplasty	3	3
5	Pacemaker implantation	2	2
6	Balloon valvotomy	3	3
7	Paediatric catheterisation and interventions	3	3
8	Pericardiocentesis	1	1
9	Complications of cardiac intervention and their management	2	2
10	Principles of electro physiological studies and ablation.	2	2

Paper – III
Subject: - Investigations and equipments in invasive cardiology

Sr. No.	Topics	Theory	Demo / Practical
1	Pre catheterisation assessment	2	2
2	Post catheterisation care and assessment	2	2
3	Sterilization procedures (including autoclave, ETO, fumigation)	4	4
4	Catheterisation laboratory infrastructure and equipments	6	6
5	Hardware used in Catheterisation laboratory (including catheters, wires, leads, devices, balloon, stents etc)	8	8
6	Radio opaque contrast	2	2
7	Drug used in invasive cardiology (antiplatlets, anticoagulant, GpIIbIIIa inhibitors etc.)	3	3
8	Introduction to cardio vascular surgery	3	3

ROTATIONAL POSTING :

Each day student will remain in the Cath Lab for 4 hours in the morning to assist in operating C - arm

BACHELOR OF PARA MEDICAL TECHNOLOGY (BPMT)

Course Name:- Cardiology

List of Suggested Books for reading

Sr. No.	Subject / Topic	Author/ Editor	Title of Book	Publisher
I)	Anatomy	BD Chaurasia	Human Anatomy	CBS
II)	Physiology	Chatterjee	Human Physiology	CBS
III)	Biochemistry	Satyanarayan	Biochemistry	Elsevier
IV)	Pathology	Harsh Mohan	Textbook Of Pathology	Jaypee
V)	Phamacology	Tripathi	Essentials Of Medical Pharmacology	Jaypee
VI)	Forensic medicine	Reddy	The Essentials Of Forensic Medicine And Toxicology	Jaypee
VII)	Medicine	Davidson	Principles & Practice of Medicine	Elsevier
VIII)	CVTS	Lectures only		
IX)	Cardiology	1. Brunwald 2. Hurst	Heart Disease The Heart	Elsevier Jaypee

Lecture notes/Modules should be prepared by the teachers

Duty Roster for BPMT Students

1st Year (5)
ECG/cont ECHO - 1
OPD/cont ECHO - 1
ECHO -1
ICCU - 2

2nd yr(5)
ICCU - 2
ECHO- 2
CST/CPET- 1

3rd yr(3)
CATH- 2
ECHO- 1