

Madhya Pradesh Paramedical Council

6th Floor, Satpura Bhawan, Bhopal Syllabus & Guidelines

Schedule Serial No. 14 Subject: E.C.G. Technician
No. Of Admission; - 0-50 Admission: - Per Year

S. No	Duration/ Degree/ Diploma/ Certificate	Syllabus	Teaching Faculty with minimum qualification & experience	Non teaching staff with qualification & Experience	Library	Laboratory with Equipment	Building		Remarks
							Teaching	Hostel	
1.	1 year (12 months)	Appendix 'A' enclosed	1. Professor of Cardiology- 1 2. Associate Professor Cardiology-1 3. Assistant Professor Cardiology -1 4. Demonstrator-2	Clerk-2 Computer Operator- 1 Peon-2 Sweeper - 2 Technician-4 Accountant - 1 Chowkidaar- 2 Nurse -2 (B.Sc N)		Fully equipped Cardiology Department as per MCI norms Single Channel ECG Machine-5	Lecture Hall-2 2500 Sq.ft Demonstration-3 1250 Sq.ft. each	25 room Double seated 15x20	Qualification & experience of teaching staff as per Medical Council of India Norms.

DEPARTMENT OF CARDIOLOGY GMC BHOPAL PARAMEDICAL COURSE FOR E.C.G. TECHNICIAN NO. OF CANDIDATE NO.

S. No.	Course	Duration	Syllabus	Min. Qualification	Non-teaching staff	Laboratory with equipments	Building		Remark
							Teaching	Hostel	
1.	E.C.G. Technician	One year	Appendix 'I'	10 + 2	Class IV employees-2 Lady Attendant-2 Clerk-1	1. Single channel ECG Machine Qty.-5 2. Multichannel ECG Machine Qty-5. 3. ECG Rolls for both 250 Machines. 4. ECG Jelly 100. 5. Miscellaneous maintenance cost (10 %) of cost of equipment (per annum).	Class room-2 ECG room-2 Office room-1		

SYLLABUS FOR ECG TECHNICIAN COURSE

COURSE DURATION: One year

1. Anatomy of Heart

- Structure of Myocytes
- Coronary Arteries veins
- Nerves, Pericardium
- Relation of heart to thoracic structures/Mediastinum.

PHYSIOLOGY:

- Depolarization/ Repolarization
- Ionic charges- Influx and Efflux of Na^+ K^+ .
- Calcium in Sarcoplasmic Reticulum.
- Properties – Automaticity, Refractory period etc.
- Normal ECG pattern and Recording.
- Physiological changes in ECG

PATHOLOGY: Introduction of Rheumatic Heart disease, coronary Artery disease, Pericardial disease, Rest Heart disease, Arrhythmias with Pathogenesis and complications.

PHARMACOLOGY:

- Cardiac Drugs
- Effect of drugs on ECG changes.
- Toxicity of Drugs and ECG changes.

CLINICAL CARDIOLOGY:

- Recording of E.C.G.
- Recording of various leads/ modifications under different clinical conditions.
- Recording at different speed/ Amplitude.
- Recording on single channel machine multi channel machine with analyses.
- Basic interpretation of Myocardial Infarction, Arrhythmia/ Hypertrophy/ Effect of Drugs.
- Reporting of ECG and ECG changes which need immediate attention/ intervention

SYLLABUS OF E.C.G. TECHINCAL TRAINING COURSES FOR ONE YEAR

- (1) Applied Anatomy, Physiology and Biochem of cardio-vascular system. 10
- (2) Cardio-vascular pathology, clinical pharmacology and cardio-vascular disorders in General. 10
- (3) Electro cardiography –Electro physiology, Einthevern's law 10
(a) Introduction to ECG Reading normal and Abnormal ECG.
- (4) Cardio pulmonary resuscitation 02
- (5) Electricity – principles of AC/DC, Types of Batteries, Power Supply system, Ohm's Law CRT, Tube Multi meter 05
- (6) Electro med, equipment standards and safety 05 (a) ECG maintenance of minimum repairs
- (7) Applied aspects of ultra sound/ Doppler principles and practice. 05
- (8) Defibrillator – indication and indications and Precautions. 05
- (9) Arrhythmia's conduction/ abnormalities, pacemaker 05
- (10) Stress ECG principles, methods of recording and observations. 05
- (11) Halter recording – principles, methods of recording and observations. 03
- (12) Introduction to cardiac catheterization.

II. LIST OF PRACTICALS

1. ECG Recording pediatrics/ Adults patients
2. Operations, Calibration and servicing of ECG
3. Recording of Halter/ Stress ECG
4. Ambulatory B.P. Monitoring.

III. COURSE TRAINING INCLUDES:

3 months in O.P. Dept.

3 months in LCCU

6 months in Non – Invasive Lab. TOTAL PERIOD OF TRAINING – ONE YEAR

Magnetism/Electro-Magnetism/Electromagnetic induction

- a) Magnetic poles/fields/flux/and in flux density.
- b) Magnetic field due to a straight and circular coil wire.
- c) The AC transformer.

IV. COMPUTER SCIENCES:

A) FUNDAMENTALS:

1. Evolution of computers, contributions of eminent scientists to the field of computers, present day scenario of computer field.
2. Concepts of computer hardware, input/output devices, Central processing unit, main memory, secondary memory etc.
3. Definition of instructions, programmes, software.
4. Software spectrum, system software, business orient applications, R & D type research S/W, real time software etc.
5. Languages- Machine languages, assembly languages, higher level languages 4 GI languages, Natural Languages.
6. Significance of grammar in computer languages

B) LOGIC DIAGRAM:

1. Flow-charts symbols and their significance.
2. Variables- simple variables array variables.

C) BASIC LANGUAGES:

1. Input/output commands, assignment, If then, If then R.statement, for next statement, GOTO, on GOTO, STOP interactions, swapping, ascending and descending order also arrays DIM command. Data types: Integer, Real double precision. Files: Data fields, records, data files, program file, sequential files, random files etc.
2. I) Basic aspects with special emphasis on applied aspects as related to medicine, electricity, sound, pressure, properties of solids and liquids and magnetism.
II) Biomechanics
III) Electronics- Basic principles with special reference to applied aspects as related to medicine.
3. Basic aspects of computers and computer language. The lecture Courses should cover all aspects of computers so as to enable the candidate to do simple programming.

VI. SPECIFIC TO THE SPECIALITY:

- 1) Instrumentation and their circuits as related to the
The candidate should be given training to enable him to identify the defect if any instrument goes out of order and to rectify the simple defects.
- 2) The candidate should be trained in al the technique in the concerned specialty. He should be able to do the procedure independently and know the abnormal and abnormal pattern of the tests.
- 3) The candidate should be taught basic aspects of anatomy, Physiology of the concerned specialty. Account of diseases states related to various test procedures to be taught.

VII. LIST OF PRACTICALS:

1. ECG Recording pediatrics/ Adults patient.
2. Operations, calibrations and servicing of ECG.
3. Recording of Holter/stress ECG.
4. ECG Monitoring of patients in ICCU.
5. Ambulatory B.P. Monitoring.
6. Operations of 2-D Echo/M. Mode Doppler and CFM system its maintenance.
7. Operation of TEE and its maintenance.
8. Operations and control of recording system in Cath. Lab.
9. Operation of Blood Oxymeter, Ventilator and ABG Machine
10. Operation of Tagarno and its maintenance
11. ICCU Monitoring
12. Control of film processing and developing
13. Other practical in assisting in temporary- Pace- Maker/Permanent Pace maker etc.