

DEBRA THANA SAHID KSHUDIRAM SMRITI MAHAVIDYALAYA

Re-accredited by NAAC with grade 'A' (2nd cycle)
Debra, Paschim Medinipur, West Bengal, India, 721124



Course: Certificate Course on ECG & X-Ray Technician

Duration: 1 Year

Eligibility: Higher Secondary

Total No. of Seats: 30

SYLLABUS AND CURRICULUM

❖ Objectives of the course:

To prepare an ECG and X-ray technician who-

- Can perform ECG and X-rays precisely.
- Can interpret the result of ECG recording and X-ray plate.
- Well aware of radiation hazards and protection measures.

❖ Duration of the Course:

- One Year

❖ Course Fee:

Course fees Rs – 2,000/- per semester, Internship fee Rs – 500/-

Total fee in 1-year Rs – 4,500/-

❖ Syllabus Content of the Course:

1. For ECG Technician:

1.1. Theory:

➤ Paper I: (15 Hours)

A) Anatomy of Heart-

- Structure of myocytes
- Coronary arteries veins
- Nerves, Pericardium
- Relation of heart to thoracic structures

B) Physiology-

- Action Potential (Depolarization, Repolarization, Hyperpolarization)
- Conic charges- Influx and Efflux of ions
- Calcium in Sarcoplasmic Reticulum
- Properties- Automaticity, Refractory period etc
- Normal ECG pattern and Recording.
- Physiological changes in ECG

C) Pathology:

- Introduction of Rheumatic disease
- Coronary artery disease
- Pericardial disease
- Rest Heart disease

- Arrhythmias with pathogenesis and complications

➤ **Paper II:** **(20 Hours)**

A) Pharmacology:

- Cardiac drugs
- Effect of drugs on ECG
- Interrelation between the toxicity of drugs and ECG

B) Clinical Cardiology:

- Recording of ECG
- 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
- Normal and abnormal ECG
- Electro med, equipment standards and safety
- Defibrillator- indication and precautions
- Arrhythmia's conduction/ abnormalities, pacemaker
- Halter recording- principles, methods of recording and observations
- Introduction to cardiac catheterization

1.2. Practical:

➤ **Paper III:** **(30 Hours)**

A) ECG Recording of pediatrics/ adult patients:

- Recording of ECG
- 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

B) Operations, Calibration, and servicing of ECG

C) Recording of Halter/ stress ECG

D) Ambulatory BP monitoring

2. For X-Ray Technician:

2.1. Theory:

➤ Paper I: (15 Hours)

- A) General anatomy and physiology (Cytology, Histology, Osteology and basics of all organ systems of body)
- B) Basics of relevant Pathology, Pharmacology & Microbiology & drugs used during X-ray.
- C) Details of relevant surgical & medical conditions.
- D) Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.

➤ Paper II: (20 Hours)

- A) Details of radiological Anatomy & surface making.
- B) Radio physics, Radiographic positions & Radiation hazards.
- C) Hand hygiene & prevention of cross infection.
- D) Basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).
- E) Radiological imaging techniques & patient care.
- F) Bio-medical physics of X-ray machine & development of X-ray film etc.

2.2. Practical: (30 Hours)

➤ Paper III:

- A) Preparation of patient for X-Ray
- B) Performing all types of X-Ray
- C) Contrast administration and management of adverse reactions to it

D) Protection from radiation hazards

E) Developing film

F) Record Keeping

❖ **COURSE TRAINING INCLUDES:**

➤ 1 month in O.P. Dept. / Hospitals/ chambers/ Diagnostic Centre.



Thank
you.