Syllabus

For the trade of

MEDICAL LAB. TECHNICIAN
(RADIOLOGY)

Under
Apprenticeship Training Scheme
In the Informal Sector

Designed in
2002

Government of India
Ministry of Labour (D.G.E.&T.)
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE
EN – Block, Sector – V, Salt Lake
Kolkata -700 091
List of the Trade Committee members approved the syllabus for the trade of
“MEDICAL LABORATORY TECHNICIAN (RADIOLOGY)”
under A.T.S. in the Informal Sector

1. Shri H. Somasundaram, Director CSTARI, Kolkata Chairman
2. Dr. K. L. Mukherjee, Professor R. K. Mission &
   W.B.V.H.A., Kolkata Member
3. Dr. (Mrs.) Uma Ghosh Jay Prakash Institute of
   Social Change, Salt Lake Member
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   Social Change, Salt Lake Member
5. Dr. S. C. Mahanta
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   Medicine, Kolkata Member
6. Dr. Barin Roy, Ex-Professor National Medical College Member
7. Shri Basudev Dalal,
   Res. Officer Regl. Occupational Health
   Centre (E), ICMR, Kolkata Member
8. Shri S. P. Bera,
   Bio-medical Engineer Health & Family Welfare
   Deptt., Govt. of W.B. Member
9. Shri Tarak Banerjee W.B.V.H.A. Member
10. Shri T. Mukhopadhyay,
    D.D.T. CSTARI, Kolkata Member
11. Shri S. Kant, D.D.T.
    CSTARI, Kolkata Member
12. Shri A. K. Samaddar, JTA CSTARI, Kolkata Member
# GENERAL INFORMATION

1. **Name of the Trade**: MEDICAL LABORATORY TECHNICIAN (RADIOLOGY)

2. **N. C. O. Code No.**: 

3. **Duration of Apprenticeship Training**: 6 Months  
   (Including one week Basic Training)

4. **Entry Qualification**: Passed 12th Class Examination under (10+2) System of Education with Physics, Chemistry & Biology.

5. **Rebate to Ex-Craftsmen Trainees**: NIL

6. **Ratio of Apprentice to Worker**: 1 : 3

7. **Examination**: Practical & Viva Voce at the end of the training.
SYLLABUS FOR THE TRADE OF
“MEDICAL LABORATORY TECHNICIAN (RADIOLOGY)”
UNDER APPRENTICESHIP TRAINING SCHEME

**DURATION**: 6 MONTHS

**BASIC TRAINING (ONE WEEK)** :

1. Familiarisation with safety appliances, chemicals, Laboratory works and Laboratory hazards.

**TRADE PRACTICAL**

1. Practice on identification of different parts of the human body.
2. Demonstration with Models and A.V. Show.
3. Examining a patient following prescribed steps.

**Radiographic photography and Dark-room technique** :

1. Setting up of X-Ray Dark-room.
2. Designing of loading bench.
3. Preparation of solution and storage of dry chemicals.
5. Preparing patient for general X-Ray examination and also various special investigations.
6. Placing and adjusting the film plates on frame.
8. Taking X-Ray.
9. Rinsing, Washing and Drying of plates using different methods.
10. Day to day care and maintenance of the equipments.

**TRADE THEORY** :

**Anatomy** : Regions of the body. Bones and joints; General structures and forms; Important ligaments and muscular attachments. Skull, spine, pelvis, bones of upper and lower extremities. Structure of a typical joint and general descriptions of main joints. Synovial fluid, movements in joints and their limitation; chief relation, group movements of joints.


**Respiratory System** : Accessory nasal sinuses, Larynx, trachea, bronchi, lungs, pleura.
**Alimentary System:** Mouth, tongue, salivary glands, pharynx, tonsils, oesophagus, stomach, small and large intestine, liver and biliary tract, spleen, pancreas, mesentery, omentum. Urinary tract: Kidney, ureters, bladder and urethra.

**Reproductive System:** Female and Male tract – fallopian tubes, ovaries, uterus, mammary gland. Tests of gonads.


**Physics:** Basic idea of X-Ray, Generation of X-Ray., its characteristics, Photoelectric effect, Compton effect, Fluorescence, Phosphorescence

Production of X Ray, X Ray Tubes, Design.
Diagnostic H T circuits, H T generators, Measuring Instruments.

Scattered radiation: Control of Scattered radiation, cones diaphragms, filters.
Interaction of X-ray with mater, Energy absorption from x-rays, measurement of x-rays, Roentgen and Rad, Simple principle of Dosimeter, Fluorescent effect, photographic effect.

Protection: Code of practice for the protection of person against ionising radiation, protective materials, lead, lead equivalent, building material, personnel monitoring, international recommendations against hazards of ionising radiation.

Radiographic photography and dark room technique:

X-ray materials: types of emulsion characteristic and control, screen and non-screen films, dental films, X-ray paper under and over exposure, speed contrast.

Intensifying screen: Fluorescence, application of fluorescence in radiography, types of intensifying screens, intensifying factors, cleaning and general care of screen-after glow.

X-ray cassettes: testing for proving good screen contact, general care.

X-ray developers: Characteristics, details and contrast freedom from chemical fog and staining, function and constituent of developers, standardisation of time and temperature, exhaustion of developers, Replenisher.

X-ray fixer and fixing: fixing agents, acids and preservative in fixer, inclusion of hardener, time of fixation, silver recover.

Rinsing, washing and drying: Object, methods employed, method of drying films.

Processing methods, method of preparation of solution, nature of mixing order mixing solution filtration, solution.

X-ray Dark room, size, light proof entrance, hatches, construction of walls for protection against chemicals and radiation, ceiling, colour schemes, water proofing of floors, loading bench design, disposition of processing and accessory equipment for efficient working, arrangement of drying cabinets in dark room or in adjacent rooms, dark-room illumination and testing for safety, ventilation.