

Course Code	Course Name	Credits
26BT952	MEDICAL DIAGNOSTICS	02

Course Description

This course provides foundational training in medical diagnostics with a focus on laboratory equipment handling, haematological investigations, urine analysis, biochemical testing, and quality control practices. It combines theoretical knowledge with practical exposure to diagnostic procedures used in clinical laboratories. The course is designed to develop technical competency and accuracy in basic diagnostic methods and laboratory management.

Course Objectives

- To introduce learners to medical diagnostic laboratory equipment and basic operations.
- To develop skills in routine haematological and blood analysis techniques.
- To enable learners to perform basic urine diagnostic tests and interpretation.
- To train students in biochemical testing using kit-based methods.
- To develop understanding of quality control practices in clinical laboratories.

Skill Enhancement Outcomes

After completing the course, learners will be able to:

- Identify and operate basic medical laboratory instruments and equipment.
- Perform routine haematological tests such as blood smear preparation, DLC, RBC count, and blood grouping.
- Analyze physical and abnormal constituents of urine samples.
- Conduct biochemical investigations including blood glucose and liver function tests using kits.
- Apply basic quality control procedures in laboratory settings.
- Identify common laboratory errors and prepare quality control charts.

Course Content and Practical Training

- Introduction to medical diagnostic laboratory and its importance
- Laboratory equipment: microscope, centrifuge, colorimeter, spectrophotometer, pH meter, autoclave, incubator, oven, and distillation units
- Basic laboratory operations and safety procedures
- Handling, storage, and maintenance of laboratory reagents
- Laboratory glassware cleaning and maintenance techniques
- Blood composition and preparation of blood smear
- Differential leukocyte count using Leishman's stain
- Platelet count using haemocytometer
- Total RBC count and blood grouping techniques
- Urine analysis: physical characteristics and abnormal constituents
- Blood glucose testing using glucometer and diagnostic kits
- Liver function tests (SGOT, SGPT, ALP, bilirubin, albumin, total protein)
- Introduction to laboratory quality control principles
- Common laboratory errors and troubleshooting methods
- Quality control of quantitative data and chart preparation

Learning Outcome

At the end of the course, learners will be able to independently handle basic diagnostic laboratory equipment, perform routine haematological, urine, and biochemical tests, and apply fundamental quality control practices in clinical laboratory environments.