Semester- III/ Extra Credit Course - III	MEDICAL LAB TECHNIQUES	Course Code : ECSB
Instruction Hours : 3	Credits: 2	Exam Hours: 3
Theory – 40	Practical – 60 Marks	Total Marks: 100

Cognitive Level	**K1 – Recalling** **K2 – Understanding** **K3 - Applying** **K4 – Analyzing** **K5 – Evaluating** **K6 – Creating**
Course Objectives	This course aims at providing knowledge on • Principles of Basic laboratory • Equipments of common laboratory • Analysis of blood serum • Predict the immunological assays of human • Assessment of quality control

UNIT	CONTENT	HOURS
I	**Introduction to Clinical laboratory** Basic laboratory principles – code of conduct of medical laboratory personnel. The use of the laboratory – Organization of clinical laboratory and role of medical laboratory technician – safety measures – Medical Laboratory professional and professionalism in laboratory workers.	9
II	**Common Laboratory Equipment's** Incubator, Hot air oven, Water Bath, Centrifuge, Autoclave, Spectrophotometer, Balance. Microscope – Fundamentals of microscopy, resolution & magnification light microscopy. Glassware – description of glassware, its use, handling and care, Colorimeter, blood cell counter.	9
III	**Basic steps for drawing a blood specimen** Requirement of blood collection- Phlebotomy- sampling errors- collection and preservation of biological fluids- anticoagulants- Preservation of samples- chemical preservatives- process of analyzing the specimens-the laboratory report.	9
IV	**Immunology** Agglutination tests, Haemagglutination tests, Precipitation tests and flocculation tests, Tests for RA factor, CRP,ASO, VDRL, WIDAL, Hepatitis, HIV testing and EBV. Serum electrophoresis.	9

V	**Quality Control & Laboratory automation** Quality assurance in a clinical laboratory. External QC and Internal QC- Assessment-corrective and preventive actions. Clinical validation and accreditation. Equipment calibration. Automation- advantages over manual methods. Automated analyzers. Lab informatics and scientific data management system- record keeping, coding and indexing.	**9**

Text Books:

1. Text book of Medical Laboratory Techniques, Muhargee, Vol.I, II & III

Reference Books:

1. Fichbach,2005 Manual of lab & Diagnostic Tests, Lippincott Willams Wilkins, New York
2. Gradwohls, 2000, Clinical Laboratory Methods and Diagnosis (Ed) Ales C.Sonn enwirth and Leonard Jarret, M.D.B.O, New York.

Web-Resources:

1. https://www.ebooks.com/en-us/book/1602488 / Manual of -medical-laboratory-techniques/s.ramkrishnan/.
2. https://www.pdfdrive.com/bensons-microbiological- applications-laboratory-manual-in-general-microbiology-short-version-e-185416575/
3.

PRACTICAL

	1. Collection and Preservation of Blood & Urine sample 2. Estimation of Hemoglobin by Shali's Method. 3. Quantitative analysis of normal & abnormal Urine a) Urea b) Creatinine c) Calcium d) Choride e) Sodium f) Sulphate g) Phosphate h) Sugar i) Protein j) Amino acid ketone bodies k) Bile Pigments 4. Blood group Checking & Rh Factor 5. Erythrocyte Sedimentation Rate (ESR) 6. Blood cell Count (RBC, WBC, Platelet, TC & DC) 7. Packed Cell Volume (PCV) 8. Liver Function Test (Albumin, Total Protein, ALP, ALT, AST, Total Bilirubin (Conjugated & Un Conjugated). 9. Total Cholesterol Test (LDL, HDL, VLDL) 10. Bleeding time & Clotting Time

Text Book:

1. Manuals in Biochemistry Dr. J. Jeyaraman1996
2. Practical Biochemistry, Plummer ,2000

Reference Books:

1. Manuals in Biochemistry Dr. J. Jeyaraman,1996
2. Practical Biochemistry ,Plummer, 2000
3. Practical Clinical Biochemistry, Harold Varley ,1988
4. Introductory practical Biochemistry,S.K. Sawhney, Randhir Singh, 2001

Web Resources:

1. https://www.amazon.in/Practical-Clinical-Biochemistry-Method.

Course Outcomes

On completion of the Course, Students should be able to

CO 1: Discuss the fundamental biochemistry knowledge related to health

CO 2: Explain the clinical significance of the laboratory tests

CO 3: Diagnosis of clinical disorders by estimating biomarkers

CO 4: Determine various substances including substrates, enzymes, hormones, etc and their use in diagnosis and monitoring of disease are applied

CO 5: Evaluate the abnormalities which commonly occur in the clinical field

Mapping of Course outcomes with Programme outcomes/ Programmes Specific outcomes

CO/PO	PO					PSO				
	1	2	3	4	5	1	2	3	4	5
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S

S – STRONG M - MEDIUM L - LOW