

**DEPARTMENT OF BIOCHEMISTRY & BIOTECHNOLOGY****SBIOVAC01 - Advanced Techniques in Clinical Microbiology****Learning Objectives**

To learn the basic and advanced techniques in clinical Laboratory.

**Course Outcomes**

At the end of this course, students will be able to,

- Understand laboratory safety methods.
- Understand pathological analysis of clinical specimens.
- Gain knowledge about automated techniques in Clinical Laboratory Technology.

**Unit I Laboratory Safety**

Organization of laboratory and safety precautions in laboratory – Personal hygiene and care – General health care – Vaccination Schedule for technicians – Laboratory care and cautions – Do's and Dont's – lab accidents – Cuts and wounds – Fire Accidents (Chemical Gas, Flammable Chemicals, Electrical , Spirit Lamp, Gas) – Chemical burns.

**Unit II Sample Analysis**

Sample collection, processing, preservation and transportation of various clinical pathology samples. Pathological Analysis of clinical specimens.

**Unit III Microscopic Analysis**

Microscopic analysis of clinical specimens – Urine, Stool, Sputum, Pus, Blood, CSF and other body fluids.

**Unit IV Culture Methods**

Culture methods – Culturing and isolation of pathogens from clinical specimens. Culture media – General purpose media – special media – selective media – differential media – transport media.

**Unit V Advanced Techniques & Automation**

ELISA – PCR- Fluorescence Microscopy – Automated culture systems – automated Blood culture – Automated Urine culture – Automated Antibiotic Sensitivity testing.

**Text Books:**

Anantha narayanan. R. and Paniker, C.K.J. Text Book of Microbiology, 9<sup>th</sup> Edition Orient Longman, 2013.

Chakraborty, A Text Book of Microbiology 3<sup>rd</sup> Edition, New Central book Agency Pvt. Ltd. Kolkata, India 2005.

James cappuccino and Natalie Sherman.2004. Microbiology, A Laboratory manual. 7th Edition.

Praful Godkar, Darsan, 2014. Text book of Medical Laboratory Technology Vol I & II, Bhalani Publishing House.

**Supplementary Books:**

David Greenwood., Richard Slack and John Peutherer. 2000. Medical Microbiology.15<sup>th</sup> Edition, Church Hill Living stone Publication.

Glick, B.J., Pasternak, J.Jand Patten, C.L. 1994. Molecular Biotechnology Principles and Applications of Recombinant DNA, 4th Edition, ASM Press.

Ochei.J and A. Kolhatkar, 2000. Medical laboratory science Theory and Practice, McGraw Hill Education.

Sood Ramnik. 2009. Medical Laboratory Technology Methods and Interpretations. Jaypee Brothers, Medical Publishers Pvt. Limited.