B.Sc. Forensic Science: Semester-III FST301: Tools & Techniques in Forensic Science	
Teaching Scheme	**Examination Scheme**
Lectures: 3 hrs/Week	Class Test -12 Marks
Tutorials: 1 hr/Week	Teachers Assessment – 6 Marks
Credits: 4	Attendance – 12 Marks
	End Semester Exam – 70 marks

Course Objectives: After studying this paper the students will know –

a. The importance of chromatographic and spectroscopic techniques in processing crime scene evidence.
b. The utility of electrophoresis and Centrifugation in analysis of chemical and biological materials.
c. The significance of microscopy in visualizing trace evidence and comparing it with control samples.
d. The usefulness of photography and videography for recording the crime scenes.

Unit 1: Chromatography
Fundamental principles, instrumentation and forensic application of Paper Chromatography, TLC, GC and LC.
Unit 2: Spectroscopy
Fundamental principles, instrumentation and forensic applications of Ultraviolet- Visible spectroscopy, Infrared spectroscopy, Atomic Absorption spectroscopy, Atomic Emission spectroscopy and Mass spectroscopy. X-ray spectrometry. Raman spectroscopy.
Unit 3: Microscopy
Fundamental principles, Instrumentation and forensic application of different types of microscopes – Optical and Electron microscopes.
Unit 4: Electrophoresis and Centrifugation
Fundamental principles, Instrumentation and forensic applications of Electrophoresis. Fundamental principles, Instrumentation and forensic applications of Centrifuge.
Unit 5: Photography
Basic principles and applications of photography in forensic science. 3D photography. Infrared and ultraviolet photography. Digital photography. Videography. Crime scene photography. Functioning of DSLR

Suggested Readings :

1. D.A. Skoog, D.M. West and F.J. Holler, *Fundamentals of Analytical Chemistry*, 6th Edition, Saunders College Publishing, Fort Worth (1992).
2. W. Kemp, *Organic Spectroscopy*, 3rd Edition, Macmillan, Hampshire (1991).
3. J.W. Robinson, *Undergraduate Instrumental Analysis*, 5th Edition, Marcel Dekker, Inc., New York (1995).
4. D.R. Redsicker, *The Practical Methodology of Forensic Photography*, 2nd Edition, CRC Press, Boca Raton (2000).

Head
Department of Biotechnology
Invertis University, Bareilly (U.P.)

Dean
Faculty of Science
Invertis University, Bareilly (U.P.)

Registrar
Invertis University
Bareilly