



COURSE CURRICULUM

Course Title: FORENSIC BIOLOGY & SEROLOGY

Course Code: FSIC 701

Credit Units: 3

Course Level: PG

Course Objectives: This course will cover:

- The important biological evidences commonly found at crime scene
- Significance of forensic anthropology, and forensic botany.
- Importance of serology and DNA analysis in interpretation of crime.

Pre-requisites: Basic Knowledge in Biology

L	T	P/S	SW/F W	TOTAL CREDIT UNITS
3	0	0	0	3

Course Contents/Syllabus:

	Weightage (%)
Module I : HAIR & FIBER	
Descriptors/Topics Structure of hair and its biochemical properties, Phases of hair growth, types of hair. Differences between animal and human hair, Forensic examination of different types of hairs. Different Types of fibers and their identification.	10
Module II : INTRODUCTION TO BOTANICAL EVIDENCES & DIATOMS	
Descriptors/Topics Different botanical evidences of forensic significance: seeds, pollens etc .Diatoms: Classification, basic structure and morphology, forensic significance of diatoms.	30
Module III : INTRODUCTION TO FORENSIC ANTHROPOLOGY	
Descriptors/Topics Definition and scope of forensic anthropology, Human skeletal system and Types of bones. Estimation of age from skull and long bones, site and side determination. Estimation of Stature from skeletal remains. Determination of sex from skull, mandible and pelvis.	20
Module IV : INTRODUCTION TO FORENSIC SEROLOGY	
Descriptors/Topics Definition and scope of forensic serology. Nature, composition and functions of blood and other fluids. Collection, preservation and packing of Biological fluids. Introduction to ABO, Rh, MN systems, Lectins – their forensic significance, Determination of	20

secretor/ non secretor status. Antigens- Antibody reactions.	
Module V : INTRODUCTION TO DNA PROFILING	
Descriptors/Topics Introduction to DNA, DNA biochemistry, Nuclear DNA and Mitochondrial DNA,. Significance of DNA profiling, Fundamental concepts and techniques applied in specific DNA tests, Scientific principles of forensic DNA typing. FTA cards, DNA extraction/isolation from different samples.	20

Student Learning Outcomes: On completion of this course the students will be able to:

- **Examine** Botanical evidences.
- **Analyse** Biological evidences.

Pedagogy for Course Delivery:

The course will be taught in active-learning mode, incorporating lectures along with class presentations, general discussions, and interactions.

Lab/ Practicals details, if applicable: NA

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	Total (%)
100	0	100

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment				End Term Examination
Components (Drop down)	A	H	CT	
Weightage (%)	5	10	15	70

Text Reading & References:

- Pandey, B. P., Plant Anatomy; S. Chand, New Delhi, 1998.
- Biology Methods manual, Metropolitan Police Forensic Science Laboratory, London, 1978.
- Byrd, J. H. & Castner, J. L., Forensic Entomology, The Utility of Arthropods in legal Investigation, CRC Press, USA, 2000.
- Catts, E.P & Haskell N.H., Entomology and death: A procedural guide, Joyce's Print Shop, 1990.
- Mauersberger, Herbert R., & Mathews, Textile Fibres – Their physical, Microscopic and chemical properties, John Wiley, New York, 1954.
- Richard Saferstein; Forensic Science Hand Book; Ed.; Prentice – Hall, Englewood Cliff, New jersey; (1982)
- Smith; DGV; A manual of Forensic Entomology Ithaca New York Camstock Univ. Press, USA, (1986)
- Glaister's Book of Hairs Seta: Hair
- Fisher, B., Techniques of Crime Scene Investigation (6th Edn.) CRC Press, Boca Raton, Florida, 2000.