



COURSE CURRICULUM

Course Title: INSTRUMENTAL ANALYSIS – BIOLOGICAL

Course Code:

Level: PG

Credit Distribution			
L	T	P	Total
3	0	0	3

Course Objective: The objective of the course is to provide student with practical understanding of working and applications of various instrumentation techniques used in the forensic science laboratory for the analysis of biological evidences.

Prerequisites: Basic Knowledge in biology

Course Contents:	Weightage (%)
Module I: Centrifugation Techniques I Basic principles of sedimentation, various types of centrifuges, Density gradient centrifugation	20
Module II: Centrifugation Techniques II Preparative centrifugation, Analysis of sub-cellular fractions, Ultracentrifuge, Refrigerated Centrifuges	20
Module III: Immuno-chemical Technique Gel immuno-diffusion, Immuno-electrophoresis, Radio Immuno Assay (RIA), ELISA, Fluorescence immuno assay.	20
Module IV: Electrophoretic Techniques I General principles, Factors affecting electrophoresis, Low voltage thin sheet electrophoresis, High voltage electrophoresis	20
Module V: Electrophoretic Techniques II Isoelectric focusing (IEF), Capillary electrophoresis	20
Total	100

Student Learning Outcomes: Upon completion of this course the students would be able to:

- **Demonstrate** principles and working of various instrumentation techniques.
- **Analyze** various biological evidences by instrument.

Pedagogy: This course will be taught in the active-learning mode, featuring lecture, discussion and presentations.

Assessment/ Examination Scheme:

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

Theory Assessment (L&T):

Components	CIA (30%)			ESE (70%)
	A	H	CT	
Weightage (%)	5	10	15	70

Lab/ Practical/ Studio Assessment: NA

Text & References:

- H.H Willard et al, Instrumental methods of analysis, CBS Publishers and Distributors, Delhi, 1986.
- Skoog, Holler, Crouch, PRINCIPLES OF INSTRUMENTAL ANALYSIS, 6TH EDITION, 2007.
- Mendham et al., Vogel's Quantitative Chemical Analysis, Pearson Education Ltd., 2009.
- N. Gray, Instrumental Methods of Analysis, 1st Edition, CBS Publisher, 2011.