Department of Liberal Education
Era University, Lucknow
Course Outline
Effective From: 2023-24

Name of the Program	**B.A. / B.Sc. (LIBERAL EDUCATION)**			**Year/ Semester:**	**3th / 6th**
Course Name	Applied Biochemistry, Laboratory Instrumentation and Techniques Practical	**Course Code:**	**BCH305P**	**Type:**	**Practical**
Credits	**01**			**Total Practical Hours:**	**30 Hours**
Evaluation Spread	**Internal Continuous Assesment:**	**10 Marks**		**End Term Exam:**	**15 Marks**
Type of Course	○ Compulsory	◉ Core		○ Creative	○ Life Skill
Course Objectives	This course also allows the student to learn the basic techniques and method of various instruments used in biochemistry laboratory such as centrifugation, microscopy, spectroscopy, electrophoresis, along with basics of microbiologcal laboratory techniques.				

Course Outcomes(CO): *After the successful course completion,learners will develop following attributes:*

Course Outcome (CO)	**Attributes**
CO1	The students will learn about the usage and principals of various instruments used in biochemistry laboratory and basic microbiological laboratory.
CO2	The students will learn the techniques, methods to use and precautions while using the instruments.
CO3	This paper will also train students in taking care of the instruments, in maintaining log books and routinely doing standardization checks.
CO4	The student will be able to carry out small analytical methods and experiments.
Pedagogy	Interactive understanding of principles, requirements, methods and precautions and integration of classroom teaching and lab demonstration, demonstration of the methodology; self-practice and experimentation by students.
Internal Evaluation Mode	Experiment-Writing and Conductance File Maintenance/ Laboratory Record Continuous Attendance and Participation

Practical No.	**Experiments**	**Contact Hours**	**Mapped CO**
1.	Introduction to principals and working of instruments-centrifuges, colorimeter, spectrophotometer, microscopes (simple and compound), autoclaves, electrophoresis apparatuses (agarose& SDS-PAGE)	8	**CO1**
2.	Verification of Beer-Lambart's Law, Estimation of proteins by Biuret/Lowry method	2	CO2
3.	Electrophoresis: making and running samples on SDS PAGE	4	
4.	Autoclaving and preparation of laminar air flow hood	4	**CO3**
5.	Microbiological agar plate preparation and plate streaking	4	**CO3**

6.	Staining and visualization of cells under microscope	4	**CO4**
7.	Visit to various laboratories at medical college (Biotechnology, Microbiology, Radiology)	4	**CO2**

CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	3	2	2	2	2	1	3	2	2	2	2	1
CO2	3	2	2	2	2	2	2	2	3	2	2	2	2	1
CO3	3	2	2	2	2	2	2	2	3	2	2	2	2	2
CO4	3	2	2	2	1	1	2	2	3	2	2	2	2	2

Strongcontribution-3, ***Averagecontribution-2,*** ***Lowcontribution-1,***

Suggested Readings:

Text- Books	1. Lehninger Principles of Biochemistry, Nelson & Cox. Macmillan Learning Publisher. 7th Edition/ Latest edition. 2. Principles and Techniques of Biochemistry and Molecular Biology. Keith Wilson, Cambridge University Press. 8th edition
Reference Books	1. Bioinstrumentation by Webster, Wiley India. Latest Edition. 2. Instrumental Methods Of Analysis In Biotechnology by Dinesh Kumar Chatanta and Prahlad Singh Mehra, Wiley India. Latest Edition
Para Text	• Instrumentation and analytical techniques: https://youtu.be/N-nDCPSm3us

Internal Practical Evaluation:

Component	Marks
Experiment-Writing and Conductance	5
File Maintenance/ Laboratory Record	2
Continuous Attendance and Participation	1
Viva-Voce	2
Total Marks	10

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Signature:

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Signature: