

**Programme:** M. Sc. (Zoology)

**Course Code:** ZOO-403

**Title of the Course:** Biochemical Techniques

**Number of Credits:** 8

**Effective from AY:** 2018-19

<b><u>Prerequisites for the course:</u></b>	Elementary knowledge of Physics, chemistry besides Lifescience.	
<b><u>Objective:</u></b>	To provide general overview of different biochemical experimental approaches to understand the structure and functions of cell and its components.	
<b><u>Content:</u></b>	<b>Module 1:</b> Radiant energy: nature and properties of electromagnetic radiation; interaction of radiant energy with matter, Mono chromators; sources of radiant energy, spectrophotometry, x-ray diffraction. Radioactive transformation: isotopes; radioactivity detection and quantification; Geiger – Muller Detectors; liquid scintillation detectors; Autoradiography. Ultra Centrifugation: Centrifuge component; Theory of Centrifugation, Types of rotor, Density gradient Centrifugation; Isopycnic Centrifugation; Measurement of Centrifugal force.	12 hours
	<b>Module 2:</b> Electrokinetic Phenomena: concepts of Electrophoresis and Electro-osmosis; Basis of electrophoretic separation; chemistry of Acrylamide Polymerization; Isoelectric focusing; SDS – PAGE electrophoresis, Recovery of materials from Electrophoretic gels. Chromatography: Adsorption Chromatography, Partition Chromatography, Affinity Chromatography; Exclusion Chromatography, Gas Chromatography, Liquid Chromatography, HPLC.	12 hours
<b><u>Pedagogy:</u></b>	Lectures/ tutorials/assignments/self-study	
<b><u>References/Readings</u></b>	<ol style="list-style-type: none"><li>1. Cooper TG (1977), <i>The Tools of Biochemistry</i>, John Wiley publication, India</li><li>2. Dryer R and G. Lata G (1989), <i>Experimental Biochemistry</i>, Oxford University Press, Oxford Ewing GW(2006), <i>Instrumental Methods for Chemical Analysis</i>, Mc Graw Hill Book Co., London Freifelder D (1982), <i>Physical Biochemistry</i>, W. H. Freeman &amp; Co., New York.</li><li>3. Holme D and Peck H (1998), <i>Analytical Biochemistry</i>, Longman Scientific &amp; Technical Publication, England.</li></ol>	
<b><u>Learning Outcomes</u></b>	<ol style="list-style-type: none"><li>1. Understanding the basic knowledge of some advance techniques and their uses and its potential application in animal biology.</li></ol>	