Course Code: ZOC 103 **Course Title: Animal Biochemistry**
Number of Credits: 3
Effective from AY: 2020 -21

Prerequisite for the Course:	Elementary knowledge on structural biochemistry of Protein, Carbohydrate and Fat.	
Objectives:	To understand the biochemical integrity of various metabolic pathways. To understand metabolic pathways, their regulation, and application in diagnostic and maintenance human well being state.	
Content:	**Module 1** Water as biological solvent; Ionization of water and buffering in biological system.	**3 hours**
	Enzyme Kinetics and enzyme inhibition; Catalytic and Regulatory strategies of Enzymes.	**5 hours**
	Concept of metabolism; Concept of free energy; Coupled reaction; TCA cycle; Electron transport system; Oxidative phosphorylation.	**4 hours**
	Module 2 Regulation of Glycolysis & Gluconeogenesis, Glycogenolysis & Glycogenesis.	**4 hours**
	Integration of Fatty acid synthesis & β Oxidation of fatty acid; Importance of Cholesterol and Lipoprotein in health management; Eicosanoids : types, outline of biosynthesis and their physiological importance.	**6 hours**
	Metabolism of Purine and Pyrimidines.	**2 hours**
	Module 3 Protein and peptide chains; Primary-, Secondary-, Tertiary- and Quaternary structures of protein; Purification of proteins.	**4 hours**
	Protein turn-over and amino acid catabolism; Nitrogen	**4 hours**

	excretory pathways; Oxidation of amino acids; Bio-synthesis of amino acids in animal. Integration of metabolism; Caloric homeostasis; Membrane receptors; Role of calcium and calmodulin in metabolism.	**4 hours**
Pedagogy:	Lectures/ tutorials/ online teaching mode/self-study.	
Learning Outcome:	1. Understanding the various metabolic pathways 2. Understanding the regulation of various metabolic pathways. 3. Understanding the integrative metabolism and life processes. 4. Understanding the application of metabolism in maintenance of human well being state.	
References /Reading:	1. Devlin TM (2010), Text book of Biochemistry with Clinical Correlations, Willey, Oxford. 2. Murray RK, Granner D, Mayes P and Rodwell VW (2000), Harper's Illustrated Biochemistry, McGraw-Hill, Companies, USA. 3. Blanco A and Blanco G (2017), Medical Biochemistry, Academic press. 4. Berg J, Tymoczko J and Stryer L (2002), Biochemistry**,** W H Freeman and Company, New York. 5. Nelson DL and Cox MM (2010), Lehninger's Principles of Biochemistry**,** Freeman WH and Co, USA. 6. Pelley J (2012), Elsevier's Integrated Biochemistry, Elsevier Publication, Amsterdam, The Netherlands.	