Semester	JAN 2022
Open to semester	6,8,12,14,22
Course code	**BI3284/BI6284**
Course title	**Advanced Biochemistry II**
Credits	4 /4
Course Coordinator & participating faculty (if any)	Thomas Pucadyil*, Amrita Hazra
Nature of Course	Lectures
Pre-requisites	No prerequisites required. Advanced Biochemistry 1 or Bioorganic Chemistry is recommended
Objectives (goals, type of students for whom useful, outcome etc)	This course constitutes topics that cover (i) molecular metabolism, and (ii) membrane biochemistry. The first constitutes a mechanistic study of carbohydrate, amino acid, lipid and nucleotide metabolism. The course highlights the intersections and cross-talk between the various different biochemical pathways in primary metabolism The second deals with understanding physical principles underlying formation, organization and dynamics of membranes and also includes case studies from contemporary literature discussing working with artificial membrane systems and reconstitution of membrane proteins into such systems.
Course contents (details of topics /sections with no. of lectures for each)	In the first section, topics include understanding primary metabolism pathways involved in carbohydrate, nucleotide amino acid, lipid, and glycogen metabolism. A contemporary view of pathways such as glycolysis, the citric acid cycle, urea cycle, the electron transport chain, oxidative phosphorylation, and nucleotide and lipid biosynthesis, and the mechanistic role of vitamins and coenzymes is presented. The course hones into important primary metabolism intersections that connect the various different biochemical pathways. In the second section, topics include structure and organization of membranes, physical chemistry of membranes, membranes and physiology, analytical tools to understand biochemistry and biophysics of membranes.
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-35% Others-25%

Suggested readings (with full list of authors, publisher, year, edn etc.)	1) The Organic Chemistry of Biological pathways. John McMurry and Tadhg Begley. Roberts and Company Publishers 2) Lehninger Principles of Biochemistry. David L Nelson, Michael M. Cox 3) Molecular Biology of the Cell. B. Alberts, A. Johnson, J. Lewis, M. Raff, K. Roberts, P. Walter, (2002) Garland Science. 4) Life - As a Matter of Fat. O. Mouritsen, (2004) Springer. 5) The Structure of Biological Membranes. P. Yeagle. (2004) CRC Press. 6) Biochemsitry. D. Voet & J.G. Voet. 7) Primary research articles and reviews would be utilized to provide contemporary insights into the field.