

1.	Title of the course	Biophysical Chemistry
2.	Course number	CY609L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	New
5.	To be offered by	Chemistry
6.	Prerequisite	CoT
7.	Course Objective(s): To establish a bridge between chemistry and physics with biology. To learn the underlying biophysical principles of interactions between biomolecules by means of their structure and function. To introduce state-of-the-art techniques used in studying biological systems.	
8.	Course Content: Biomimetic chemical systems: buffers, micelles, liposomes and polyelectrolytes; Basic overview of biomolecules: protein, lipid, nucleic acid, carbohydrate; Protein-protein, protein-lipid and protein-nucleic acid interactions; Bioconjugation techniques; Protein engineering: mutation, fusion protein; Spectroscopic techniques: UV-Vis, circular dichroism, fluorescence, phosphorescence, bioluminescence, resonance energy transfer; Small molecule and nanoparticle probes; Biophysical techniques and their applications: gel electrophoresis, chromatography, dialysis, dynamic light scattering, isothermal titration calorimetry, surface plasmon resonance, bio-layer interferometry; Fluorescence microscopy; Electron microscopy; Force microscopy.	
9.	Textbook(s): 1. Jackson M B, Molecular and Cellular Biophysics, Cambridge University Press (2006). 2. Gurtu A and Gurtu J N, Biophysical Chemistry, 9th Edition, Pragati Prakashan (2015).	
10.	Reference(s): 1. Glaser R, Biophysics: An Introduction, 2nd Edition, Springer (2012). 2. Hermanson G T, Bioconjugate Techniques, Elsevier Academic Press (2013). 3. Stockert J and Castro A, Fluorescence Microscopy In Life Sciences, Wiley (2018).	