Semester	JAN 2022
Open to semester	6,8,12,14,22
Course code	**BI3413/BI6413**
Course title	**Physical Biochemistry**
Credits	3 /3
Course Coordinator & participating faculty (if any)	Jayant Udgaonkar
Nature of Course	Lectures
Pre-requisites	Basic biology and chemistry Courses of Year 1 and 2
Objectives (goals, type of students for whom useful, outcome etc)	Objectives: To teach students to think quantitatively about biochemical and biophysical data concerning biomolecules Students: Senior (3rd/4th year BSMS students, First year IPhD and PhD students Outcomes: Students will gain the self-confidence to tackle basic quantitative questions at the interface of biology and chemistry
Course contents (details of topics /sections with no. of lectures for each)	Basic Structural and chemical properties of biomolecules (2 lectures) Biomolecular fluorescence (3 lectures) Basic thermodynamics pertaining to biomolecules in solution (3 lectures) Elementary statistical thermodynamics pertaining to biomolecule conformational change (3 lectures) Molecular Interactions (Torsional forces, Electrostatics, H Bonding, vDW interactions, hydrophobic effect, disulphide bonds, effective concentrations) (6 lectures) Protein thermodynamics (2 lectures) Binding (4 lectures) Basic kinetics for understanding biochemical mechanisms (4 lectures)
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-30% Others-30%%
Suggested readings (with full list of authors, publisher, year, edn etc.)	1. Physical Chemistry –Principles and applications in Biological Sciences. Tinoco, Sauer, Wang,Puglisi, Harbison, Rovnyak. Pearson. 2014. 5th edition.

	2. Principles of Physical Biochemistry. Van Holde, Curtis Johnson, Shing Ho. Prentice Hall. 1998. 1st edition. 3. Structure and Mechanism in Protein Science. Fersht. Freeman. 1999. 1st edition. 4. Physical Chemistry for the Life Sciences. Atkins, de Paula. Freeman. 2006. 1st edition