Semester	JAN 2022
Open to semester	4
Course code	**BI2213**
Course title	**Cell Biology**
Credits	3 /
Course Coordinator & participating faculty (if any)	Richa Rikhy*, Thomas Pucadyil
Nature of Course	Lectures and Tutorials
Pre-requisites	1st year Biology courses
Objectives (goals, type of students for whom useful, outcome etc)	This course will provide an insight into basic concepts of cellular structure and function. It also aims to give a sense of the complex regulatory mechanisms that control cell function.
Course contents (details of topics /sections with no. of lectures for each)	1) Cell compartmentalization 2) Cell membrane organization - Lipid Composition, inner and outer leaflets, protein binding to the lipid bilayer, proteins bypassing the lipid bilayer, receptors and membrane channels. Receptor mobility and clustering in the lipid bilayer. 3) Bending the cell membrane - What does it take and what does it allow cells to do. Endocytosis / Exocytosis - Cell receptor function - cellular trafficking 4) Detailed evaluation of the cytoskeletal network - MT vs Actin - their organization, association with membrane, membrane receptors, role in endocytosis and exocytosis. 5) Role and regulation of the motor proteins. Directionality and what that means to cellular function (trafficking, endocytosis, exocytosis). Use this to introduce the idea of redundancy and what that means to the cell. 6) Cell cyle and Cell Division - An overview - Role for the cell membrane, cytoskeleton - MT and actin + motor proteins, Golgi disorganization 7) Cell Division check points and their regulation. Role of growth factors. 8) Mutations in the genes that regulate cell cycle and division and their role in causing cancer.
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-40% Others-10 + 10 Quiz or assignment%

Suggested readings (with full list of authors, publisher, year, edn etc.)	1) Molecular Biology of the Cell by Alberts, Johnson, Raff, Lewis et al. (2007) 5th Ed. Garland Science; 2) Molecular Biology of the Gene by James Watson et al., (2007) 6th Ed. Benjamin Cummings; 3) Molecular Cell Biology by Lodish, Berk, Kaiser, et al., (2007) 6th Ed. W.H.Freeman; 4) Reviews recommended on the course website.