Semester	AUG 2022
Open to semester	13,21
Course code	**BI6522**
Course title	**Mechanobiology and Disease**
Credits	/2
Course Coordinator & participating faculty (if any)	Kundan Sengupta
Nature of Course	Lectures
Pre-requisites	Introductory biology
Objectives (goals, type of students for whom useful, outcome etc)	The objective of this course is to understand the fundamentals of; 1. Mechanobiology 2. How do cells deal with mechanical stress? 3. Molecular mechanisms of mechanosignalling in cells & into the nucleus 4. Mechanosignalling & disease - Cardiomyopathies & Cancers
Course contents (details of topics /sections with no. of lectures for each)	1. Mechanobiology - the basics - 2 2. Cell and mechanobiology - 2 3. Molecular mechanisms of mechanosignalling - 4 4. Mechanobiology & Disease - 4
Evaluation /assessment	End-Sem Examination-50 % Mid-Sem Examination-50 % Others-%
Suggested readings (with full list of authors, publisher, year, edn etc.)	1. Uhler C, Shivashankar GV. Mechano-genomic regulation of coronaviruses and its interplay with ageing. Nat Rev Mol Cell Biol. 2020 May;21(5):247-248. doi: 10.1038/s41580-020-0242-z. PMID: 32242128; PMCID: PMC7115351. 2. Shivashankar GV. Mechanical regulation of genome architecture and cell-fate decisions. Curr Opin Cell Biol. 2019 Feb;56:115-121. doi: 10.1016/j.ceb.2018.12.001. Epub 2018 Dec 13. PMID: 30554028. 3. Uhler C, Shivashankar GV. Nuclear Mechanopathology and Cancer Diagnosis. Trends Cancer. 2018 Apr;4(4):320-331. doi: 10.1016/j.trecan.2018.02.009. Epub 2018 Mar 16. PMID: 29606315.

	4. Zuela-Sopilniak N, Lammerding J. Can't handle the stress? Mechanobiology and disease. Trends Mol Med. 2022 Jun 15:S1471-4914(22)00152-6. doi: 10.1016/j.molmed.2022.05.010. Epub ahead of print. PMID: 35717527. 5. Kalukula Y, Stephens AD, Lammerding J, Gabriele S. Mechanics and functional consequences of nuclear deformations. Nat Rev Mol Cell Biol. 2022 May 5. doi: 10.1038/s41580-022-00480-z. Epub ahead of print. PMID: 35513718.