Semester	AUG 2022
Open to semester	1
Course code	**PH1113**
Course title	**Introductory Mechanics**
Credits	3 /
Course Coordinator & participating faculty (if any)	Arka Banerjee*, Sudarshan Anath
Nature of Course	Lectures and Tutorials
Pre-requisites	None
Objectives (goals, type of students for whom useful, outcome etc)	Overview of major branches of physics Overview of what IISER physics covers Concepts and exercises in mechanics, aimed at all students of the basic sciences A basic understanding of waves and oscillations in the physical sciences
Course contents (details of topics /sections with no. of lectures for each)	Part I (First half of the course): Introduction to Vectors (Gradient, Divergence and Curl), Statics, Energy, Momentum, Central Forces and Angular Momentum, Least Action principle, Frames of reference, Special relativity. Part II (Second half of the course): Oscillations, Free, damped, driven, and coupled oscillators, Normal modes. Continuous system, vibrating strings, and wave equation. Fourier analysis, Dispersion, phase and Group velocity. Wave propagation. Interference, reflection and refraction.
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-30% Others-Tutorial presentation: 30%
Suggested readings (with full list of authors, publisher, year, edn etc.)	1. Introduction to Classical Mechanics With Problems and Solutions, David Morin, Cambridge University Press, 2008. 2. Vibrations and Waves, A.P. French, CRC Press (2003) 3. Mathematical methods for physicists, Arfken, Weber and Harris, Academic Press, 7th edition (2012).