

Indian Institute of Science Education and Research (IISER) Kolkata

Earth Sciences Pre-Major (5yr BS-MS Program: Autumn Semester 2024)

ES2104: Geophysics - Earth Structure and its Physical Fields

Instructor: Supriyo Mitra (DES, CCES)

Lecture Schedule:

Date	Day	Time	Mode	L/T	Broad Topic(s)
Module 1: Earth Structure and Plate Tectonics					
13 Sept	Fri	5 pm	offline	L1	Plate Tectonics: kinematic Earth, analyzing plate boundaries
18 Sept	Wed	9 am	offline	L2	Tectonics on a sphere: geometry of plate tectonics
18 Sept	Wed	6 pm	offline	L3	Triple Junction of plates: stability and significance
20 Sept	Fri	5 pm	offline	L4	Absolute plate motion and plate driving forces
Module 2: Magnetic Field of the Earth and Past Plate Motions					
6 Nov	Tue	3 pm	offline	L5	Magnetic potential and field
6 Nov	Wed	5 pm	offline	L6	Calculation of paleomagnetic latitude and pole positions
8 Nov	Fri	4 pm	offline	L7	Magnetisation of rocks, paleomagnetism & polar wander path
13 Nov	Tue	3 pm	offline	L8	The magnetic reversal time scale. Reconstruction of past plate motion & continents
Module 3: Gravitational Field of the Earth					
13 Nov	Wed	5 pm	offline	L9	Isostasy
15 Nov	Wed	5 pm	offline	T4	Gravitational potential & field, Geoid and reference ellipsoid
20 Nov	Tue	3 pm	offline	L10	Gravity measurements, corrections & anomalies
20 Nov	Wed	5 pm	offline	L11	Plate flexure and elastic thickness
22 Nov	Fri	4 pm	offline	L12	Isostatic rebound and viscosity of the mantle
1-14 Dec			offline		End-Sem Exam

Text Books:

1. C. M. R. Fowler, *The Solid Earth*, second edition, Cambridge University Press.

Notes:

L/T – Lecture / Tutorial

At the end of each module written/oral quiz (surprise/announced) may be given for 15-30 mins duration. Assignments will be given in Tutorial Class (Wednesday 6-7 pm) and will have to be submitted via we-learn.