

## INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

1. **Name of the Academic Unit:** Geology and Geophysics

2. **Subject Name:** Introduction to Earth Science **L-T-P:** 3-1-0 **Credits:** 4

3. **Pre-requisites:** None

4. **Syllabus and reference books:**

**Syllabus:** Earth in relation to other planets in the Solar system - origin and habitability. Earthquakes, seismic waves and the internal structure of the earth. Elements of plate tectonics, global scale domains of active magmatism, sedimentation, metamorphism and deformation. Endogenic and exogenic earth processes, and their relevance to the formation of igneous, sedimentary and metamorphic rocks. Folding and fracturing of rocks. Historical geology: principles of stratigraphy, fossil records, isotope dating and the geologic time scale. Timing of major geological events - origin of life, Great Oxidation Event and supercontinent cycles. Surface processes and landform evolution - action of water, wind and ice. Geologic controls on climate.

### Reference Books:

- 1) The Dynamic Earth: An Introduction to Physical Geology by B. J. Skinner & S. C. Porter
- 2) The Solid Earth: An Introduction to Global Geophysics by C. M. R. Fowler
- 3) Principles of Physical Geology by Arthur Holmes

5. **Lecture-wise break-up:**

Sl. No.	Topic	No. of lectures
1.	Earth in the Solar System	2
2.	Earthquakes - internal Structure of the Earth	4
3.	Elements of Plate Tectonics	4
4.	Endogenic and Exogenic Processes	12
5.	Folding and Fracturing of Rocks	4
6.	Historical Geology	8
7.	Surface Processes	8
8.	Geologic controls on climate	2
Total number of hours		44