

Research topics - PhD Admissions Spring Semester 2025-26

Geophysics and Geophysical Engineering

1. Integrative AI-Based Approach to Mineral Prospectivity Mapping: A Case Study Using Geophysical and Geochemical Signatures
2. Electromagnetic and Electrical Resistivity Techniques for Groundwater Contamination Mapping in Open Waste Disposal Areas
3. Real-Time Geophysical Techniques for Assessing Moisture-Triggered Landslide Risks in the Western Ghats
4. High-Resolution Sub-Surface Seismic Imaging using distributed acoustic sensing (DAS).
5. Ambient noise tomography using a dense seismic array for mineral exploration.
6. Methodology development and application for ensuring long-term CO₂ storage site integrity using passive seismic monitoring. (TAP)
7. Petrophysics and rock physics of reservoirs of Mumbai Offshore Basin
8. Development of machine learning algorithms for ocean acoustics
9. Estimation of seabed properties in the Indian ocean
10. Magnetic field modelling using satellite data
11. Modelling hydrological loading–induced deformation using GRACE and GRACE-FO observations
12. AI/ML-driven mineral prospectivity mapping through multi-modal geoscience data integration
13. Trans-dimensional inversion of satellite gravity gradients to image the density structure of the NW Indian lithosphere
14. Seismic Imaging of Lithospheric Structure Beneath Western Tibet, the Pamir, and the Western Himalayas
15. Crustal and Upper-Mantle Structure beneath the Deccan Volcanic Province
16. Seismic Signatures of Precambrian Terrains of India
17. Seismic data processing and full waveform inversion
18. Applications of ambient noise interferometry and cryoseismology to unravel glacial dynamics in a changing climate
19. Deep learning applications in seismic data processing for hydrocarbon exploration

Radiogenic and stable isotopes, Chemostratigraphy and Geochemistry

20. Evolution of the western Indian landscape: insights from geochemical and isotopic studies of the continental sediments

Sedimentology, Basin analysis and Provenance studies

21. Provenance study of Jaisalmer Basin using multi-proxy approach
22. Reservoir modelling of Mesozoic sandstones

Mineralogy and Thermochronology, Biomineralization

23. Sustainable ways of Cu and Au extraction from overburden and tailings.
24. Biomineralisation - understanding mechanisms of Bio-inspired formation of minerals

Structural Geology

- 25. Tectonics of the Bayana basin, Rajasthan
- 26. Tectonics of the Deri mine area, Ambaji basin, Rajasthan
- 27. Tectonics of the Damagoria coal mine, West Bengal
- 28. Tectonics of the Kapurdi coal mine, Rajasthan