

## Research topics - PhD Admissions Autumn Semester 2025-26

1. Prediction of nonlinear climate data using AI/ML/DL techniques.
2. Adaptive data analysis techniques for climate data analysis.
3. Characterization of seismicity in tectonic provinces: A study using nonlinear signal analysis technique.
4. Wavelet analysis of Magnetotelluric timeseries data
5. Carbon sequestration in the Deccan trap, India
6. Tectonics of the Higher Himalaya in the Bhagirathi river section
7. Tectonics of Jaisalmer basin, Rajasthan
8. Tectonics of the Lesser Himalaya in the Bhagirathi river section
9. Tectonics of Krishna-Godavari basin, India
10. Integrated Geophysical Investigation for Landslide Mapping and Real-Time Monitoring in the Western Ghats of Maharashtra Using Electrical and Electromagnetic Methods
11. Development of a Low-Cost Integrated System for Surface Methane Detection and Subsurface Resistivity Monitoring in Municipal Landfill Environments
12. Artificial Intelligence-Driven Mineral Prospectivity Mapping Using Integrated Geophysical, Geological, and Remote Sensing Datasets
13. Development of AI-Driven Water Yield Prediction Using Integrated Geophysical and Hydrogeological Datasets
14. Development of a near real-time early warning system using passive seismology for landslide detection in hazard-prone regions.
15. High-Resolution Sub-Surface Seismic Imaging and Hazard Monitoring using Distributed Acoustic Sensing (DAS)
16. Reservoir sedimentological, ichnological, and stratigraphic evaluation of the Palaeogene Upper Assam Basin
17. Sedimentological, ichnological, and stratigraphic evaluation of the Bikaner-Nagaur Basin
18. Petrophysics and rock physics of reservoirs of Mumbai Offshore Basin
19. Low contrast Low resistive reservoir modelling of Upper Assam Basin
20. Development of machine learning algorithms for ocean acoustics
21. Estimation of seabed properties in the Indian ocean
22. Magnetic field modelling using Swarm satellite data
23. White Hydrogen: Experimental understanding of reactions in rocks
24. Geochronological and thermochronological tools to determine the timing and rates of geological processes.
25. Li enrichment and sustainable ways of extraction in laterites of Kashmir.
26. Diagenetic and catagenetic fate of plant terpenoids: Insights from hydrous pyrolysis
27. Production bio-oil via hydrothermal liquefaction of biomass
28. 3D Mineral Prospectivity Mapping Using Multi-Source Geoscience Data and Deep Learning
29. Downscaling of GRACE satellite data to quantify hydrological loads at sub-basin scale
30. Thermal Structure of the NW Indian lithosphere from Trans-dimensional inversion of multi-scale Potential field data
31. Studying Geomagnetic Field Variations Using Satellite Data and the Ground Observatory Network
32. Seismic imaging of the crust and shallow upper mantle beneath South India.
33. Ambient noise tomography in the Deccan Volcanic Province (DVP).
34. The crust beneath Tibet, the western Himalayas, and the Pamir: constraints from passive seismic tomography and radial anisotropy.
35. Seismic imprints of the interaction of mantle plumes with the Indian lithosphere.
36. Heavy Mineral studies of Lower Gondwana sandstones in Karanpura coal field
37. Clay mineral characterization of Tipam and Girujan Formations in Upper Assam
38. Provenance study of Girujan Formation in Upper Assam
39. A geochemical outlook on evolution of the Thar Desert
40. Melt and fluid inclusion studies in granitoids with implications on metallogeny
41. Lithium Mineralization in Katghora region, Korba District, Chhattisgarh
42. Detrital zircon evidence for Eoarchean to Mesoarchean Crust formation and implications for Archean geodynamic regime
43. Data analysis for seismic disaster risk reduction.
44. Full waveform inversion of seismic data
45. Applications of deep learning to seismic data processing
46. Ambient noise tomography of passive seismic data: applications to cryo seismology
47. Industrial applications of micropaleontology