| Course Type | Course Code | Name of Course | L | T | P | Credit |
|---|---|---|---|---|---|---|
| DP | NGPC534 | **Seismic Data Processing and Interpretation Practical** | 0 | 0 | 2 | 1 |

| **Course Objective** |
|---|
| Knowledge on fundamentals of seismic data processing. Knowledge on 2D and 3D seismic data processing technique. Knowledge on 3D seismic data special processing technique. Knowledge on seismic data modelling technique and converted wave processing technique. Knowledge on processed seismic data interpretation. |
| **Learning Outcomes** |
| Knowledge on fundamentals of seismic data processing. Knowledge on 2D and 3D seismic data processing technique. Knowledge on 3D seismic data special processing technique. Knowledge on seismic data modelling technique and converted wave processing technique. Knowledge on processed seismic data interpretation. |

| Unit No. | Details of Lectures | Lectures Hrs. | Outcome |
|---|---|---|---|
| 1. | Introduction to seismic data processing. Processing sequences - Preparation of processing geometry, quality checks. | 2 | Basic processing steps |
| 2. | True amplitude recovery, deconvolution, filtering, velocity analysis, statics, noise elimination through multichannel filtering, parameter optimization for generation finalstacked section. | 2 | Understanding about processing parameters and steps |
| 3 | DMO and migration, | 4 | Approaches of DMO & Migration |
| 4. | AVO and attribute analysis. Anisotropy processing: HTI, VTI. | 2 | Attribute, AVo and Anisotropy analysis |
| 5. | Mode Converted Wave Processing. 3D Processing techniques- generation of time slice andstacked sections. | 2 | Understanding about converted wave processing |
| | | | |
| 6. | Concepts of SRME, Radon. PSTM, Imaging. | 2 | Understanding PSTM data |
| 7. | PSDM Imaging. | 2 | Understanding about Depth imaging |

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|---|---|---|---|
| **8.** | Seismic modeling: Introduction to wave equations & wave equation modeling. | 2 | Seismic modeling through wave equation |
| **9.** | Overview of Seismic Stratigraphy. | 2 | Seismic stratigraphy study |
| **10.** | Wavelet processing for seismic stratigraphic interpretation. Seismic sequence analysis andseismic facies analysis. | 2 | Wavelet & facies charecterization |
| **11.** | Interpretation: Study of seismic section and other geological aspects of prospecting. | 2 | Seismic data interpretation & prospects identification |
| **12.** | Structural interpretation, construction of isochron and isopach maps, thin bed resolutionand pitfalls. | 2 | Generation of Maps & pitfalls |
| **13.** | Prospect evaluation, new development such as work station environment in seismic interpretation using standard packages. | 2 | prospect evaluation |
| | **Total** | 28 | |

**Text Books**


1. Al Sadi, H. M., 1982, Seismic Exploration: Birkhauser Verlag.
2. Claerbout, J. F., 1985, Imaging the interior of the earth, BlackWell Scientific Publications.
3. Lavergene, M., Seismic Methods.
4. Dobrin, M. B., and Savit, C. H., 1988, Introduction to Geophysical Prospecting (Fourth Edition), Tata McGraw Hill.
5. Yilmaz, O., Seismic data processing, SEG Publication.


**Reference Books**


1. Digital Signal Processing by Oppenheim and Schafer
2. Field Traces hard/soft for SEG publication
3. Lindseth, R. O., 1976, Digital processing of geophysical data - A review: Technical Publication
4. National and International Journal Published Paper for Case Studies
5. SEGD data for from SEG publication/Industry/Field Acquired
6. Telford, W. M., Geldart, L. P., Sheriff, R. E., and Keys, D. A., 1988, Applied Geophysics.
7. Waters, K. H., Reflection Seismology (Third Edition), John Wiley Publications