Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NGPC524	**Seismic Data Acquisition Practical**	0	0	2	1

Course Objective

Knowledge on seismic wave theory. Knowledge on 2D seismic data acquisition technique. Knowledge on 3D seismic data acquisition technique. Knowledge on various shooting technique and challenges for marine seismic data acquisition technique. Knowledge on shear data acquisition technique. Finally laboratory and on field practical classes will provide knowledge on seismic data acquisition technique in various geological condition with different geometry and shooting condition.

Learning Outcomes

Upon successful completion of this course, students will:
The primary objective of the course is to introduce fundamental and advanced aspects of seismic data acquisition technique which is vital part for applied geophysics study of any kind sub-surface geological study. The underlying physics and mathematics of the various seismic analysis methods are presented through theory and practical classes, giving students an appreciation of their limitations and potential for creating models of the subsurface.

Unit No.	Details of Lectures	Lectures Hrs.	Outcome
1.	Plotting of time distance curve for reflection, refraction and diffraction data.	**2**	Understanding travel time curve
2.	Calculation of statics (elevation and weathering correction) on the basis of givenmodels.	**2**	Understanding of static correction
3	Acquisition and processing of refraction data using signal enhancement seismographs	**2**	Workflow on Acquisition & Processing
4.	Acquisition of CDP reflection data using signal enhancement seismograph and Construction of CDP stacking chart.	**2**	Understanding abou CDP
5.	Acquisition of reflection / refraction data using accelerated weight drop seismic energysource.	2	Knowledge on seismic sources
6.	Study of field reflection seismic records acquired for various spread configurations: Part1	2	Study of seismic record of reflection data: Part 1
7.	Study of field reflection seismic records acquired for various spread configurations: Part2	2	Study of seismic record of reflection data: Part 2
8.	Generation of response curves for various source receiver arrays and Design of Linear uniform array based on the field noise record.	2	Understanding of Array & noise test.

9.	Designing the VSP data acquisition field arrangements	2	VSP data acquisition & field arrangement.
10.	Study of zero-offset VSP records and identification of down going, up going and multiples events.	2	Classification of VSP and identification of VSP waves.
11.	Computing Ricker wavelets with different dominant frequencies; Computer synthetic seismogram given the reflectivity series and source wavelet.	2	Ricker Wavelet analysis, understanding about synthetic seismograph
12.	Standard processing of seismic data (from raw data to stacked section).	2	Basic understanding on conventional processing sequences
13.	Standard practice on structural interpretation of seismic data	4	Basic understanding on structural interpretation
	Total	28	

Text Books:

1. Al Sadi, H. M., 1982, Seismic Exploration: Birkhauser Verlag.
2. Dobrin, M. B., and Savit, C. H., 1988, Introduction to Geophysical Prospecting (Fourth Edition), Tata McGraw Hill.
3. Evans, B., Field Geophysics: SEG Publications
4. Lab Manual on Seismic Data Acquisition
5. Telford, W. M., Geldart, L. P., Sheriff, R. E., and Keys, D. A., 1988, Applied Geophysics.
6. Yilmaz, O., Seismic data processing, SEG Publication.

Reference Books

1. Grifith, and King, Applied Geophysics for Engineers and Geologists.
2. Kearey, P., Brooks, M., and Hill, I., 2002, Introduction to Geophysical Exploration: BlackWell Scientific Publications.
3. Lavergene, M., Seismic Methods.
3. Lindseth, R. O., 1976, Digital processing of geophysical data - A review: Technical Publication
4. Parasnis, D. S., 1997, Principles of Applied Geophysics (Fifth Edition), Chapman and Hall.
5. Field records and on field setup literature (SEG/EAGE publication)
6. National and International Journal Published Paper for Case Studies