Course Type	Course Code	Name of Course	L	T	P	Credit
DP	**NGPC505**	**Seismology Practical**	**0**	**0**	**3**	**1.5**

Course Objective
The course aims to provide a practical understanding of seismology concepts. The course provides hands on experience dealing with earthquake data using various approaches in seismology.
Learning Outcomes
Any student delving into modern seismology would become proficient in its core principles, enhancing their comprehension through a well-rounded blend of theory and practical application of computer programs openly accessible for use.

Unit No.	Description of Lectures	Lecture Hrs.	Learning Outcomes
1.	Visit to geodetic observatory, understanding the seismic instruments and other facilities available in the observatory.	**3**	Students will learn about instrumentation used in seismology
2.	Analysis of seismograms for local, regional and teleseism events.	**3**	Students will learn how the earthquakes can be classified based on distance.
3.	Identification of seismic phases on the broadband record of local earthquake events.	**3**	Various phases such as P-and S-waves will be identified on local earthquakes.
4.	Identification of seismic phases on the broadband record of regional and teleseismic events.	**3**	Students will be able to quantify an earthquake based on difference between P-and S-waves arrival times.
5.	Coda magnitude estimation of local event. Computation of tentative location of earthquake using 3- components broadband digital record, and plotting on a map.	**3**	Students will learn to locate an earthquake.
6.	Computation of origin time of local earthquake using Wadati diagram.	**3**	Students will learn to find the origin time and hypocentral depth of an earthquake.
7.	Reconstruction of intensity map on the basis of field survey data.	**3**	Students will develop contour map of intensities.

8.	Richter magnitude calculation using attenuation data of local earthquake. Comparison of estimated magnitudes of same earthquake using different seismographs.	**3**	Students will learn to calculate the magnitude of an earthquake using various scales.
9.	Installation of SEISAN software and analysis of digital seismogram.	**3**	Operation of open use softwares and tools used for data processing
10.	Computation of magnitude and stress drop of local earthquakes using SEISAN software.		Students will learn to find magnitude and associated stress drop.
11.	Plotting of nodal planes, P- and T-axes on the stereonet using P-wave first motion data.	**3**	Students will learn to understand the beach ball diagrams.
12.	Computation of fault parameter using focal mechanism.	**3**	Fault parameters such dip, rake, strike, slip.
13.	Reconstruction of block diagram for earthquake faulting using focal mechanism data.	**3**	Reconstructing a block diagram for earthquake faulting using focal mechanism data.
14.	Revisions of all practical.	**3**	Revisions
	Total	**42**	

Textbooks

1. Stein, S. and Wysession, M. 2003. An Introduction to Seismology, Earthquakes and Earth Structure, Oxford: Blackwell Publishing.

Reference Books

1. Shearer, P. 1999. Introduction to Seismology, Cambridge: Cambridge University Press
2. Lowrie, W., 2007. Fundamental of Geophysics, Cambridge: Cambridge University Press