Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NGPC512	Earthquake Statistics and Hazards -Practicals	0	0	3	1.5

Course Objective
The Earthquake Studies Program aims to foster interdisciplinary teaching and research related to natural, man-made and technological disasters. Earthquake Engineering and Active Tectonics Tracks focus on particularly in the area of earthquakes. While in Disaster Management Track discuss implementations in wide-ranging disasters.
Learning Outcomes
Upon successful completion of this course, students will be able to Students will learn that hazards are the phenomenon while risk is the likelihood of that consequence. This unit may be used as an introduction to the Natural Hazards and Risks. Develop performance-based earthquake engineering as a new paradigm for analysis, design, characterize and mitigate earthquake hazards; improve fundamental knowledge.

Unit No.	Details of Lectures	Lectures Hrs.	Outcome
1.	Interpretation of Global and Indian seismicity maps	3	Understanding of seismicity plots
2.	Compilation of seismic catalogue and removing duplicate events	3	Introduction to seismic catalogue
3	Homogenization of Magnitude scale	3	Homogenization of scale
4.	Calculation of Magnitude of Completeness (Mc)	3	Magnitude of completeness
5.	Calculation of b-value and a-value from graph and Z-maps	6	b-value calculation
6.	Identification of foreshock and aftershock based on the window technique	3	Aftershock identification

5.	The Epidemic type Aftershock sequence model (ETAS) generation	**9**	Earthquake occurrence models
6.	Calculation of Coulomb Stress	**3**	Earthquake occurrence models
7.	Case study: Seismic vulnerability assessment	**3**	Seismic vulnerability assessments
8.	Case Study: Intensity scales and use of intensity scales	**3**	Seismic vulnerability assessments
9.	Case Study: Hazard assessment	**3**	Assessment of earthquake related loss
	Total	**42**	

Text books

1. CORSSA: the Community Online Resource for Statistical Seismicity Analysis.
2. Kramer, S. L., "Geotechnical Earthquake Engineering", Pearson Education.
3. McGuire, Robin K., "Seismic Hazard and Risk Analysis", Earthquake Engineering Research Institute

Reference books

1. Stein, S. and Wysession, M., "An Introduction to Seismology, Earthquake and Earth Structures", Black Well Publications
2. Reiter, L. "Earthquake Hazard Analysis, Issues and Insights", Columbia University Press
3. Coburn, A. and Spence R., "Earthquake Protection", John Wiley and Sons, Ltd