

Higher Institute of Earthquake studies and Research

COURSE : Processing of earthquake data
Specialty: Master of Seismology – First year
CONTACT HOURS: 6 hours weekly

Text books & References:

Description:

The course is 8 chapters. It starts by the elementary principals of seismic Data, signal and noise, the seismogram interpretation, the seismic signals processing and processing of seismic networks data. Then, it presents some advanced aspects such as waves polarization, multiplet analysis and moment tensor inversion. SEISAN has been chosen as the processing software to illustrate the problems discussed in this course.

Aims & Objectives:

The purpose of this course is to present the essential theoretical background of the processing earthquake data, and to get some experience in the traditional tasks that need to be performed at seismological observatories. The goal of the SEISAN basic exercises is to be able to handle the SEISAN database, pick phases, locate the events and display the results.

Syllabus:

Chapter 1: Seismic Data Formats, Archival and Exchange

Chapter 2: Seismic Signals and Noise

Chapter 3: Seismogram Interpretation: Criteria and parameters for routine seismogram analysis, Routine signal processing of digital seismograms, Examples of seismogram analysis

Chapter 4: Principles of Seismic Signals Processing

Chapter 5: Processing of Seismic Networks data

Chapter 6: Seismic Waves Polarization

Chapter 7: Seismic Multiplet Analysis and some of its applications

Chapter 8: Seismic Moment Tensor Inversion

Course Outline:

Week 1-10: Introduction to SEISAN and Computer exercises in processing earthquake data

Exercises 1-10: Basic SEISAN exercises, Signal processing and phase reading, Response files and seismic formats, Signal processing exercises, Earthquake location, Focal mechanism, Spectral analysis, Operation and earthquake statistics

Instructional Methodology & Teaching Resources:

Lectures, Lab for computer processing,

Head of Department:.

Date:

Vice dean:

Date:

Dean:

Date: