

Course Title: earthquake hazard analysis

Number of Credits: 3

Prerequisite (Corequisite): Structural analysis (I), Concrete Technology **Lecturer: -**

Course Topic

- Familiarity with the concepts of danger, hazard, vulnerability and methods of analysing earthquake hazard
- Reminders of probability concepts, independent and dependent events, conditional probability, discrete and joined random variables
- Familiarity with possible distributions: geometric, binomial distribution and its limit state (Poisson distribution), normal distribution and logarithm – normal and their usage in extracting hazard analysis relation
- Defining a reduction relation and explaining how to extract it, local, regional and global reduction relationships and how to evaluate its compatibility with a region and selecting superior reduction relationships and determining the weight of each relation(LH and LLH statistical tests)
- Instrumental and historical seismicity, familiarity with sources, and data bases, how to search and compile catalogs, homogenization and integration of catalogs(magnitude conversion, delete dependent event)
- Earthquake reversal models, sandy head earthquake model, Gutenberg model – Richter (how to estimate model parameters)
- The basics of the maximum desire method(maximum likelihood)
- Maximum magnitude estimation (historical – experimental method, maximum desire method), familiarity with experimental relations of rupture length and magnitude (such as the relation between wells and cooper smith 1994)
- Types of seismic fountains, active fault definition and potential fault(capable)
- Earthquake – prone states of Iran and their differences with each other, Iran’s famous faults and earthquakes
- Determinative or definite hazard analysis (DSHA), total probability theorem and its relation wit hearthquake probability hazard analysis (PSHA)

Course Description:

Reading Sources:

Course Goals and objectives:

Evaluation:

Course topics:

The course aims to: