Department of Civil Engineering

Course Name:

Advanced Earthquake Engineering

Course Number: 20-165	**Credit:** 3
Program: Graduate	**Course Type:** Technical Required
Prerequisite: -	**Corequisite:** Structural Vibrations & Advanced Engineering Mathematics

Course Description (Objectives):

This lesson is compiled to study the behavior of structures against vibrations caused by earthquakes. The goal of earthquake engineering is to optimally design and construct various types of structures in civil projects to withstand seismic loads, in order to increase the safety factor of structures and minimize earthquake-induced damages.

Course Content (outline):

- Chapter 1: Fundamentals of Structural Dynamics
- Chapter 2: General Topics in Seismology and Seismicity
- Chapter 3: Seismic Hazard Analysis
- Chapter 4: Design Spectrum
- Chapter 5: Numerical Methods for Solving the Equation of Motion
- Chapter 6: Other topics

References:

- Anil K. Chopra, "Dynamics of Structures, Theory and Application to Earthquake Engineering", 3rd Edition, Prentice Hall, 2007.
- Clough, R.W. and Penzien, J., "Dynamics of Structures", 3nd Edition, McGraw-Hill, New York, 2003.
- Naeim, F., "The Seismic Design Handbook", 2nd Ed., 2001