Structural Dynamics and Earthquake Engineering

Dr. Shahria Alam

(Time: 2017.12.06-09 09:00-11:00am **Location:** ZhongShan 310)

Lecture 1：Earthquake Ground Motion Characteristics

1. Why earthquake occurs
2. How to measure earthquakes
3. Effects of earthquakes
4. Earthquake time history

Lecture 2: Single Degree of Freedom System

1 Equation of Motion, Problem Statement, Solution Methods

2. Free Vibration
3. Response to Harmonic and Periodic Motions
4. Earthquake Response of Linear Systems
5. Earthquake Response of Inelastic Systems

Lecture 3: Multi Degree of Freedom System

1. Two story shear building
2. General approach for linear system
3. Natural Vibration Frequencies
4. Natural modes

Lecture 4: Seismic Behavior Structures

1. Inelastic behavior of materials and structures
2. Seismic response of reinforced concrete and steel elements
3. Seismic response of frame elements
4. Hysteretic response, energy dissipation and ductility
5. Seismic Force Modification factors
6. Seismic behavior of beam-column connections
7. Seismic behavior of braced frames
8. Past Seismic damages of structures and improved design details