

**Faculty of Engineering & Technology**  
**Introduction to Earthquake Engineering**

**Information :**

**Course Code :** SCM 525      **Level :** Undergraduate      **Course Hours :** 3.00- Hours  
**Department :** Department of Structural Engineering & Construction Management

**Area Of Study :**

Upon successful completion of this course, the student should be able to:  
- Understand the basic concepts and main principles  
- Calculate the values of the essential terms  
Regarding characteristics of earthquakes seismic waves response of structures to earthquakes seismic design regulations requirements for different types of buildings applications

**Description :**

Overview: Characteristics of earthquakes: causes, seismic waves, scales, regionalization, Response of structures to earthquakes, Concept and philosophy of seismic design regulations, Minimum requirements for different types of buildings in seismic codes, Applications.

**Course outcomes :**

**a. Knowledge and Understanding: :**

- |     |                                                         |
|-----|---------------------------------------------------------|
| 1 - | Define the main terms of characteristics of earthquakes |
| 2 - | Describe the main concept of seismic waves              |

**b. Intellectual Skills: :**

- |     |                                                               |
|-----|---------------------------------------------------------------|
| 1 - | Analyze the system of seismic waves                           |
| 2 - | Calculate the values of response of structures to earthquakes |
| 3 - | Solve problems regarding seismic design regulations           |

**c. Professional and Practical Skills: :**

- |     |                                                                               |
|-----|-------------------------------------------------------------------------------|
| 1 - | Apply Code provisions regarding requirements for different types of buildings |
| 2 - | Prepare technical reports for applications                                    |

**d. General and Transferable Skills: :**

- |     |                                                     |
|-----|-----------------------------------------------------|
| 1 - | Search for information and self-learning discipline |
|-----|-----------------------------------------------------|

**Course Topic And Contents :**

| Topic                                 | No. of hours | Lecture | Tutorial / Practical |
|---------------------------------------|--------------|---------|----------------------|
| characteristics of earthquakes        | 8            | 6       | 2                    |
| seismic waves                         | 8            | 6       | 2                    |
| response of structures to earthquakes | 8            | 6       | 2                    |

### **Course Topic And Contents :**

| <b>Topic</b>                                  | <b>No. of hours</b> | <b>Lecture</b> | <b>Tutorial / Practical</b> |
|-----------------------------------------------|---------------------|----------------|-----------------------------|
| seismic design regulations                    | 8                   | 6              | 2                           |
| requirements for different types of buildings | 8                   | 6              | 2                           |
| applications                                  | 16                  | 12             | 4                           |
| Revision                                      | 4                   | 3              | 1                           |

### **Teaching And Learning Methodologies :**

Interactive Lec.  
Discussion  
Problem Solving  
Report / Present.

### **Course Assessment :**

| <b>Methods of assessment</b> | <b>Relative weight %</b> | <b>Week No</b> | <b>Assess What</b> |
|------------------------------|--------------------------|----------------|--------------------|
| Final exam                   | 40.00                    |                |                    |
| First mid-term exam          | 15.00                    |                |                    |
| Quizzes / Assig.             | 15.00                    |                |                    |
| Report / Present.            | 15.00                    |                |                    |
| Second mid-term exam         | 15.00                    |                |                    |

### **Course Notes :**

Handout notes on MOODLE

### **Recommended books :**

"Structural Dynamics, Theory and Computations", Mario Paz, 2013