

# Higher Institute of Earthquake studies and Research

**Department: Earthquake Structural Engineering**

**Course: Advanced Math - Modeling and Numerical Analysis**

**Hours: (2 Hours Theoretical+2hours Practical) Weekly**

**Teaching Staff:**

## **Syllabus:**

**Chapter 1:** Introduction

**Chapter 2:** Applied multivariable mathematics.

**Chapter 3:** Advanced mathematics for physical sciences

**Chapter 4:** Numerical Linear algebra

**Chapter 5:** Numerical modeling and discretization of structural systems.

**Chapter 6:** modeling techniques

**Chapter 7:** Analysis procedures

**Chapter8:** Solutions and methods of analysis

## **Course Outline:**

**Week 1:** Introduction

**Week 2 + Week 3:** Applied multivariable mathematics.

**Week 4 + Week 5:** Advanced mathematics for physical sciences

**Week 6 + Week 7:** Numerical Linear algebra

**Week 8:** Numerical modeling and discretization of structural systems.

**Week 9:** modeling techniques

**Week 10:** Analysis procedures

**Week 11:** Solutions and methods of analysis

**Week 12:** examples

## **Instructional Methodology & Teaching Resources:**

Lectures, examples, applications

**Head of Department:**

Date:

**Vice Dean:** o

Date:

**Dean:** o

Date: