STRUCTURAL ENGINEERING

Course No	-	CE-407
Instructor	-	Rana Muhammad Waqas waqas.uet2k9@yahoo.com
Homework/Quiz	-	4-5 homework/Assignments 3-4 Quiz Tests Presentations
Exams	-	1 Mid Exams during the course Final comprehensive exam at the end of course
Grades	-	Attendance Homework Quiz Presentations Mid Term Exams Final Exam
Expectations	-	Class discipline Class participation Class timings/Attendance Timely submission of homework/project

COURSE CONTENTS

1. **Advanced Structure Analysis:**

   Matrix method of Analysis, Definition of matrices and determinants

   Introduction to flexibility method, Determination of flexibility matrix for truss member , beams , planer frames. Bending moment and shear force diagrams specially for indeterminate structures using Direct Flexibility Method.

   Introduction to stiffness method, Development of member and structure stiffness matrices, Bending moment and shear force diagrams specially for indeterminate structures using Direct Stiffness Method.

COURSE CONTENTS

2. **Pre-stressed concrete:**

   Introduction to Pre-stressed concrete, Pre-stressed VS ordinary reinforced concrete. Types of pre-stressing. Losses in pre-stressing. Analysis and design of simple pre-stressed concrete members.

3. **Introduction to Bridge Engineering :** Types of Reinforced Concrete Bridges , Design of Slab Bridge , Design of T Beam or Deck Slab Bridge.

4. **Introduction to structural dynamics**

Books

1. Nilson A. H., Design of Prestressed concrete

2. James G. MacGregor . Reinforced Concrete Design

3. Saeed Ahmad., Analysis of Structures (Stiffness methods- Higher Education Commission Pakistan)

4. Alexander Chajes, Structural Analysis (Flexibility method)