INSTITUTE	**FACULTY OF TECHNOLOGY**
PROGRAM	**BACHELOR OF TECHNOLOGY (CIVIL ENGINEERING)**
SEMESTER	**6**
COURSE TITLE	**COMPUTER APPLICATION IN CIVIL ENGINEERING-IV**
COURSE CODE	**01CI1606**
COURSE CREDITS	**1**

Objective:

1 Develop an understanding to use commercially available FEM packages for the structural analysis and design.

2 To model, analyze and design structures using commercially available software.

Course Outcomes: After completion of this course, student will be able to:

1 Create analytical models of structures in FEM software, ensuring accurate representation of geometry and material properties for structural analysis and design.

2 Simulate real-world conditions by applying various types of loads to structural models.

3 Evaluate structural behavior by interpreting analysis results to assess performance and safety.

4 Generate detailed structural drawings and documentation from the analysis and design results using software tools.

Pre-requisite of course: Structural Analysis and Structural Design

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	2	0	0	0	25	25

Contents : Unit	Topics	Contact Hours
Total Hours		

DR. ANKUR CHANDRAKANT BHOGAYATA
Digitally signed by (Name of HOD)

DR. RAJENDRASINH BAHADURSINH JADEJA
Digitally signed by (Name of Dean/ Principal)

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Modelling, Analysis and Design of Structures Using Commercially Available Software Packages** Fundamentals of FEM software, Introduction to structural design process. Introduction to various software available for analysis and design, Creating geometry of various types of structures, defining materials and properties of materials in software., Defining the structural elements in software, assigning properties of material to structural members, defining various types of boundaries or support in software., Use of various commands for repetitions of tasks, Quickdraw commands, Define various types of loads and load combinations, Assigning various types of load and load combinations to structures. Analysis Commands. Design concepts, defining various parameters used for the design of structures., Preparation of structural layout of RC and Steel buildings, Modeling of Advanced Concepts like seismic analysis using the Response Spectrum Method.	12
2	**Detailing of Structures** Introduction to detailing of a structural member as per Indian standards, Introduction to detailing using AutoCAD, Export results of FEM software, Design & and detailing of slabs, beams, columns, and foundation. Develop the design basis report of structural design.	8
3	**Project – Structural Design** The project work has to be a design project from the following projects. Students have to carry out structural design projects from the following: 1. Multistoried reinforced concrete structure 2. Industrial structure It is compulsory to submit at least one structural design project from concept level to execution level., Each structural design project must be submitted with design basis report (DBR) which includes: 1. Framing system & plan of structures 2. Details of materials & properties being considered 3. Loads & load combination 4. Modelling of structures with all relevant details 5. Design results 6. Detailed drawings	8
Total Hours		**28**

Textbook :

1 Structural Design of Multi-storeyed Buildings,, Varyani U. H, South Asian Publishers, 1988

2 Advanced Design of Concrete Structures, Krishana Raju N., Tata Mc-Graw Hill, Delhi, 2012

3 Advanced Reinforced Concrete Design, Varghese P. C., Prentice Hall of India, New Delhi., 2010

References:

1 Structural Analysis and Design of Tall Buildings, Structural Analysis and Design of Tall Buildings, Taranath B. S, Mc Graw Hill, 1988

References:

2 Steel Structures, Steel Structures, William McGuire, Prentice Hall, Inc., Englewood Cliffs, N.J., 1986

3 Steel Structure -Design and Behaviour, Steel Structure -Design and Behaviour, Salmon, C.G., and Johnson, J.E. Harper and Row, Salmon, C.G., and Johnson, J.E. Harper and Row, 2000

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
5.00	20.00	30.00	25.00	10.00	10.00

Instructional Method:

1 At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.

2 Lectures will be taken in class room with the use of multi-media presentations, white board – mix of both.

3 Attendance is compulsory in lectures and laboratory which carries a 5% component of the overall evaluation.

4 Minimum two internal exams will be conducted and average of two will be considered as a part of continuous evaluation

5 Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. It carries a weightage of 5%.

6 The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.

7 Surprise tests/Quizzes will be conducted which carries 5% component of the overall evaluation.

Supplementary Resources:

1 https://www.nicee.org/EQTips.php

2 www.nicee.org

3 www.eeri.org

4 www.gsdma.org

5 www.ndma.gov.in

6 www.nptel.iitm.ac.in/courses