B.E. (Civil) Semester: V

Subject Name: STRUCTURAL ANALYSIS - III (CV506)

A. Course Objective:

- To provide a coherent development to the students for the courses in sector of Structural Analysis - III
- To present the foundations of many basic engineering concepts related Analysis of structures
- To give an experience in the implementation of analysis concepts which are applied for Design and the Design applied for field of structural engineering
- To involve the application of scientific and technological principles of Analysis.

B. Teaching / Examination Scheme

Teaching scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract/ Tut.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
03	02	00	05	05	03	70	30	20	30	150

C. Detailed Syllabus:

UNIT-I Domes

Uses of domes, Types of domes, Nature of stresses in conical and spherical domes, Analysis of conical and spherical domes subjected to uniformly distributed load/concentrated load at crown, Analysis of domes with opening.

UNIT-II Matrix Analysis Methods

Types of skeletal structures, Internal forces and deformations. Introduction and applications of flexibility method and stiffness method to analyze beams, Trusses and plane frames.

UNIT-III Approximate Methods

Portal Method, Cantilever Method.

UNIT-IV Beam Curved in Plan

Uses of curved beam, types of internal forces, Analysis of curved beam fixed at ends for point load, Uniformly distributed load, Analysis of circular beam supported symmetrically.

D. Lesson Planning

Unit no	Title of the Unit	Minimum Hours	Weightage (%)
I	Domes	05	11
II	Matrix Analysis Methods	25	55
III	Approximate Methods	08	18
IV	Beam Curved in Plan	07	16
	TOTAL	**45**	**100**

E. Term Work

1. Minimum 10 Examples based on Flexibility Method.
2. Minimum 10 Examples based on Stiffness Method.
3. Minimum 10 Examples based on Portal and Cantilever Method.
4. Minimum 10 Examples based on Beam Curved in Plan
5. Minimum 05 Examples based on Domes

F. Instructional method and pedagogy (Continuous Internal Assessment Scheme) (CIA)

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures and practical which carries marks.
- At regular intervals assignments will be given. Students should submit all assignments during given period.
- Classroom participation and involvement in solving the problems in Tutorial rooms carries marks
- Internal exam of 30 marks will be conducted as a part of mid semester evaluation.
- Experiments shall be performed in the field related to course contents.
- The course includes a practical, where students have an opportunity to build an appreciation for the concept being taught in lectures.

G. Students Learning Outcomes:

- The students will gain an experience in the implementation of Analysis on engineering concepts which are applied in field Structural Engineering.
- The students will get a diverse knowledge of Analysis practices applied to real life problems

H. Recommended Study Materials

Reference Books :

1 Junnarkar S. B. & Shah H.J, Mechanics of Structures Vol-II, Charotar publishing house, Anand.

2 Wang C.K., Matrix methods of Structural Analysis Mc Graw Hill book Company, New Delhi.

3 Reddy C.S., Basic Structural Analysis, Tata Mc Graw Hill Publishing Company Ltd, New Delhi.

4 Dr. Punmia B.C. Jain Ashok & Jain Arun, RCC Design, Laxmi Publications, New Delhi.

5 William Weaver, Jr & James M. Gere, Matrix Analysis of Framed Structures, CBS Publishers & Distributors, Delhi.