Course Number and Name

BCE601 - STRUCTURAL ANALYSIS – II

Credits and Contact Hours

4 & 60

Course Coordinator's Name

Ms.M .V. Shruthi

Text Books and References

TEXT BOOKS:

1. S.S.Bhavikati. Structural Analysis Vol.-I & II. Vikas Publishing House pvt ltd, 2009

REFERENCES:

1. William Weaver, Computer Programs for structural Analysis, VNR Publishers, 2006
2. Rubinstein M.F, Matrix Computer Analysis of Structures, Prentice Hall, Englewood cliffs, 1990
3. Arya AS. and Jain." Theory and Analysis of Structures", Nem Chand & Bros, Dec 1992
4. Pandit G S and Gupta S P,"Matrix methods in structural analysis", Tata McGraw Hill Publishing Company Limited, 2007

Course Description

- To introduce the students to basic theory and concepts of structural analysis and methods for the analysis of structures.

Prerequisites	Co-requisites
Structural Analysis – I	NIL

required, elective, or selected elective (as per Table 5-1)

Course Outcomes (COs)

CO1	Analyze Space Truss using tension Coefficient method
CO2	Analyze cable suspension bridges
CO3	Perform plastic analysis of indeterminate beams and frames
CO4	Analyze structures by using matrix flexibility and stiffness methods
CO5	Implement basic concepts of finite element analysis

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1			M	H							
CO2			M	H							
CO3			M	H							
CO4			M	H							
CO5			M	H							

List of Topics Covered

UNIT I ILD FOR INDETERMINATE STRUCTURES 12

Influence line for statically indeterminate structures – Maxwell Betti theorem - Muller – Breslau Principle and its application to determine the influence lines of reactions. SF and BM at a section of continuous beams – qualitative influence lines for horizontal thrust reaction and moments for continuous beams, portal and arches.

UNIT II ARCHES & CABLES 12

Arches and suspension Cables : Three hinged and two hinged arches-parabolic and circular arches – influence lines for three and two hinged arches for horizontal thrust, SF and BM at any section - length of cable, maximum tension - types supports – forces in towers.

UNIT III PLASTIC THEORY 12

Plastic Theory: Plastic moment of resistance - plastic modulus – shape factor – plastic hinges – determination of collapse load for continuous beams and portals.

UNIT V STIFFNESS METHOD 12

Matrix Method of Structural Analysis: Stiffness methods-development of stiffness method -stiffness matrix for continuous beams and portals application to simple pin jointed trusses, continuous beams, portal frames.

UNIT V FLEXIBILITY METHOD 12

Matrix method of Structural Analysis: Flexibility method – statically determinate and indeterminate (up to 2 degrees only) structures- formation of flexibility matrix - simple problems on Continuous beams, Portal frame.