

Date :	05/01/2017	G. H. RAISONI COLLEGE OF ENGG. AND MANAGEMENT(ENGG)(PUNE)	Run By.	GIRISH JOSHI
Time :	11:36 52	SYLLABUS PLANNING REPORT		

Faculty : Girish Joshi(194)					
Class : Civil (STRUCTURAL ENGINEERING)(PG) - SECOND SEMESTER(A)					
Subject : Finite Element Method (T)					
Sr.No	Unit	Topic	From Date	To Date	No. of Lectures
1	1	a) Background on variational calculus. Galerkin methods, Collocation methods, Least squares methods. Variational methods of approximation- Rayleigh-Ritz method. b) Variational theorem; Principle of minimum potential energy, Use of polynomial displacement function. Variational approach for formulation of element stiffness matrix for truss and beam elements	02/01/2017	11/01/2017	6
2	2	Two dimensional elements in plane stress /plane strain problems. CST, LST & Rectangular elements, modelling considerations; aspect ratio, Use of polynomial displacement functions, Pascal triangle. Requirements for convergence, Geometric Invariance, Grid refinement.	12/01/2017	20/01/2017	6
3	3	Standard stiffness and load vector formulation procedure using variational principle.	23/01/2017	31/01/2017	6
4	4	a) Shape functions in cartesian & natural coordinate systems, shape functions for one dimensional element such as truss & beam. Shape function for two dimensional elements. b) Three dimensional elements such as Tetrahedron, Hexahedron, shape functions, stress strain relations	01/02/2017	11/01/2017	6
5	4	a) Shape functions in cartesian & natural coordinate systems, shape functions for one dimensional element such as truss & beam. Shape function for two dimensional elements. b) Three dimensional elements such as Tetrahedron, Hexahedron, shape functions, stress strain relations	01/02/2017	10/02/2017	6
6	5	Axisymmetric elements in axisymmetric problems, stress strain relations, triangular and Quadrilateral elements.	13/02/2017	22/02/2017	6
7	6	Concept of isoparametric elements and isoparametric mapping, Jacobian Matrix, Formulation procedure for 2 D quadrilateral isoparametric element in plane elasticity problem, 3-D isoparametric elements.	23/02/2017	03/03/2017	6
8	7	Thin Plate bending elements, various Triangular and Rectangular elements, ACM (Adini, Clough, Melosh) and BFS (Bogner, Fox, Schimdt) elements Conforming & nonconforming elements, Concept of four noded & eight noded isoparametric elements, Mindlin's hypothesis for plate bending element	06/03/2017	16/03/2017	6
9	8	a) Flat & curved shell element, elements for cylindrical shells, curved solid element b) Ahmad's degenerated solid element, Pawsey's eight noded shell element.	20/03/2017	31/03/2017	6