

## AR-403

CODE	SUBJECT	CREDITS
AR-403	STRUCTURE-IV	02
<b>FOCUS</b>		
	The main emphasis is on understanding of advanced methods of analysis of indeterminate structures and behavior of advanced elements in structure. The course deals with analysis and behavior of advanced structural elements like arches, continuous beam and rigid frame.	
<b>CONTENT</b>		
	<ol style="list-style-type: none"><li>1. Pure bending stress &amp; its importance, derivation of basic equation, solution of simple problems</li><li>2. Combined direct and bending stress, Core or Kernel of section and its importance. Solution of a few practical problems.</li><li>3. Concept of shear stress, average and maximum shear stress. Horizontal shear stress and its variation across the cross section of the beam.</li><li>4. Indeterminate and indeterminate structures, finding indeterminacy of structures. Advantages and disadvantage of indeterminate structures.</li><li>5. Analysis of indeterminate structures. Introduction to stiffness and distribution factors, introduction to moment distribution factors, introduction to moment distribution method.</li><li>6. Indeterminacy of frame, comparison of post and lintel system and portal frames. Importance of portal frames in resisting horizontal forces.</li><li>7. Arch as a curved element. Arch in history, efficiency of an arch. Three hinged arch. Simple problems to illustrate the importance of the shape of an arch, rise end conditions and loading.</li><li>8. Section made up of more than one material (composite sections), their uses, and their advantages, assumptions made in the theory of composite sections, derivation of basic equations. Solution of simple problems.</li></ol>	
<b>METHODOLOGY</b>		
	Through class lectures, Presentations, site visits, case studies and making models & testing them.	
<b>REFERENCES:</b>		
	<ul style="list-style-type: none"><li>- Mechanics of Structures – I &amp; II - S.B.Jurnarkar &amp; H.J.Shah</li><li>- Theory of structures - B.C.Punamia, Ashok Jain and Arun Jain</li><li>- Strength of Materials - S.Ramamrutham</li><li>- Elementary Structural Analysis - Norris &amp; Wilbur.</li></ul>	