AR-503

CODE	SUBJECT	CREDITS
AR-503	STRUCTURE-V	02
FOCUS		
	• In the first part of the course the main emphasis is on study of steel as structural material and the role of properties of material and behavior of elements in evolution of structural system is carried out. • In the second part of the course emphasis on understanding of section design in R.C.C. and its implication on design of structures. The course is divided in two parts one which deals with analysis and design of steel structures, the other deals with design of reinforced concrete members. The course is divided in two parts one which deals with analysis and design of steel structures, the other deals with design of reinforced concrete members.	
CONTENT		
	• Steel as structural material, structural systems in steel with case studies. • Analysis and design of steel girders & columns using IS:800 & Handbook of steel sections. • Designing and detailing the bolted connections. Design of simple welded connections. • Theory of composite sections applied to R.C.C. structures. Review of properties of concrete and steel as applicable to R.C.C. Fundamental assumptions of R.C.C. structure. • Analysis and design of singly reinforced sections, under reinforced, over reinforced and balanced sections. • Analysis and design of one way and two way slab using coefficients and standard tables. Effects of continuity, detailing of reinforcement, provisions of IS:456. Derivation of thumb rules. • Doubly reinforced section, effect of compression steel on deflection. • Design of Tee beams and Ell beams, practical examples of both. • Diagonal tension, its effect and methods of resisting it. Design of shear reinforcement. • Axially and eccentrically loaded columns, types of column, permissible stresses in concrete and steel, slenderness and its effect on the load carrying capacity. Design of axially loaded columns & reinforcement detailing, code provisions, derivation of thumb rule. • Types of foundations and their use, punching shear, analysis and design of spread footings, structural behavior of other types of foundations. • Principles and practices of Earthquake resistant structures.	
METHODOLOGY		
	Through class lectures, Presentations, site visits, case studies and making models & testing them.	
REFERENCES:		
	1. Design Of R.C.C. Structures - H.J.Shah 2. Design Of R.C.C. Structures - Ramamrutham 3. Fundamentals of Reinforced concrete design - M.L.Gambhir 4. Limit State Design of Reinforced concrete - P.C.Verghese 5. S.P.–16 Design Aids to IS 456 - BIS, New Delhi 6. Design Of Steel Structures - Arya & Ajmani 7. Design Of Steel Structures - A.K.Jain 8. Design Of Steel Structures - L.S.Negi 9. IS Code 800 – Code Of Practice For Structural Steel Design- BIS, New Delhi 10. IS Handbook – 1, Structural Sections & Properties - BIS, New Delhi 11. IS Code – 456 -2000, Code Of Practice For Plain & Reinforce Concrete - BIS, New Delhi 12. IS Code - 875 – 1987 , Code Of Practice For Design Loads.- BIS, New Delhi	