



School of Planning and Architecture: Vijayawada
(An institution of National Importance under the Ministry of Education, GoI)
Survey No.4/4, ITI Road, Vijayawada-520 008, Andhra Pradesh, India

Department of Architecture

Course: ARC 314; Design of Structures (RCC & Steel) **Class:** II Yr B.Arch III Sem A.Y. 2024-25
Instructors: Prof. Dr. G. Rama Rao (Visiting Faculty) **Internal Assessment:** 50
Dr. P. Siva Prasad **External Theory Exam:** 50
Contact Periods/ week: 046 periods (55 min each) **Total Marks:** 100
Time Table: **Credits:** 4
Attendance: Min 75% **Min. Passing Marks:** 50% each in Internal & External Assessment, 50% in Aggregate

Objective: To introduce various RCC and Steel structures and to impart the knowledge of design concepts of RCC & Steel beams, RCC Slabs, RCC Columns & footings and Steel Columns with bases.

Out Line of the Course:

LECTURE PLAN

WEEK	DATE	TOPIC OF CLASS LECTURE & DISCUSSION	TOPIC OF STUDIO WORK & ASSIGNMENTS / REMARKS
1	Week-1	Introduction to RCC and steel structures. Limit state method of design of RCC and Steel structures.	Lecture/Discussion/Studio
2	Week-2	Indian Standard codes of practice IS 456-2000 and IS 800.	Lecture/Discussion/Studio
3	Week-3	Neutral axis, balanced, under & over reinforced sections.	Lecture/Discussion/Studio
4	Week-4	Design of RCC beams for flexure, shear & bond.	Lecture/Discussion/Studio
5	Week-5	Concept and design of Steel beams.	Lecture/Discussion/Studio
6	Week-6	Different type of RCC slabs.	Lecture/Discussion/Studio

7	Week-7	Concepts and design of One way and Two way slabs.	Lecture/Discussion/Studio
8	Week-8	Mid-Semester examination	Mid-semester examination
9	Week-9	Concepts and design of axially loaded RCC columns.	Lecture/Discussion/Studio
10	Week-10	Isolated footings.	Lecture/Discussion/Studio
11	Week-11	Concepts and design of Columns, Built up Columns.	Lecture/Discussion/Studio
12	Week-12	Lacing and Battening. Column bases.	Lecture/Discussion/Studio
13	Week-13	Reinforcement detailing and casting of RCC foundation / columns Reinforcement detailing and casting of Beams / slabs	Demo
14	Week-14	Steel structures, roof trusses, skyscrapers etc.	Lecture/Discussion/Studio
15	Week-15	Welded connections /Fabrication and welding of Steel Beams, Columns etc.	Lecture/Discussion/Studio

S. No.	Stages of Evaluation	Weightage
1	First stage: Assessment -1	15
2	Second stage: Mid-semester Examination	20
3	Third stage: Assessment -3	15
	Total	50

Reference Books:

1. Arumanikyam. (2000) Design of RCC Structures.I.K. International Publishing House.
2. Bhavikatti, S. S. (2008) Design of RCC Structural Elements. Newage International Publishers.
3. Punmia, B. C. (2007) Limit State Design of Reinforced Concrete.Delhi :Laxmi Publications
4. Ramachandra, S. (2004) Limit State Design of Concrete Structures. Scientific publishers.
5. Ramamrutham, S. (2000) Design of RCC Structures. New Delhi : Tata McGraw Hill Education.
6. Varghese, P. C. (2011) Limit state Design of Reinforced Concrete. PHI Learning.
7. Indian Standard 456 : 2000 Standard Plain and Reinforced Concrete- Code of Practice
8. Indian Standard 800 : 2007 General Construction in Steel - Code of Practice
9. Bhavikatti, S. S. (2010) Design of Steel Structures.I.K. International Publishing House.
10. Duggal, S. K. (2000) Design of Steel Structures.Tata McGraw Hill Education.
11. Subramanian, N. (2008) Design of Steel Structures.Oxford University Press.

Course Instructors:

sd/-
(Prof. G. Rama Rao / Dr. P. Siva Prasad)

Head of Department

sd/-
(Dr. D. Srinivas)