



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF CIVIL ENGINEERING

TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods/Week	Academic Year	Date of commencement of Semester
23CE5T01	DESIGN & DRAWING OF REINFORCED CONCRETE STRUCTURES (R23)	V	Civil Engineering	5	2026-27	22-06-2026

COURSE OUTCOMES: Upon completion of the course, Students are able to

1	Work on different types of design philosophies. K2
2	Carryout analysis and design of flexural members and detailing. K3
3	Design structures subjected to shear, bond and torsion. K3
4	Design different type of compression members and footings. K3
5	Design of different types of slabs and detailing. K3

UNIT	OutComes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	CO1: Work on different types of design philosophies. K2	1.1	Introduction to Reinforced concrete and reinforced concrete structures, Advantages and disadvantages of reinforced concrete	T1,R2	1	Chalk & Board, PPT
		1.2	Properties of concrete and steel	T1,R2	1	
		1.3	Working stress method: Design codes and handbooks, loading standards – Dead, live, wind and earthquake loads, Elastic theory: design constants, modular ratio	T1,R2	1	

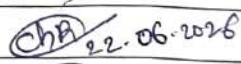
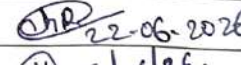
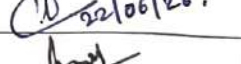
		1.4	neutral axis depth and moment of resistance for balanced, under-reinforced and over-reinforced sections.	T1,R2	1	
		1.5	Design of singly reinforced beams.	T1,R2	2	
		1.6	Design of doubly reinforced beams.	T1,R2	2	
		1.7	Limit State Design: Concepts of limit state design, Basic statistical principles	T1,R2	1	
		1.8	Characteristic loads, Characteristic strength – Partial load and safety factors.	T1,R2	1	
		1.9	Representative stress-strain curves for concrete, cold worked deformed bars and mild steel bars.	T1,R2	1	
		1.10	Assumptions in limit state design	T1,R2	1	
		1.11	stress - block parameters	T1,R2	1	
		1.12	Limiting moment of Resistance	T1,R2	1	
		Total			14	
II	Co2: Carryout analysis and design of flexural members and detailing. K3	2.1	Limit state analysis and design of singly reinforced sections: Effective depth, Moment of Resistance.	T1,R2	1	Chalk &Talk, PPT, Tutorial, Active learning
		2.2	Minimum depth for a given capacity, Limiting Percentage of Steel	T1,R2	1	
		2.3	Minimum Tension Reinforcement, Maximum Flexural Steel	T1,R2	1	
		2.4	Design Problems on singly reinforced beams	T1,R2	2	

		2.5	Limit state analysis and design of doubly reinforced beam sections.	T1,R2	1	
		2.6	Design Problems on doubly reinforced beams	T1,R2	2	
		2.7	Limit state analysis and design of T-sections: Effective width of flange –Behaviour	T1,R2	1	
		2.8	Analysis and Design of Flanged Sections (T)	T1,R2	2	
		Total			11	
III	CO 3: Design structures subjected to shear, bond and torsion. K3	3.1	Design for Shear, Torsion and Bond: Limit state analysis and design of section for shear	T1,R2	1	Chalk &Talk, PPT, Tutorial, Active learning
		3.2	Design of section for shear and torsion	T1,R2	1	
		3.3	concept of bond, anchorage	T1,R2	1	
		3.4	concept of development length	T1,R2	1	
		3.5	I.S. Code provisions	T1,R2	1	
		3.6	Design examples in simply supported beams, detailing.	T1,R2	1	
		3.7	Design examples in continuous beams, detailing.	T1,R2	1	
		3.8	Limit state design for service ability: Deflection	T1,R2	1	
		3.9	Limit state design for service ability: Deflection, cracking.	T1,R2	1	
		3.10	IS code provision	T1,R2	1	
		3.11	Design of beams (Design for flexure, shear. Checking for limiting Deflection)	T1,R2	1	
		3.12	Design of beams (Design for flexure, shear. Checking for limiting Deflection)	T1,R2	1	
		Total			12	

IV	CO 4 : Design different type of compression members and footings. K3	4.1	Design of Compression members: Effective length of a column	T1,R2	1	Chalk &Talk, PPT, Tutorial, Active learning
		4.2	Design of short columns- under axial loads, uniaxial bending	T1,R2	1	
		4.3	Design of short columns- under axial loads, and biaxial bending	T1,R2	1	
		4.4	Design of long columns- under axial loads, uniaxial bending	T1,R2	1	
		4.5	Design of long columns- under axial loads and biaxial bending	T1,R2	1	
		4.6	Braced columns, Unbraced columns, IS code provisions	T1,R2	1	
		4.7	Footings: Different types of footings, Design of isolated and combined footings-rectangular footings subjected to axial loads	T1,R2	1	
		4.8	Rectangular footings subjected to axial loads, uni-axial bending moments.	T1,R2	1	
		4.9	rectangular footings subjected to axial loads, bi-axial bending moments	T1,R2	1	
		4.10	Design of isolated and combined footings-circular footings subjected to axial loads	T1,R2	1	
		4.11	Design of isolated and combined footings-circular footings subjected to axial loads, uni-axial bending moments.	T1,R2	1	

		4.12	Design of isolated footings- circular footings subjected to axial loads and bi-axial bending moments.	T1,R2	1	
Total					12	
V	CO 5: Design of different types of slabs and detailing. K3	5.1	Slabs: Classification of slabs	T1,R2	1	Chalk &Talk, PPT, Tutorial, Active learning
		5.2	design of one - way slabs	T1,R2	1	
		5.3	Design problems one way slab using IS Coefficients	T1,R2	1	
		5.4	design of two - way slabs simply supported	T1,R2	1	
		5.5	Design of two - way slabs-simply supported and various edge conditions using IS Coefficients	T1,R2	1	
		5.6	Design of two - way slabs-simply supported and various edge conditions using IS Coefficients	T1,R2	1	
		5.7	Design of two - way slabs-simply supported and various edge conditions using IS Coefficients	T1,R2	1	
		5.8	Design problems on two way slabs	T1,R2	1	
		5.9	Design problems on two way slabs	T1,R2	1	
		5.10	Design of waist-slab staircase	T1,R2	1	
		5.11	Design problems on waist-slab staircase, IS code provisions	T1,R2	1	
Total					11	
CUMULATIVE PROPOSED PERIODS					60	

Text Books:	
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	S.S.Bhavikatti, 'Design of RCC Structural elements', 5 th Edition, New age international publishers, 2020.
2	A. K. Jain, 'Limit State Design', 7 th Edition, Nem Chand & Brothers-Roorkee, 2012
3	N. Subrahmanyian, 'Design of Reinforced concrete Structures', 4 th Edition CBS Publishers and Distributors Pvt Ltd, 2019
4	S. Unnikrishna Pillai & Devdas Menon 'Reinforced Concrete Structures', 3 rd Edition, Tata McGraw Hill, New Delhi, 2017.
Reference Books:	
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1	Arthus H.Nilson, David Darwin, and Charles W. Dolar, 'Design of concrete structures', 3rd Edition, Tata McGrawHill, 2005.
2	Park and Pauley, John Wiley and Sons, 'Reinforced Concrete Structures', John Wiley & Sons, Inc.
Code Books:	
S.No.	Code Book
1.	IS 456 : 2000
2.	IS 875
3.	SP : 16
Web Details	
1	https://nptel.ac.in/courses/105/105/105105105/

	Name	Signature with Date
i. Faculty	Mr. Ch Ravi Kiran	 22.06.2026
ii. Course Coordinator	Mr. Ch Ravi Kiran	 22.06.2026
iii. Module Coordinator	Mr. D Satish	 22/06/26.
iv. Programme Coordinator	Dr. G.V.L.N.Murthy	


Principal