



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.D.T., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF CIVIL ENGINEERING

TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
23CE4T02	CONCRETE TECHNOLOGY	4	CIVIL	05	2024-25	17-12-2025
COURSE OUTCOMES						
1	Identify the characteristics of basic ingredients and properties of concrete. (K2)					
2	Distinguish the properties of fresh and hardened concrete. (K2)					
3	Assess the quality of hardened concrete. (K2)					
4	Discriminate concepts proportioning of concrete by various methods-IS method of mix design. (K2)					
5	Justify the significance of special concretes. (K2)					
UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	CO1 K2	1.1	Concrete ingredients Cement heat of hydration-tests for cement	T2,R1	1	Chalk & Talk, PPT, Tutorial
		1.2	Admixtures-mineral and chemical admixtures	T2,R1	1	
		1.3	Accelerators, retarders, air entrainers, plasticizers, super plasticizers, fly ash, and silica fume	T2,R1	1	
		1.4	Classification of aggregate-particle shape & texture-bond strength & other mechanical properties of aggregates	T2,R1	1	
		1.5	Specific gravity, bulk density, porosity, absorption and moisture content of aggregate-bulking of sand	T2,R1	1	
		1.6	Deleterious substances in aggregates	T1,T2,	1	



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		1.7	Soundness of aggregate-alkali aggregate reaction – thermal properties	R1 T1,T2, R1	1	
		1.8	Sieve analysis-fineness modulus	T1,T2, R1	1	
		1.9	Grading curves	T1,T2, R1	1	
		1.10	Grading of fine & coarse aggregate	T1,T2, R1	1	
		1.11	Gap graded and well graded aggregate as per relevant is code	T1,T2, R1	1	
		1.12	Maximum aggregate size, quality of mixing water	T1,T2, R1	1	
		Total				12
II	CO2 K2	2.1	Steps in Manufacture of Concrete	T1,R1	1	Chalk & Talk, PPT, Tutorial
		2.2	Proportion, mixing, placing, compaction, finishing, curing	T1,R1	1	
		2.3	Various types in each stage	T1,R1	1	
		2.4	Properties of fresh concrete	T1,R1	1	
		2.5	Workability – Factors affecting workability	T1,R1	1	
		2.6	Measurement of workability by different tests	T1,R1	1	
		2.7	Measurement of workability by different tests	T1,R1	1	
		2.8	Measurement of workability by different tests	T1,R1	1	
		2.9	Setting times of concrete	T1,R1	1	
		2.10	Effect of time and temperature on workability	T1,R1	1	
		2.11	Segregation & bleeding	T1,R1	1	
		2.12	Mixing and vibration of concrete	T1,R1	1	
Total				12		
III	CO3: K2	3.1	Water / Cement ratio- Abram’s Law	T1,R1	1	Chalk & Talk, PPT, Tutorial
		3.2	Gel space ratio	T1,R1	1	
		3.3	Nature of strength of concrete	T1,R1	1	
		3.4	Nature of strength of concrete	T1,R1	1	



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		3.5	Maturity concept	T1,R1	1	
		3.6	Maturity concept	T1,R1	1	
		3.7	Strength in tension & compression	T1,R1	1	
		3.8	Strength in tension & compression	T1,R1	1	
		3.9	Factors affecting strength	T1,R1	1	
		3.10	Relation between compression & tensile strength	T1,R1	1	
		3.11	Curing	T1,R1	1	
		3.12	Testing of Hardened Concrete	T1,R1	1	
		3.13	Compression tests	T1,R1	1	
		3.14	Tension Tests	T1,R1	1	
		3.15	Felxure Tests	T1,R1	1	
		3.16	Splitting Tests	T1,R1	1	
		3.17	Non-destructive testing methods	T1,R1	1	
		3.18	Codal provisions for NDT	T1,R1	1	
				Total	18	Chalk & Talk, PPT, Tutorial
IV	CO4: K2	4.1	Modulus of elasticity	T1,R1	1	
		4.2	Dynamic Modulus of elasticity	T1,R1	1	
		4.3	Poisson's ratio	T1,R1	1	
		4.4	Creep of concrete	T1,R1	1	
		4.5	Factors influencing creep	T1,R1	1	
		4.6	Relation between creep & time – nature of creep	T1,R1	1	
		4.7	Effect of creep	T1,R1	1	
		4.8	Shrinkage – types of shrinkage.	T1,R1	1	
		4.9	Factors in the choice of mix proportions	T1,R1	1	
		4.10	Durability of concrete – Quality Control of concrete	T1,R1	1	
		4.11	Statistical methods – Acceptance criteria	T1,R1	1	
		4.12	- Concepts Proportioning of concrete mixes by various methods -BIS methods of mix design	T1,R1	1	
				Total	12	Chalk & Talk,
V	CO5: K2	5.1	Ready mixed concrete	T1, R2	1	
		5.2	Light weight aggregate concrete- Cellular concrete	T1, R2	1	



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	5.3	No-fines concrete, High density concrete	T1, R2	1	PPT, Tutorial
	5.4	Fibre reinforced concrete – different types of fibres- Factors affecting properties of FRC, polymer concrete	T1, R2	1	
	5.5	Polymer concrete	T1,R2	1	
	5.6	Types of polymer concrete- Properties of polymer concrete	T1,R2	1	
	5.7	High performance concrete	T1,R2	1	
	5.8	Self-consolidating concrete	T1,R2	1	
	5.9	SIFCON	T1,R2	1	
	5.10	Self-healing concrete	T1,R2	1	
Total				12	
CUMULATIVE PROPOSED PERIODS				64	
Text Books:					
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION				
1	M.S. Shetty, Concrete Technology, Ed16, S. Chand &co, 2003				
2	Gambhir, Concrete Technology, Ed7, McGraw Hill, 2019				
Reference Books:					
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION				
1	Neville, properties of concrete,Ed19, McGraw Hill, 1999				
2	A.R. Shanthakumar, Ed2, Concrete Technology, Oxford, 2010				
Web Details					
1	https://elearn.nptel.ac.in/shop/nptel/concrete-technology/				

	Name	Signature with Date
i. Faculty	J.A.S.R.MARUTHI	J. A. S. R. Maruthi / 17/12
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