SRI VIDYA COLLEGE OF ENGINEERING & TECHNOLOGY

COURSE PLAN (THEORY)

ACADEMIC YEAR: 2018-2019

Subject Code	CE6002		L	P	T	C
Subject Title	CONCRETE TECHNOLOGY		3	0	0	3
Year / Dept / Sem	III/ CIVIL / VI	Regulation Year	2013			
Faculty Name / Desg / Dept	S. KEERTHI PRIYAN, AP / CIVIL Mr. R. MANIKANDAN, M.E.,/ Assistant Professor / CIVIL					
Course Prerequisite	1. To impart knowledge to the students on the properties of materials for concrete by suitable tests, mix design for concrete and special concretes.					

SYLLABUS

CE8404 **CONCRETE TECHNOLOGY** **L T P C**
3 0 0 3

UNIT I CONSTITUENT MATERIALS **9**

Cement-Different types-Chemical composition and Properties -Tests on cement-IS Specifications-Aggregates-Classification-Mechanical properties and tests as per BIS Grading requirements- Water-Quality of water for use in concrete.

UNIT II CHEMICAL AND MINERAL ADMIXTURES **9**

Accelerators-Retarders- Plasticisers- Super plasticizers- Water proofers - Mineral Admixtures like Fly Ash, Silica Fume, Ground Granulated Blast Furnace Slag and Metakaoline -Their effects on concrete properties

UNIT III PROPORTIONING OF CONCRETE MIX **9**

Principles of Mix Proportioning-Properties of concrete related to Mix Design-Physical properties of materials required for Mix Design - Design Mix and Nominal Mix-BIS Method of Mix Design - Mix Design Examples

UNIT IV FRESH AND HARDENED PROPERTIES OF CONCRETE **9**

Workability-Tests for workability of concrete-Slump Test and Compacting factor Test-Segregation and Bleeding-Determination of Compressive and Flexural strength as per BIS - Properties of Hardened concrete-Determination of Compressive and Flexural strength-Stress-strain curve for concrete-Determination of Young's Modulus.

UNIT V SPECIAL CONCRETES **9**

Light weight concretes - High strength concrete - Fibre reinforced concrete – Ferrocement - Ready mix concrete - SIFCON-Shotcrete – Polymer concrete - High performance concrete- Geopolymer Concrete

TOTAL: 45 PERIODS

TEXTBOOKS:

1. Gupta.B.L., Amit Gupta, "Concrete Technology", Jain Book Agency, 2010.
2. Shetty,M.S, "Concrete Technology", S.Chand and Company Ltd, New Delhi, 2003

REFERENCES:

1. Santhakumar,A.R; "Concrete Technology" , Oxford University Press, New Delhi, 2007
2. Neville, A.M; "Properties of Concrete", Pitman Publishing Limited, London,1995
3. Gambir, M.L; "Concrete Technology", 3 rd Edition, Tata McGraw Hill Publishing Co Ltd, New Delhi, 2007
4. IS10262-1982 Recommended Guidelines for Concrete Mix Design, Bureau of Indian Standards, New Delhi, 1998

Course Objectives (CO)	CO1: To impart knowledge to the students on the properties of materials for concrete by suitable tests, mix design for concrete. CO2: To impart knowledge to the students on the properties of the chemical and mineral admixtures used on the concrete. CO3: To impart knowledge to the students on the concrete design of nominal and design mix as per BIS. CO4: To impart knowledge to the students on the fresh and hardened concrete. CO5: To introduce the students to determine the flexural, compressive strength and young's modulus of concrete. C06: To impart knowledge to the students on the special concrete.
Expected Course Outcomes (ECO)	At the end of the course, the students will possess the knowledge on: ECO1: Properties of materials required for concrete tests on those materials ECO2: Design procedures for making conventional and special concretes.

Mapping of CO & PO(Specify the PO's) - ***(Fill the col.s with the legend given below)***

Programme Outcomes of Civil Engineering

a. Graduates of Civil Engineering program will be able to apply the fundamental knowledge of mathematics, science and engineering to solve problems pertaining to Civil Engineering.
b. Graduates of Civil Engineering program will be able to identify, analyze, formulate, and solve civil

Engineering problems in accordance with Indian Standard codes of practice.

c. Graduates of Civil Engineering program will be able to design a system component, or process to meet desired needs within realistic constraint such as economic, environmental, social, political, ethical, health safety, manufacturability, and sustainability.
d. Graduates of Civil Engineering program will able be to design and conduct experiments, as well as to analyze and interpret data.
e. Graduates of Civil Engineering will be able to use the techniques, skills, and modern civil engineering tools, necessary for engineering practice.
f. Graduates of Civil Engineering program will be able to incorporate specific contemporary issues into the identification, formulation, and solution of specific civil engineering problems.
g. Graduates of Civil Engineering program will be able to work on the basis of broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
h. Graduates of Civil Engineering program will be able to understand the role of Civil Engineers and ethical responsibility.
i. Graduates of Civil Engineering program will be able to function on multidisciplinary teams.
j. Graduates of Civil Engineering program will be able to deliver effective verbal, written, and graphical communications.
k. Graduates of Civil Engineering program will be able to recognize the need for, and an ability to engage in life-long learning
l. Graduates of Civil Engineering program will be able to perform economic analysis, quality checks, time/labour management and cost estimates related to design, construction, operations and maintenance of systems in the civil technical specialties.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	2	3	-	1	-	-	-	-	1
CO2	-	-	-	-	-	-	-	-	-	1	-	-
CO3	-	-	3	-	-	3	-	2	-	1	-	-
CO4	-	-	-	-	-	-	-	-	1	-	3	1
CO5	-	-	-	-	-	1	-	-	-	1	3	-
CO6	-	-	-	-	-	-	-	1	-	-	3	-

Bridging the Curriculum Gap (Additional Topics beyond syllabus / Seminars / Assignments)	BCG1: MATERIALS USED CONCRETE BCG2: SPECIAL CONCRETES USED IN BUILDINGS BCG3: ADMIXTURES USED IN SPECIAL AND NORMAL CONCRETE
Related Website URLs	www.slideshare.net/.../cv213-s5-concrete-**tecnology** www.universityquestions.in/.../concrete technology https://www.vidyarthiplus.com/vp/thread
Related Video Course Materials (min. 4 no.s)	http://freevideolectures.com/Course/2673/special concrete http://www.nptel.ac.in/courses/105107123/ https://www.youtube.com/watch?v=bvHAUpJbN0g–

UNIT I CONSTITUENT MATERIALS

S.No	Topic Name	Book – P. No	Teaching Aids	No of hrs	Cumulative hrs
1.	Introduction to unit I	T2 1-7	Brain storming	1	1
2.	Cement-Different types-Chemical	T2	Class room teaching &	2	3

	composition and Properties		PPT		
3.	Tests on cement	T2	Class room teaching &PPT	1	4
4.	IS Specifications- Aggregates- Classification- Mechanical properties and tests as per BIS grading requirements	T2	Class room teaching &PPT	3	7
5.	Water- Quality of water for use in concrete.	T2	Class room teaching	1	8
6.	Review of unit 1	T2	Revised unit 1	1	9
	UNIT II CHEMICAL AND MINERAL ADMIXTURES				
1.	Introduction to unit II	T2	Brain storming	1	10
2.	Accelerators-Retarders	T2	Class room teaching	1	11
3.	Plasticizers-Superplasticizers-Water proofers	T2	Class room teaching	2	13
4.	Mineral Admixtures like Fly Ash, Silica Fume	T2	Class room teaching	1	14
5.	Ground Granulated Blast Furnace Slag and Metakaoline	T2	Class room teaching	2	16
6.	Their effects on concrete properties	T2	Class room teaching	1	17
7.	Review of unit II	-	Revised unit 2	1	18
	UNIT III PROPORTIONING OF CONCRETE MIX				
1.	Introduction to unit III	T2	Brain storming	1	19
2.	Principles of Mix Proportioning- Properties of concrete related to Mix Design	T2	Class room teaching	2	21
3.	Physical properties of materials required for Mix Design	T2	Class room teaching	1	22
4.	Design Mix and Nominal Mix	T2	Class room teaching	1	23
5.	BIS Method of Mix Design	T2	Class room teaching	1	24
6.	Mix Design Examples	T2	Class room teaching & PPT	2	26
7.	Revision of unit III	-	Revised unit 3	1	27
	UNIT IV FRESH AND HARDENED PROPERTIES OF CONCRETE				
1.	Introduction to unit-IV	T2	Brain storming	1	28
2.	Workability-Tests for workability of concrete-Slump Test and Compacting factor Test-Segregation and Bleeding	T2	Class room teaching &PPT	2	30

3.	Determination of Compressive and Flexural strength as per BIS	T2	Class room teaching &PPT	1	31
4.	Properties of Hardened concrete	T2	Class room teaching &PPT	1	32
5.	Determination of Compressive and Flexural strength-Stress-strain curve for concrete	T2	Class room teaching &PPT	2	34
6.	Determination of Young's Modulus.	T2	Class room teaching &PPT	1	35
7.	Revision of unit IV	-	Revised unit 4	1	36
	UNIT V SPECIAL CONCRETES				
1.	Introduction to unit-V	T2	Brain storming	1	37
2.	Light weight concretes - High strength concrete- Fiber reinforced concrete	T2	Class room teaching &PPT	2	39
3.	Ferro cement - Ready mix concrete-SIFCON-Shotcrete	T2	Class room teaching &PPT	3	42
4.	Polymer concrete – High performance concrete- Geopolymer Concrete.	T2	Class room teaching &PPT	2	44
5.	Revision of unit V	-	Revised unit 5	1	45

	Prepared by	*Approved by*
Signature	R. Manikandan C. Ganesan 28/11/18	
Name	Mr. R.MANIKANDAN, M.E.,	Mr.P.GANESAN, M.E., Ph.D.,
Designation	Assistant Professor / CIVIL	HOD -CIVIL
Signed date	23.10.18 & 28/11/18	29/10/18

LEGEND:

METHODOLOGY TO MAP OBJECTIVE WITH OUTCOME

Course outcomes are achieved through

a. Suitable Analogies.
b. Class room teaching.
c. Assignments.
d. Tutorials
e. Weekly, monthly and model exams.
f. Brain storming.
g. Group discussion and role play.
h. Seminars

Endorsed