SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of **CIVIL ENGINEERING**		LP: **CE 18007** Rev. No: Date:23/07/2022
B.E/B.Tech/M.E/M.Tech : **Civil Engineering**	Regulation: **2013**	
PG Specialisation :N/A		
Sub. Code / Sub. Name : **CE 18007 Concrete Technology**		
Unit : **I**		

Unit Syllabus: CONSTITUENT MATERIALS

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.

Objective: to describe the various constituent materials used in concrete and their functions.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Introduction to Cement, Classification, properties of each type	2- pg.1-27	PPT
2	Different Types of Cement – Its chemical composition and Properties	2- pg.28-47	PPT
3	Tests on Cement Based on IS Specifications – Field test and Laboratory Test. Lab Test – Fineness and setting time test	2- pg.47-53	PPT & BB
4	Strength test, soundness test, heat of hydration test and chemical composition test.	2- pg.53-65	PPT & BB
5	Classification of Aggregates, source, size, shape, texture, strength, specific gravity and bulk density, moisture content	2- pg.67-79 5 – pg.63-95	PPT
6	bulking factor, cleanliness, soundness, Chemical properties, thermal properties, durability, sieve analysis, grading	2- pg.80-107 5 – pg.63-95	PPT
7	Tests on aggregates as per BIS grading requirements-determination of flakiness index, elongation index, clay, fine silt and fine dust, organic impurities, specific gravity, bulk density and voids.	2- pg.108-112 5 – pg.63-95	PPT & BB
8	Mechanical Properties – determination of aggregate crushing value, ten percent fines value, aggregate impact value, aggregate abrasion value.	2- pg.113-117 5 – pg.63-95	PPT & BB
9	Quality of water for use in Concrete	2- pg.119-123	PPT
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes

Sub. Code / Sub. Name: **CE 18007 Concrete Technology**

Unit : **II**

Unit Syllabus : CHEMICAL AND MINERAL ADMIXTURES

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

Objective: to explain the effects of chemical and mineral admixtures on the properties of concrete..

Session No *	Topics to be covered	Ref	Teaching Aids
1	Chemical Admixtures – accelerators–their effects on concrete properties	2-pg.149-173 5-pg. 104-133	PPT & BB
2	Chemical Admixtures – retarders –their effects on concrete properties	2-pg.148-149 5-pg. 104-133	PPT & BB
3	Chemical Admixtures – Plasticisers –their effects on concrete properties	2-pg.126-129 5-pg. 104-133	PPT & BB
4	Chemical Admixtures – super plasticizers, water proofers –their effects on concrete properties	2-pg.129-147 5-pg. 104-133	PPT & BB
5	Chemical Admixtures –water proofers –their effects on concrete properties	2-pg.149-173 5-pg. 104-133	PPT & BB
6	Mineral Admixtures – Fly ash–their effects on concrete properties	2-pg.174-183 5-pg. 134-140	PPT & BB
7	Mineral Admixtures –silica Fume –their effects on concrete properties	2-pg.183-186 5-pg.142	PPT & BB
8	Mineral Admixtures – Ground granulated blast furnace slag–their effects on concrete properties	2-pg.189-192 5-pg. 141	PPT & BB
9	Mineral Admixtures –metakaoline –their effects on concrete properties	2-pg.188	PPT & BB

Content beyond syllabus covered (if any):

* Session duration: 50 mins

Sub. Code / Sub. Name: **CE 18007 Concrete Technology**

Unit : **III**

Unit Syllabus : PROPORTIONING OF CONCRETE MIX

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 – ACI method of mix design - Mix Design Example

Objective: to design concrete mixes using BIS and ACI Codes

Session No *	Topics to be covered	Ref	Teaching Aids
1	Principles of proportioning	2-pg.458-462 5-pg.239-240 6-pg. 2-5	PPT & BB
2	Properties of concrete related to Mix Design.	2-pg.489-494 5-pg.241 6-pg. 2-5	PPT & BB
3	Physical properties required for mix design	2-pg.489-494 5-pg.241-252 6-pg. 2-5	PPT & BB
4	Design Mix and nominal Mix – BIS method	2-pg.489-498 5-pg.283-295 6-pg. 2-8	PPT & BB
5	Design Mix and nominal Mix –ACI method	2-pg.489-498 5-pg.283-295 7-pg. 2-8	PPT & BB
6	Method of mix Design	2-pg.489-494 5-pg.283-295 6-pg. 2-8	PPT & BB
7	Method of mix Design	2-pg.489-494 5-pg.283-295 6-pg. 2-8	PPT & BB
8	Design Examples	2-pg.489-494 5-pg.305-306 6-pg. 6-8	PPT & BB
9	Design Examples	2-pg.489-494 5-pg.305-306 6-pg. 8-11	PPT & BB

Content beyond syllabus covered (if any):

* Session duration: 50 mins

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Unit : IV

Unit Syllabus : FRESH AND HARDENED PROPERTIES OF CONCRETE 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.

Objective: to determine the properties of fresh and hardened concrete.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Tests for fresh concrete – workability- factors affecting workability	2-pg.218-221 5-pg.146-148	PPT & BB
2	Tests for fresh concrete – slump test	2-pg.222-224 5-pg.148-149	PPT & BB
3	Tests for fresh concrete – compacting factor test	2-pg.227-228 5-pg.149-150	PPT & BB
4	Tests for fresh concrete – segregation	2-pg.233-236 5-pg.159	PPT & BB
5	Tests for fresh concrete – bleeding	2-pg.233-236 5-pg.159	PPT & BB
6	Tests on Hardened concrete – Determination of Compressive strength	2-pg.420-428 5-pg.179-180	PPT & BB
7	Tests on Hardened concrete – Determination of flexural strength	2-pg.428-433 5-pg.180-183	PPT & BB
8	Stress-strain curve for concrete	2-pg.432 5-pg.190-192	PPT & BB
9	Determination of Young's Modulus	2-pg.432 5-pg.192-194	PPT & BB

Content beyond syllabus covered (if any):

* Session duration: 50 mins

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Sub. Code / Sub. Name: CE 18007 Concrete Technology

Unit : V

Unit Syllabus : SPECIAL CONCRETES

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

Objective: select the suitable special concretes for different practical situations

Session No *	Topics to be covered	Ref	Teaching Aids
1	Light weight concrete	2-pg.504-514 5-pg.463-474	PPT & BB
2	High strength concrete	2-pg.318-321	PPT & BB
3	Fibre reinforced concrete	2-pg.526-531 5-pg.506-531	PPT & BB
4	Ferrocement	2-pg.566-570 5-pg.495-505	PPT & BB
5	Ready mix concrete	2-pg.248-250	PPT & BB
6	SIFCON, Polymer concrete	2-pg.532-542 5-pg.532-540	PPT & BB
7	Shotcrete	2-pg.119-123 5-pg.488-494	PPT & BB
8	High Performance Concrete	2-pg.321-323 5-pg.576-579	PPT & BB
9	Geo polymer concrete	2-pg.599-602	PPT & BB

Content beyond syllabus covered (if any):

* Session duration: 50 mins

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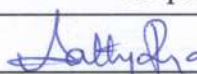
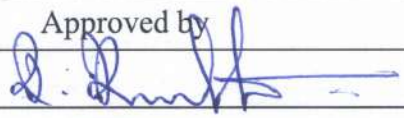
REFERENCES:

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
3. Santhakumar,A.R; "Concrete Technology" , Oxford University Press, New Delhi, 2007
4. Neville, A.M; "Properties of Concrete", Pitman Publishing Limited, London,1995
5. Gambir, M.L; "Concrete Technology", 3rd Edition, Tata McGraw Hill Publishing Co Ltd, New Delhi, 2007
6. IS10262-2009 Recommended Guidelines for Concrete Mix Design, Bureau of Indian Standards, New Delhi.
7. ACI : 211.1-91, (reapproved 2002) - Standard Practice for selecting proportions for normal, heavyweight, and mass concrete : American Concrete Institute

	Prepared by	Approved by
Signature		
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Date	23/07/2022	23/07/2022
Remarks : The same lesson plan is followed for the academic year 2022-23.		
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD