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General Handout for all courses appended to the time table

Course Code : 19CVT34	Dept.: Civil Engineering
Course Title : Construction Materials, Stores and Inventory Control	Semester: 3 rd
Instructor-in-charge : Dr.Nagaraj V K	Academic Year: 2020-21
Lab. Instructor :	

Subject Description:


The main objective of this course is to make the student aware of various construction materials employed for different types of construction activities. At the end of this course the student shall have a reasonable knowledge about ingredients of concrete, reinforcement and material testing along with stores and Inventory management.

Text Books:

1. Rangawala, Building Construction, Charotar Publishing House Pvt. Ltd., India, 33rd Edition, 2019.
2. S. C. Rangawala, “Engineering Materials (Material Science)”, Charotar Publishing House, India, 8th Edition.
3. M. S Shetty, “Concrete Technology Theory and Practice”, S. Chand & Co Ltd., New Delhi, 2007.
4. P. Gopalakrishnan and M. Sundaresan, Materials Management and Integrated Approach, PHI Learning Pvt. Ltd., New Delhi, 34th Edition, ISBN: 978-81-203-0027-9, 2012.

Reference Books:

1. S. K. Duggal: “Building materials”, New Age International Publishers, India, 4th Revised Edition, ISBN 10: 81224337900.
2. IS 3495-1976: Code of practice for Methods of Tests of Burnt Clay Building Bricks
3. M. L Gambhir, “Concrete Technology”, 4th edition, McGraw-Hill, 2009.
4. A. R Santhakumar, “Concrete Technology”- Oxford University Press, New Delhi, 2007.
5. IS 1786: Code of practice for High Strength Deformed Steel Bars and Wires For Concrete Reinforcement—Specification.
6. B.C. Punmia, Ashok Kumar Jain, Arun Kumar Jain , “Soil Mechanics and Foundations”, 2017, ISBN-13: 978-8170087915.


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E Resource:

1. <https://nptel.ac.in/courses/105/102/105102088/>
2. <https://nptel.ac.in/courses/105/106/105106053/>
3. <https://www.rejinpaul.com/2015/03/ce6401-construction-materials-syllabus-notes-question-papers-civil-4th-sem.html>
4. https://www.researchgate.net/publication/339685554_Introduction_to_Composite_Materials
5. <http://www.understandconstruction.com/plywood.html>
6. <https://www.scribd.com/document/356375803/Unit-1-Laminates-Veneers>
7. <https://civilengineering.blog/2017/11/12/thermocool-building-material/>

PREREQUISITES


1 CIVIL ENGINEERING FOUNDATION	Self study/ Online/ Outsourced	Referral Document	Remarks
<i>A good understanding of the above topics is essential</i>			

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LECTURE PLAN


Topic	Topic Details	Number of Lectures	Cumulative lecture hrs.	Unit/ Chapter Reference
Overview	The course area contains requirement and applications of stones, bricks, plastics and insulation materials. Tests on cement, fine aggregate and coarse aggregate. Manufacturing process of concrete. Types of reinforcement. Uses of timber, paints, varnishes, distempers, bitumen, sealants, glass, ceramics and composite materials along with introduction to stores and inventory management.			
Module 1	Stone as building material, requirement of good building stones.	10	10	T2: Page No. 1-48, 69-108 T1: Page No. 237-266 R2: Page No. 1-7
	Dressing of stones, deterioration and preservation of stone work.			
	Bricks; classification, manufacturing of clay bricks.			
	Requirement of good bricks, field and laboratory tests on bricks.			
	Test on bricks: Compressive strength, water absorption.			
	Test on bricks: Efflorescence, dimension and warpage.			
	Cement Concrete blocks, Autoclaved Aerated Concrete blocks.			
	Sizes and Requirement of good blocks, types of masonry.			
	Plastics and Insulation materials, classification, properties, applications. Structure of building materials.			
Revision	Unit - 1 Brush up and video presentation.			
Module 2	Cement – Manufacturing of cement.	10	20	T3: Page

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	Types of cements and their uses.			No. 1-119
	Field test and acceptance.			
	Fine aggregate – Natural and manufactured.			
	Sieve analysis and zoning.			
	Specify gravity, bulking, moisture content, deleterious materials.			
	Coarse aggregate – Natural and manufactured: Importance of size, shape and texture.			
	Grading of aggregates, Sieve analysis, Specific gravity			
	Flakiness and elongation index, Crushing, impact and abrasion tests.			
Revision	Unit - 2 Brush up and video presentation.			
AAT/ Quiz on Unit - 1 and Unit - 2				
Module 3	Ingredients, Manufacturing Process – batching plants.			T3: Page No. 253-314, 537 – 642, 128-232 R5: Page No. 1-9
	Manufacturing Process – Mixing, transporting.			
	Manufacturing Process – Placing, compaction of concrete.			
	Manufacturing Process – Curing and finishing.			
	Ready mix concrete, mix specification	10	30	
	Special concretes, properties and admixtures.			
	Introduction, types of reinforcement. Prestressing steel, metallic – nonmetallic – sizes – configuration.			
	Test methods as per IS 1786			
	Coated steel reinforcement – types and performance, Bond strength and corrosion.			

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Revision	Unit - 3 Brush up and video presentation.			
Module 4	Timber, market forms, industrial timber.			
	Plywood, veneer, thermocol, panels of laminates.	10	40	T2: Page No. 273-465 T1: Page No. 527-548 R6: Page No. 887-903 E5: Page No. 1-17
	Steel – aluminum and other Metallic Materials – composition.			
	Aluminium composite panel – mechanical treatment.			
	Paints – varnishes – distempers, bitumen and sealants.			
	Glass, ceramics, sealants for joints.			
	Fibre glass reinforced plastic, clay products, refractories.			
	Composite materials – types – applications of laminar composites.			
	Fibre textiles – geomembrane, Geotextiles for earth reinforcement.			
Revision	Unit - 4 Brush up and video presentation.			
AAT/ Quiz on Unit - 5 and Unit - 4				
Module 5	Stores Management - Purpose of stores	10	40	T4: Page No. 151-155, 203-207
	Location and Layout.			
	Cost aspects and Productivity.			
	Problems and developments.			
	New developments in storing.			
	Inventory Management – Introduction.			
	Raw materials, WIP.			
	Finished goods, Norms of inventory.			
	Peculiarities in India, Relevant			

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	costs.			
Revision	Unit - 5 Brush up and video presentation.			
Future scope of learning The course is the pivotal criteria in construction sector and a basic of the course plays a vital role in upcoming subjects and labs in higher semesters.				

Evaluation Scheme:

Component	Duration	Weightage	Date (Time)
CIE 1	90 min	20%	29/09/2020
CIE 2	90 min	20%	07/11/2020
AIT 1	2 days	5%	25/09/2020
AIT 2	2 days	5%	20/11/2020
Make up CIE	90 min	20%	26/11/2020
SEE	270 min	50%	11/12/2020
Make up SEE	270 min	50%	08/01/2021
Total		100%	

Dr.Nagaraj V K
Course-in-charge