COURSE HANDOUT

BUILDING CONSTRUCTION MATERIALS AND DRAWING (CE-802C)

B.E. (CE) - 8TH SEMESTER

ACADEMIC YEAR (2023-24)

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Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
CE-802 C	Building Construction, Materials and Drawing	PEC	3	3	0	0	50	100	150

COURSE OUTCOMES

At the end of the course the student will be able to:	
CO1	Describe the environmental impact of materials, conduct life-cycle assessments, and make informed material selections to optimize performance.
CO2	Evaluate basics of green design and understand sustainable development concept and practices in construction.
CO3	Articulate the comprehensive understanding of structural steel, high tensile steel, carbon composites, and the use of plastics in construction.
CO4	Explain the various types of roofs, floors, doors, and window systems.
CO5	Analyze the properties and characteristics of lime, bricks, cement, and mortar, and apply this knowledge to their selection and utilization in construction projects.

Section A

Unit-I

Engineering Materials for Sustainability. Environmental impact of materials; life-cycle assessment; material selection to optimize performance; evaluation of green construction materials. Construction & Drawing - Introduction, various terms used, stone masonry-Dressing of stones, Classifications, safe permissible loads, Brick masonry-bonds, laying, structural brick work-cavity and hollow walls, reinforced brick work, Defects in brick masonry, composite stone and brick masonry, glass block masonry.

(9 Hours)

Unit-II

Green Building Materials and Indoor Environment Quality: Low emitting materials; Building and material reuse; Construction waste management; Regional materials; Life cycle cost assessment of building materials and products; Factors affecting indoor environment quality; Ventilation and filtration; Building materials and finishes. Design, production, application and quality control of construction materials unique to civil engineering.

(9 Hours)

Unit-III

Design, production, application, specification, and quality control of construction materials unique to civil engineering. Structural Steel, High Tensile Steel, Carbon Composites; Plastics in Construction; 3D printing; Recycling of Construction & Demolition wastes Prerequisite.

(9 Hours)

Section B

Unit- IV

Roofs and Floors-Types of roofs, roof trusses-king post truss, queen post truss etc. Floor structures, ground, basement and upper floors, various types of floorings. Doors and Windows-Locations, sizes, types of doors and windows, fixtures and fasteners for doors and windows.

(9 Hours)

Unit-V

Construction Engineering Materials-Design, production, application, specification, and quality control of construction materials unique to civil engineering. Construction Engineering Materials- Lime, Bricks, Cement and Mortar. (9 Hours)

Textbooks

S.No.	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	Building construction illustrated	Francis D.K. Ching	Wiley India, USA,	6th (2019)
2	A to Z Building Construction	Sandip Mantri	Satya Prakashan New Delhi	18th (2020)

Reference Books

S.No.	Name of the Books	Name of the Author	Publisher Name	Edition (Pub. Yr.)
1	Building Construction	S. S. Bhavikatti	VPH Pvt. Ltd., New Delhi	1st (2012)
2	Building Construction	S. C. Rangawala	Charotar Publication	33rd (2016)

COURSE PLAN		
Unit-I Building Construction and Drawings		
S.No.	**Topics**	**Recommended Books**
1	Sustainable engineering materials.	Book 2, Ch.2(Reference Book)
2	Environment impact assessment.	Book 2, Ch.2
3	Evaluation of green construction materials.	Book 2, Ch.2
4	Stone Masonary.	Book 2, Ch.10
5	Dressing of stones.	Book 2, Ch.10
6	Brick Masonary.	Book 2, Ch.11
7	Brick bonds and its classification.	Book 2, Ch.11
8	Reinforced brick work.	Book 2, Ch.11
9	Glass block masonary.	Book 2, Ch.11
Unit-II Green Buildings and its Designs		
10	Green Building Materials and indoor environment quality.	Book 1, Ch.6, PPT's
11	Low emitting materials.	Book 1, Ch.6
12	Construction waste materials.	Book 1, Ch.6
13	Life cycle cost assessment of building materials.	Book 1, Ch.6
14	Ventilation and filtration.	Book 2, Ch.21

15	Building materials and its finishing.	Book 1, Ch.1,2,3
16	Quality control of construction materials.	Book 1, Ch.2,3
17	Various factors controlling the indoor environment of a building.	Book 1, Ch.6
18	Green buildings in India.	Book 1, Ch.6
Unit-III Steel Works		
19	Design of steel structures.	Book2, Ch.27
20	Production of steel.	Book2, Ch.27
21	Quality control of construction steel materials.	Book2, Ch.27
22	Structural steel, high tensile steel.	Book2, Ch.27
23	Composition of different types of steels used in construction.	Book2, Ch.27
24	Use of plastics in construction- PVC, CPVC etc.	Book2, Ch.27
25	3D Printing.	Book2, Ch.27
26	Recycling of construction and demolition wastes.	Book2, Ch.27
27	Use of Recycled materials in construction.	Book2, Ch.27
Unit-IV Roofs, Floors, Doors and Windows		
28	Roofs and its types.	Book2, Ch.24
29	Classification of roofs.	Book2, Ch.24
30	Roof trusses- King post and Queen post trusses.	Book2, Ch.24
31	Flooring structures.	Book2, Ch.23
32	Types of floorings used in the construction practice.	Book2, Ch.23
33	Doors and its classifications.	Book2, Ch.21
34	Fixtures and fasteners used in doors.	Book2, Ch.21
35	Classification of windows.	Book2, Ch.21
36	Fixtures and fasteners used in Windows.	Book2, Ch.21
Unit-V Construction and Building Materials		
37	Cement as building material and its types according to IS codal provisions.	Book1, Ch.1
38	Lime and its classification.	Book1, Ch.1
39	Aggregates.	Book1, Ch.2
40	Soil, Bitumen.	Book1, Ch.1
41	Mortar, Plastics.	Book1, Ch.2
42	Indian standards for HYSD, TMT bars.	Book1, Ch.1
43	Standards and testing of different types of bricks.	Book1, Ch.1
44	Construction Sand and its classification.	Book1, Ch.2
45	AAC Blocks, Stones as building material	Book1, Ch.2

ADDITIONAL WEB RESOURCES

1.	**NPTEL:** Video lectures on Building Material, Construction and Drawing Lecture series by Dr.B. Bhattacharjee, Department of Civil Engineering, IIT Delhi. https://nptel.ac.in/courses/105102088/
2.	**NPTEL:** Video lectures on Building Material, Construction and Drawing Lecture series by Prof. Sumana Gupta, Department of Civil Engineering, IIT Kharagpur https://nptel.ac.in/courses/124105013/

GRADING AND ASSESSMENT

- **Sessional Test**: 20 marks
- **Assignment**: 20 marks
- **Attendance**: 10 marks
- **Final Examination**: 100 marks

COURSE POLICIES

- **Attendance**: Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity**: MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions**: Assignments and projects must be submitted by the specified timelines.

FACULTY INFORMATION

- **Office Hours**

  Monday (12:15 PM - 12:30 PM)
  Friday (12:15 PM - 12:30 PM)

- **Contact Information**
  sarvdaman.civ@mietjammu.in