

Daffodil Polytechnic Institute

Institute Code: 50238

Department of Civil Technology



Lesson Plan

Academic Session:	January 2025 to June 2025
Course Title:	Civil Engineering Materials
Course Code:	26411
Semester:	1 st Semester
Credit Hour:	3
Name & Designation of Teacher:	Fawzia Akter Rumki Instructor, Department of Civil Technology, DPI
Class Hours:	Monday: 11:45- 12:30 (CT A) Tuesday: 11:00 - 01:15 (CT A, Practical) Wednesday: 10:15- 11:00 (CT A)
E-mail:	civil2@bsdi-bd.org
Reference Book:	1. Engineering Materials, Gurcharan Singh 2. Engineering Materials, Sharma SK and Mathur 3. A Textbook of Engineering Materials, G.J.Kulkarni

Marks Distribution:

Marks Distribution (for 150 Marks)				Class Timing Distribution	
Theory Marks		Practical Marks		Particulars	Time
Midterm	20	PC	25	Greeting with students	05 Minutes
Class test	10	PF	25	Previous Class Review	05 Minutes
Quiz test	10	-		Present Class Topic Discussion and Lecture Delivery	30 Minutes
Final	60	-		Present Class Topics Review	05 Minutes
Total	100	Total	50		

Short Description:

Civil Engineering diploma holders play a vital role in supervising diverse construction projects, requiring the effective use of materials such as stones, bricks, sand, cement, lime, tiles, timber, wood-based products, paints, varnishes, metals, and other construction materials. To excel in their responsibilities, they must possess comprehensive knowledge of the properties, applications, and availability of these materials, as well as the skills to conduct tests to assess their suitability for various construction purposes. Furthermore, understanding material specifications, particularly those outlined in PWD and BNBC standards, is crucial for ensuring quality control and adherence to construction norms.

Subject Aims:

Upon successful completion of this course, students will be able to:

1. **Identify and classify** various types of civil engineering materials.
2. **Perform field and laboratory tests** to evaluate the quality of construction materials.
3. **Explain** the characteristics, applications, and specifications of construction materials.
4. **Understand** modern building materials and their practical applications in construction.
5. **Apply knowledge** of materials to ensure quality control in civil engineering projects.

Date	Lecture	Chapter /Exam	Learning Area	Learning Outcome	Class/Lab Supporting Equipment
Week- 1	Class-1: Introduction to Civil Engineering Materials	Chapter-1	Definition, classification of civil engineering materials, and list of materials.	Students will understand the basics of civil engineering materials.	Whiteboard, multimedia presentation.
	Class-2: Stone	Chapter-2	Definition, classification, characteristics of good stones, use, field, and laboratory tests of stone.	Students will identify and classify stones used in construction.	Diagrams, stone samples.
	Class- 3	Lab- 1	Conduct field test of stone.	Students will perform and analyze stone tests.	LA Machine, acid test kit.
Week- 2	Class-4	Chapter-2	Quiz-1		Answer Sheet
	Class- 5: Brick and Hollow Block	Chapter-3	Types, raw materials, properties, field tests.	Students will describe the characteristics and testing methods for bricks.	Whiteboard, multimedia presentation.
	Class- 6	Lab -2	Conduct field test of bricks.	Students will identify and classify the bricks.	Brick samples, testing equipment.
Week- 3	Class- 7: Manufacturing and Applications of Bricks	Chapter-3	Brick sizes, uses, advantages, and disadvantages of hollow blocks.	Students will analyze the suitability of bricks and blocks in construction.	Multimedia presentation.

	Class- 8	Lab -3 & 4	Conduct laboratory tests of bricks (compression test and water absorption tests).	Students will perform and evaluate tests on bricks.	Lab equipment.
	Class- 9	Chapter-3	CT-1		Answer Sheet
Week- 4	Class- 10 Sand	Chapter- 4	Classify sand based on sources, and describe field and lab tests.	Students will evaluate sand quality and its suitability for construction.	Whiteboard, multimedia presentation.
	Class- 11	Lab -5	Field test of sand.	Students will evaluate sand quality and its suitability for construction.	Sand samples, tools
	Class- 12 Sand (Math analysis)	Chapter- 4	Sieve analysis and determine the fineness modulus of sand.	Students will understand the approximate size of sand and it also helps to understand which type of sand will be used for which purpose.	Whiteboard.
Week- 5	Class- 13	Quiz-2	Math (Fineness Modulus)		Answer Sheet
	Class- 14	Lab -6	Perform laboratory tests of sand. (Find FM of sand).	Students will understand the approximate size of sand.	Sand samples, tools
	Class- 15: Cement and Lime	Chapter- 5	Define cement and lime, raw materials, and manufacturing process.	Students will understand cement production and its components.	Multimedia presentation, flowcharts
Week- 6	Class- 16: Cement and Lime	Chapter- 5	Describe laboratory tests of cement (fineness, consistency, strength, setting time).	Students will perform key cement tests and analyze results.	Whiteboard, multimedia presentation.

	Class- 17	Lab -7	Field test of cement.	Through this test, students will be able to learn about the quality of cement instantly.	Cement samples, testing equipment.
	Class- 18: Tiles	Chapter- 6	Define different types of tiles and their uses	Students will identify the properties and applications of various tiles.	Tile samples, diagrams
Week- 7	Class- 19	Chapter- 5	CT-2		Answer Sheet
	Class- 20	Lab -8	Perform fineness test of cement.	Students will be able to know the grading level or fineness level of cement through this test.	Cement samples, testing equipment
	Class- 21: Timber and Wood Products	Chapter-7	Classify timber, explain defects, and describe seasoning methods.	Students will recognize timber types, defects, and preparation methods.	Whiteboard, multimedia presentation.
Week- 8	Class- 22: Timber and Wood Products	Chapter-7	Describe wood-based products like plywood, blockboard, MDF, and gypsum board.	Students will understand the manufacturing and application of wood-based materials.	Whiteboard, multimedia presentation.
	Class- 23	Lab -9	Bend test of mild steel specimen.	Students will be able to determine the modulus of elasticity, bending stress etc. of metals.	Lab equipment.
	Class- 24: Glass	Chapter-8	Define types of glass (tempered, float, fiber, etc.) and their uses.	Students will understand the importance of glass in construction.	Glass samples, multimedia presentation
Week- 8	Class- 25	Chapter-7	CT-3		Answer Sheet

	Class- 26	Lab -10	Observe wood and artificial wood	Students will identify veneers, plywood, laminated board, block board, fiber board, and gypsum board.	Lab equipment.
	Class- 27: Paints and Varnishes	Chapter-9	Explain types of paints, varnishes, and their properties.	Students will identify the appropriate use of paints and varnishes for various surfaces.	Whiteboard, multimedia presentation.
Week- 9	Class- 28	Chapter-8	Quiz-3		Answer Sheet
	Class- 29 Metals and Plastics	Chapter-10	Classify metals (steel, aluminum) and plastics (thermoplastic, thermosetting).	Students will compare metals and plastics and understand their properties.	Metal and plastic samples, multimedia
	Class- 30 Insulating Materials & Geotextiles	Chapter-11	Define insulating materials and geotextiles, and describe their uses.	Students will learn about sound and thermal insulation and geotextile applications.	Whiteboard, multimedia presentation.
Week- 10	Class- 31 Construction Chemicals & Bitumen	Chapter-12	Explain construction chemicals, waterproofing materials, and bitumen uses.	Students will understand modern construction aids for quality and durability.	Whiteboard, multimedia presentation.
	Class- 32 Modern Materials	Chapter-12	Discuss modern materials like ceramics, plastics, and composites.	Students will identify advantages and applications of modern construction materials.	Multimedia presentation
	Class- 33	Chapter-10	CT-4		Answer Sheet
Syllabus Review Class					