



**R. K. Institute of Engineering and Technology**  
Approved by AICTE, New Delhi and Affiliated to SC TE&VT, Odisha

## **CIVIL ENGINEERING**

**SEMESTER : 3<sup>rd</sup>**

**FROM :01/07/2026 TO :05/11/2026**

**NAME OF THE FACULTY : Er. ARNAPURNA SETHI**

**SUBJECT : BUILDING MATERIAL & CONCRETE TECHNOLOGY**

**TOTAL CLASS AVAILABLE IN SEMESTER: 45 nos**

**NO. OF PERIODS : 03/ WEEK**

| <b>Class No.</b> | <b>Unit</b> | <b>Topic / Sub-topic</b>                                                                                          | <b>Teaching Method</b>  | <b>Learning Outcome</b>                       |
|------------------|-------------|-------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------|
| 1                | I           | Introduction to Construction Materials, Scope in Building, Transportation, Environmental & Irrigation Engineering | Lecture                 | Understand the role of construction materials |
| 2                | I           | Selection of Materials, Classification (Natural, Artificial, Special, Finishing & Recycled Materials)             | Lecture + Discussion    | Classify construction materials               |
| 3                | II          | Building Stones – Requirements, Properties & Uses                                                                 | Lecture + Specimens     | Identify suitable building stones             |
| 4                | II          | Quarrying, Dressing Methods & Tools for Stone                                                                     | Lecture + Demonstration | Explain stone processing                      |
| 5                | II          | Timber – Structure, Properties & Uses                                                                             | Lecture                 | Understand timber characteristics             |
| 6                | II          | Seasoning, Preservation, Defects in Timber & Bamboo in Construction                                               | Lecture + Samples       | Explain timber treatment methods              |
| 7                | II          | Asphalt, Bitumen & Tar – Properties and Uses                                                                      | Lecture                 | Differentiate paving materials                |
| 8                | II          | Lime – Types, Properties & Uses                                                                                   | Lecture                 | Select suitable lime for construction         |
| 9                | II          | Types of Soil, Sand Properties & Uses, Classification of Coarse Aggregate                                         | Lecture                 | Identify natural construction materials       |
| 10               | II          | Revision & Unit Test                                                                                              | Practice/Test           | Assess Unit-II                                |
| 11               | III         | Brick Earth, Conventional, Modular & Standard Bricks                                                              | Lecture                 | Explain brick classification                  |
| 12               | III         | Manufacturing of Burnt Clay Bricks, Fly Ash Bricks & Aerated Concrete Blocks                                      | Lecture + Flow Chart    | Describe manufacturing processes              |



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|-----------|------|-------------------------------------------------------------------|-------------------------|-----------------------------------------|
| 13        | III  | Characteristics, Classification & Field Tests of Bricks           | Lecture + Demonstration | Evaluate brick quality                  |
| 14        | III  | Flooring Tiles, Precast Concrete Blocks & Their Uses              | Lecture                 | Identify flooring and precast materials |
| 15        | III  | Plywood, Particle Board, Veneers & Laminated Boards               | Lecture                 | Explain engineered wood products        |
| 16        | III  | Types of Glass, Ferrous & Non-Ferrous Metals and Their Uses       | Lecture                 | Identify construction materials         |
| 17        | III  | Revision & Unit Test                                              | Practice/Test           | Assess Unit-III                         |
| 18        | IV   | Cement – Composition & Manufacturing Process (Dry & Wet Process)  | Lecture + Flow Chart    | Explain cement manufacture              |
| 19        | IV   | Types of Cement & Field Tests                                     | Lecture                 | Identify different cements              |
| 20        | IV   | Physical Properties of OPC & PPC                                  | Lecture                 | Explain cement properties               |
| 21        | IV   | Laboratory Tests on Cement                                        | Demonstration           | Describe cement testing                 |
| 22        | IV   | Storage of Cement & Effect of Storage                             | Lecture                 | Understand storage practices            |
| 23        | IV   | Special Cements & BIS Applications                                | Lecture                 | Select suitable cement types            |
| 24        | IV   | Aggregates – Classification, Properties & Requirements            | Lecture                 | Classify aggregates                     |
| 25        | IV   | Fine Aggregates – Properties, Bulking, Grading & Fineness Modulus | Lecture + Numerical     | Explain fine aggregate testing          |
| 26        | IV   | Coarse Aggregates – Properties & Mechanical Tests                 | Lecture + Demonstration | Evaluate coarse aggregates              |
| 27        | IV   | Water for Concrete & Admixtures                                   | Lecture                 | Explain water quality and admixtures    |
| 28        | IV   | Revision & Unit Test                                              | Practice/Test           | Assess Unit-IV                          |
| 29        | V    | Concrete – Grades & IS 456 Provisions                             | Lecture                 | Understand concrete grades              |
| 30        | V    | Water-Cement Ratio & Duff Abram's Law                             | Lecture + Numerical     | Explain w/c ratio significance          |
| 31        | V    | Fresh Concrete – Workability & Factors Affecting Workability      | Lecture                 | Explain fresh concrete properties       |
| 32        | V    | Workability Tests – Slump Cone, Compaction Factor & Vee-Bee Test  | Demonstration           | Describe workability tests              |

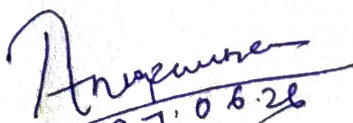


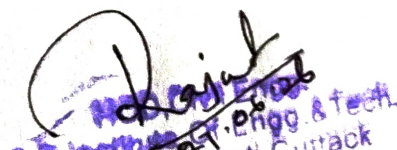


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| 33        | V    | Segregation, Bleeding & Hardened Concrete Properties         | Lecture                 | Explain hardened concrete behavior                 |
| 34        | V    | Revision & Unit Test                                         | Practice/Test           | Assess Unit-V                                      |
| 35        | VI   | Concrete Mix Design – Objectives & IS 10262 Procedure        | Lecture                 | Explain mix design steps                           |
| 36        | VI   | Non-Destructive Testing – Rebound Hammer & UPV Test          | Lecture + Demonstration | Understand NDT methods                             |
| 37        | VI   | Importance of NDT & Revision                                 | Discussion              | Explain quality assessment                         |
| 38        | VII  | Concreting Operations – Batching, Mixing & Transportation    | Lecture                 | Describe concreting operations                     |
| 39        | VII  | Placing, Compaction, Curing & Finishing of Concrete          | Lecture + Demonstration | Explain quality concreting practices               |
| 40        | VII  | Formwork – Types, Materials, Requirements & Stripping Time   | Lecture                 | Understand formwork systems                        |
| 41        | VII  | Waterproofing & Joints in Concrete Construction              | Lecture                 | Explain waterproofing methods                      |
| 42        | VIII | Special Concrete – RMC, FRC, HPC, SCC & Lightweight Concrete | Lecture                 | Identify special concretes                         |
| 43        | VIII | Cold Weather Concreting                                      | Lecture                 | Explain precautions during cold weather concreting |
| 44        | VIII | Hot Weather Concreting, Comprehensive Revision               | Lecture + Practice      | Explain precautions during hot weather concreting  |
| 45        | VIII | Final Revision, Doubt Clearing & Internal Assessment         | Discussion/Test         | Complete course assessment                         |

  
27.06.26  
Sign of Faculty

  
R. K. Institute of Engg. & Tech.  
Kantapada, Cuttack  
Sign of HOD

  
Principal  
R. K. INSTITUTE OF ENGG & TECH  
KANTAPADA, NALL-CUTTACK