Civil Engineering Materials

Course Code	Credit Hours
CE 102	3-0

Course Description

This course is concerned with introductory overview of various properties and applications of common construction materials that provides bridge between engineering mechanics and design. Materials include cement, sand, natural stones, concrete, wood, steel, and roadway materials. Conception of various concrete materials and techniques of mixing, pouring and curing is also presented. For pavement materials, various topics comprising of basic properties of asphalt, bitumen and aggregates are discussed. After this course, student will gain comprehensive knowledge of selection criteria, applications and proper use of materials in civil infrastructure projects and in building construction.

Text Book:

1. Engineering Materials by R.K. Rajput.
2. Engineering Materials by Surrendra Singh.
3. Building Materials by S.K Duggal.

Reference Book:

1. Materials of Construction by R.C. Smith.
2. Materials of Construction by ZH Syed.

Prerequisites:

Nil

ASSESSMENT SYSTEM FOR THEORY

	Without Project (%)	With Project/Complex Engineering Problems (%)
Quizzes	15	10-15
Assignments	10	5-10
Mid Terms	25	25
Project	-	5-10
End Semester Exam	50	45-50

ASSESSMENT SYSTEM FOR LAB

Lab Work/ Psychomotor Assessment/ Lab Reports	70%
Lab Project/ Open Ended Lab Report/ Assignment/ Quiz	10%
Final Assesment/ Viva	20%

Teaching Plan

Week No	Topics/Learning Outcomes
1	Building materials – General Concepts
2	Rocks and Stones, Characteristics, and selection of building stones
3	Bricks, Classification and manufacturing of Bricks Testing on Bricks, Types of Bricks masonry bonds, selection of Bricks
4	Cement and types of cement concretes, Manufacturing, and selection and testing of Cement material
5-6	Classification of concrete, Admixtures Mixing, Placing and Handling of concrete Workability of concrete
	Mid Semester Exam
7	Metals & Alloys, Rusting and Corrosion, Preservation, and treatment, selection of Metals & steel
8	Wood, Characteristics and Classification of Timber Selection and Defects in Timber, Preservation of Timber
9	Paints, selection and types of Paints, Characteristics & Defects in paints
10-12	Glass, Lime, Gypsum, Tiles, Rubber, Asbestos – General Concepts Plastics, Application, and selection of plastics in building construction
13-14	Tar, Bitumen, Asphalt, Application, and selection of Bituminous materials
15-16	Application and sustainability perspective of civil engineering materials Stone, Cement, Concrete, Wood, Metals, and asphalt
17-18	End Semester Exam

Practical: Nil