

Kerala Technological university KTU First year B.tech Syllabus for **BE101-01 INTRODUCTION TO CIVIL ENGINEERING**

**Course No. :** BE101-01

**Course Name:** INTRODUCTION TO CIVIL ENGINEERING

**L-T-P-Credits:** 2-1-0-3

**Year of Introduction:** 2015

**Course Objectives:**

1. To provide the students an overview of the profession of Civil Engineering.
2. To give the students an illustration of the use and properties of various building materials and explain the building construction aspects.

**Syllabus:**

Civil Engineering as a profession; General introduction to history of Civil Engineering; types and classification of buildings; setting out of a building; Building materials - Stones, Bricks, Tiles, Cement, Aggregate, Cement mortar, Timber, Steel; Building Construction - Stone Masonry, Brick Masonry, Floors and flooring, Roofs and roof coverings.

**Expected outcome:**

1. Students will be able to explain the importance of Civil Engineering in the infrastructural development of the society.
2. They will be able to illustrate the types, uses and properties of various building materials.
3. Students will be able to explain the method of construction of different components of a building.

**Text Book:**

1. Satheesh Gopi, Basic Civil Engineering, Pearson Publishers
2. Ketki Rangwala Dalal, Essentials of Civil Engineering, Charotar Publishing House

**References:**

1. Anurag A. Kandy, Elements of Civil Engineering, Charotar Publishing house
2. Rangwala S C and Ketki B Dalal, Engineering Materials, Charotar Publishing house
3. Rangwala S C and Ketki B Dalal, Building Construction, Charotar Publishing house
4. Michael S Mamlouk and John P Zaniewski, Materials for Civil and Construction Engineering, Pearson Publishers.
5. McKay, W. B. and McKay, J. K., Building Construction Volumes 1 to 4, Person India Education Services
6. W. F. Chen and J. Y. Richard Liew (Eds.), The Civil Engineering Handbook, Second Edition, CRC Press (Taylor and Francis)

**Module 1 Contents**

General introduction to Civil Engineering – History of Civil Engineering - Relevance of Civil Engineering in the overall infrastructural development of the country. Types and classification of structures – buildings, towers, chimneys, bridges, dams, retaining walls, water tanks, silos, roads, railways, runways and pipelines (Brief description only) Definition and types of buildings as per National Building Code of India (brief description only). Selection of site – Components of a building and their functions –Setting out of a building.

## **Module 2 Contents**

Stones: Classification of stones – Qualities of good building stones – Quarrying – Dressing – Tests – Specifications – Uses of common building stones. Bricks: Composition of good brick earth – Classification – Qualities of good bricks – Field and laboratory tests – Specifications. Tiles: Classification – Manufacture – Properties – Tests – Specifications

## **Module 3 Contents**

Cement: Basic Ingredients – Manufacturing process – Grades – Properties – Tests – Specifications. Aggregates: Fine and coarse aggregate – Properties – Uses – Tests. Cement Mortar: Types and preparation.

## **Module 4 Contents**

Stone Masonry: Types – Details of Ashlar, Random Rubble, Coarse Rubble and Dry Rubble Masonry. Brick Masonry: Types – Bond – Introduction to all types of bonds – English bond in detail (1, 1½ and 2 brick walls) – Comparison of stone and brick masonry.

## **Module 5 Contents**

Timber: Properties – Uses – Classification – Seasoning – Defects – Preservation – Tests; Hard board and Particle board – Manufacture and use. Steel: Structural steel and steel as reinforcement – Types – Properties – Uses – Market forms.

## **Module 6 Contents**

Floors and Flooring materials: Different types and selection of floors and floor coverings. Roofs and roof coverings: Different types of roofs – Suitability – Types and selection of roofing materials.