

# Concrete Engineering and Technology - Video course

## COURSE OUTLINE

The course deals with different aspects of modern concrete technology that has evolved as a result of rapid developments in mechanized construction, use of mineral and chemical admixtures in concrete.

Use of concrete in more challenging environments, better understanding of the material properties of concrete, emphasis on durability, etc.

Examples of special concretes and construction methods are used to illustrate the scientific principles involved therein and their engineering treatment.

To a limited extent, provisions in codes and their limitations are also discussed.

A brief discussion on maintenance of concrete structures, including nondestructive testing, evaluation criteria, repair and rehabilitation will also be included for completeness.

The course is designed as a elective course for final year level degree and post-graduate students of civil engineering, who have a basic background of concrete constituents and properties, and design of concrete structures.

It is hoped that the material will also be useful to teachers and practitioners.

## Contents:

Fundamental of concrete - constituents, proportioning, mixing, transportation, placing and curing; Properties of fresh and hardened concrete.

Quality control in concrete construction; Durability of concrete; Special concretes, construction methods and reinforcing materials.

Introduction to evaluation of existing structures and repair methods.

## COURSE DETAIL



NP-TEL

# NPTEL

<http://nptel.ac.in>

## Civil Engineering

### Pre-requisites:

1. Basic understanding of concrete - constituents, properties and test methods; design of concrete structures.

### Coordinators:

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Sl. No.	Topic	No. of Hours
1	Fundamental of concrete - constituents, proportioning, mixing, transportation, placing and curing.	08
2	Properties of fresh and hardened concrete.	03
3	Quality control in concrete construction.	02
4	Durability of concrete - alkali aggregate reaction, reinforcement corrosion, freezing and thawing, etc.	10
5	Special concretes - high strength, low heat of hydration, high early strength, self-compacting, etc.	06
6	Construction methods - shotcrete, roller compacted concrete, etc.	03
7	Reinforcing materials - epoxy coated bars, fibre-reinforced plastics.	04
8	Introduction to 'maintenance' of concrete structures - use of nondestructive testing, evaluation criteria.	04

**References:**

1. P.K.Mehta and Paulo J.M.Monteiro, "Concrete: microstructure, properties and materials", The McGraw-Hill Companies
2. AM Neville, Properties of concrete, Pearson
3. ML Gambhir, Concrete Technology, Tata McGraw Hill Companies

4. AR Santakumar, Concrete Technology, Oxford University Press

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