



CHARACTERIZATION OF CONSTRUCTION MATERIALS

PROF. MANU SANTHANAM

Department of Civil Engineering
IIT Madras

TYPE OF COURSE : New | Elective | PG

COURSE DURATION : 12 weeks (27 Jan' 20 - 17 Apr' 20)

EXAM DATE : 26 Apr 2020

PROF. PIYUSH CHAUNSALI

Department of Civil Engineering
IIT Madras

PRE-REQUISITES : Basic Civil Engineering degree

INTENDED AUDIENCE : Interested Learners

INDUSTRIES APPLICABLE TO : Cement companies, Concrete Producers, Construction chemical manufacturers, Construction companies

COURSE OUTLINE :

The objective of the course is to introduce students to the characterization of construction materials and their behaviour, with a view of developing their understanding of the mechanisms that govern the performance of these materials. The course will be focused primarily on cement and concrete, and include a few techniques; the physics of the techniques and their application to cement science. Lab demonstrations and experiments will be covered.

ABOUT INSTRUCTOR :

Dr. Manu Santhanam is a Professor at the Department of Civil Engineering at IIT Madras. His research interests are in multi-scale characterization of concrete, supplementary cementing materials, durability and non-destructive evaluation

Dr. Piyush Chaunsali is an Assistant Professor at the Department of Civil Engineering at IIT Madras. His research focuses on the use of principles of materials science, life-cycle assessment and structural engineering to design sustainable building materials

COURSE PLAN :

Week 1: Introduction to course; Structure of Construction Materials – An Overview

Week 2: Calorimetry

Week 3: X-ray diffraction

Week 4: X-ray diffraction, cont'd

Week 5: Thermal analysis

Week 6: Surface area measurement

Week 7: Optical microscopy

Week 8: Scanning electron microscopy

Week 9: Image analysis

Week 10: Spectroscopic techniques

Week 11: Mercury intrusion porosimetry

Week 12: Impedance analysis and ultrasonic methods