



DEVELOPMENT AND APPLICATIONS OF SPECIAL CONCRETES

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PRE-REQUISITES : The course will assume basic understanding of concrete materials and construction processes, including expected performance, quality control, etc.

INTENDED AUDIENCE : A) PG Students of Civil Engineering

B) Practising Professionals in the area of Concrete Construction

INDUSTRIES APPLICABLE TO : It Is My Earnest Hope That All Industries Related To Planning, De-sign And Construction Of Projects Using Concrete Will Find The Material Relevant And Thought Provoking.

COURSE OUTLINE :

Concrete is no longer simply a mixture of water, cement, sand and coarse aggregate-the advent of chemical admixtures and better understanding of the hydration of cement, and other issues relating to properties of concrete, has made it possible to use several other ingredients and have led to the development of several special concretes and construction methods and use concrete in diverse environments. Building on the fundamental principles of normal concrete, this course explains how some commonly used special concretes have been developed and how they are used in different conditions. The course seeks to present a unified view of concrete materials, construction methods and construction environment and examine the matter on parameters such as quality control methods

ABOUT INSTRUCTOR :

Prof. Sudhir Misra is Professor at the Department of Civil Engineering, Indian Institute of Technology Kanpur and has a keen interest in concrete materials, construction and engineering. He has worked with consulting and construction companies also during his 35 years of professional experience, and also led the effort to initiate a graduate programme in Infrastructure Engineering and Management at IIT Kanpur. He has been a member of committees of the BIS and also worked with professional organizations in Japan and India. His research interests include durability and non-destructive testing of concrete and development and utilization of special concretes. A lecture module of Concrete Engineering and Technology by him is also available online under the NPTEL scheme of the Government of India.

COURSE PLAN :

Week 1: Normal concrete

Week 2: Normal concrete (Cont'd)

Week 3: Special concretes (1)-Concreting in cold and hot weather

Week 4: Special concretes (2)-Self-compacting and fiber reinforced concretes

Week 5: Special concretes (3)-Basic understanding of high strength concrete, mass concrete and shotcrete

Week 6: Special concretes (4)-Handling preplaced aggregate concrete and light weight aggregate concrete

Week 7: Special concretes (5)-Special topics I: Underwater anti-washout concrete; micro-concrete

Week 8: Special concretes (6)-Special topics II: Expansive concrete, roller compacted concrete, concrete using recycled aggregate