

# Advanced Prestressed Concrete Design for Modern Buildings and Bridges

## Overview

Prestressed concrete is used extensively in bridges, multistory buildings and in many other important parts of today's modern infrastructure. The inherent weakness of concrete in tension is offset by introducing a pre-compression in a prestressed member, which improves its service load behavior, leading to reduced deflections and cracking. An advanced understanding of its behavior is essential before safe and economical designs can be produced. This course will provide a detailed coverage on behavior of prestressed concrete, analysis and design for strength and serviceability of prestressed concrete members, such as beams and slabs including continuous members, and anchorage design and losses in prestressing. It will also cover the recent advances in prestressed technology including external post-tensioning, use of fiber reinforced polymer in pre-stressing and improvement in the durability of prestressed concrete structures.

This course will also address the recent innovations and improvements in design issues of precast technology for modern buildings and bridges. It also aims to train the practitioners on the practical design of prestressed structures in an interactive manner. This course will be taught by internationally acclaimed academics, researchers and prestressed concrete industry specialists.

Course participants will learn these topics through lectures and hands-on experiments. Also, case studies and assignments will be shared to stimulate research motivation of participants.

<b>Course Dates</b>	<b>December 12 – 22, 2016, Number of participants for the course will be limited to eighty</b>
<b>Modules</b>	<b>Module 1: Introduction to Modern Prestressed Concrete</b> <b>Module 2: Losses in Prestressing</b> <b>Module 3: Analysis and Design for Flexure</b> <b>Module 4: Analysis and Design for Shear and Torsion</b> <b>Module 5: Statically Indeterminate Components in Buildings and Bridges</b> <b>Module 6: Overview of Precast Construction for Modern Buildings and Bridges</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"> <li>▪ you are a structural engineer or research scientist interested in designing prestressed concrete buildings and bridges</li> <li>▪ you are contractor/builder interested to learn applications of prestressed concrete.</li> <li>▪ you are a student or faculty from academic institution interested in learning how to do research on prestressed concrete behavior and its applications.</li> <li>▪ You are interested in precast concrete and its usage for building and bridges.</li> </ul>
<b>Fees</b>	<p>The participation fees for taking the course is as follows:</p> <p><b>Participants from abroad : US \$500</b>  <b>Industry/ Research Organizations: 18000</b>  <b>Faculty from Academic Institutions: 13000</b>  <b>Students: Rs. 2000 (only M-tech/ME/MS, PhD Students will be allowed)</b></p> <p>The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges. The participants will be provided with accommodation on payment basis. Additional fee of Rs. 2000 shall be paid for lunch and refreshments offered during the course.</p>

## The Faculty



**Dr. Sri Sritharan**, is Wilson Engineering Professor, at Iowa State University, USA. He joined the Department of Civil, Construction and Environmental Engineering (CCEE) at Iowa State University as an Assistant Professor in December 1999. He became an Associate Professor in 2005 and Full Professor in 2010. He served as the Director of

Graduate Education (DOGE) and Associate Chair for Research and Graduate Affairs for the CCEE department from 2007 to 2012, and the faculty lead for the Wind Energy Initiative of the College of Engineering from 2011 to 2014. He became the Grace Miller Wilson and T. A. Wilson Endowed Engineering Professor in 2008.



**Dr. Suriya Prakash** is currently working as associate professor at IIT Hyderabad. His research expertise is on prestressed concrete behaviour and design. He worked with Structural Group Inc., a renowned firm in strengthening design and construction using advanced construction materials. He has

authored more than thirty journal papers on the behaviour of reinforced concrete/ prestressed concrete. He has also extensively worked on strengthening of prestressed/precast elements with FRP composites. He is a member of ASCE and ACI, USA.



**Dr. Amlan Sengupta** is currently working as Professor at IIT Madras. He earned his B-Tech in Civil Engineering from IIT Kharagpur. Thereafter, he pursued his MS from Rice University, USA and PhD from University of Missouri Rolla, USA. His research expertise includes prestressed concrete

behaviour and design, experimental investigation of reinforced concrete members and analysis, design and seismic retrofit of buildings. Before joining IIT Madras, he worked with Ove Arup Partners, a renowned design firm. He has authored number of journal papers on the behaviour of reinforced concrete/ prestressed concrete and strengthening of concrete members.

## Course Coordinator

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## Course Website

<http://www.iith.ac.in/~prestressed>