From Infrastructure Creation to Rehabilitation: Redefining the Role of Engineers

Overview

India has rapidly built its infrastructure such as roads, bridges, dams and buildings. Many of these are facing a huge challenge of maintenance of their lifecycle performance. Rather than demolition and renewal, maintenance and rehabilitation have proved to be a more sustainable and economical option. Time has come for the development of effective methodologies for gradual shift from infrastructure creation to infrastructure maintenance and rehabilitation. The widespread deterioration of various infrastructures due to age, overloading and natural calamities has created a critical need for cost effective and sustainable solution for strengthening and rehabilitation of Indian civil infrastructures. It is imperative to retrain the human resources in infrastructure industry in maintenance, retrofitting and rehabilitation of existing infrastructure.

The major objective of this course is to give an in-depth understanding of the techniques of retrofitting and rehabilitation of concrete structures. The course will cover in detail the various distresses in concrete structures, condition assessment using several nondestructive testing, application of sustainable materials in repairing and strengthening of existing structures, strengthening design considering international standards along with recent advancements in construction technology for improved performance of civil infrastructures. Several case studies and challenges that are being faced in practical field will also be discussed by eminent experts from reputed industries. Apart from lectures, course participants will also experience hands-on experiments in the laboratory.

Modules	**Module A:** **: Sep 02 – Sep 04, 2019** **1. Distresses in Concrete Structures** **2. General Maintenance and Repair Methods** **3. Parameters for Performance Enhancement** **4. Condition Assessment and various NDT Methods** **5. Identification of Structural deficiency and Gap Analysis** **6. Corrosion in Reinforcing Steel and its Repair** **7. Earthquake Damage and its Resistance** **8. Retrofitting of Structural Components with FRP** **9. Design of Retrofitted Structural Components as per International Standards** **10. Restoration of Masonry and Heritage Structures** **11. Integrated Structural Maintenance and Future Technology** **12. Special Rehabilitation Measures, Case Studies and way forward** **Module B:** **: Sep 05 - Sep 06, 2019** **1. Casting of concrete specimens and retrofitted with FRP** **2. Condition Assessment using Several Nondestructive Test Methods** **3. Testing of FRP Retrofitted Structural Components** **Module B is optional only for the participants from Government Organizations and industry.** **Number of participants for the course will be limited to sixty.**

Who can attend	▪ Students at all levels (B. Tech/ B.E. / B. Arch/M. Tech/M. Arch/ MCP/Ph. D) or Faculty members from reputed academic institutions related to the field of Civil Engineering/ Structural Engineering/ Infrastructure Engineering. ▪ Executives, Engineers, Researchers and Working professionals from Government organizations (e.g. PWD, KMC, CPWD, Urban Development etc.) Or, Private Sectors (e.g. Consultants, Concessioners, etc.) and R&D Organizations in related fields.
Fees	The registration fees (per person) for taking up the course are as follows: ▪ Category-A: Academic Institutes (Student) from India: No Fee (Caution money INR 1500 to be deposited, which will be returned after course completion) ▪ Category-B: Academic/ R & D Organizations (Faculty/Scientist) from India: INR 10000 ▪ Category-C: Academic/Research/Government Organizations from Abroad: US $500 ▪ Category-D: Government Organizations/ Private Sectors: INR 12000 (Module A Only) and INR 18000 (for both Module A and Module B) The registration fees for Category A and Category B do not include accommodation. The participants will be provided with accommodation facility on separate payment basis. The registration fees for Category C and Category D include accommodation on twin sharing basis in Technology Guest House, IIT Kharagpur.

The Faculty

Prof. Abhijit Mukherjee is the Professor of Civil Engineering in Curtin University, Australia and Director, Curtin-India Research Academy. His research interests include Advanced Construction materials, Structural Health Monitoring, Retrofitting and Rehabilitation, Smart Structures, Composite Structures, Artificial Intelligence in Engineering and Mechanics and Finite Elements in Structural Dynamics. For further information please visit https://staffportal.curtin.edu.au/staff/profile/view/Abhijit.Mukherjee/

Dr. Mangesh Joshi is an expert in the field of repair and rehabilitation of civil infrastructures. He is a Ph.D. from IIT Bombay and is the founder CEO of M/s Sanrachana Structural Strengthening Pvt. Ltd, Mumbai, a company that undertakes structural repair, retrofitting and rehabilitation projects in India and abroad. For further information please visit http://www.sanrachana.in/management/

Dr. Swati Maitra is an Assistant Professor in Ranbir & Chitra Gupta School of Infrastructure Design and Management, IIT Kharagpur. She received her doctoral degree in Civil Engineering from IIT Kharagpur. Dr. Maitra's research interests include Sustainable Construction materials, Retrofitting and Rehabilitation of Civil Infrastructure, Structural analysis, performance evaluation and Safety. For further information please visit http://www.iitkgp.ac.in/department/ID/faculty/id-swati

Course Coordinator

Dr. Swati Maitra
Assistant Professor
Ranbir & Chitra Gupta School of Infrastructure Design and Management
IIT Kharagpur, Kharagpur – 721 302
Phone: +91-3222 304946
Email: swati@infra.iitkgp.ac.in; swati@iitkgp.ac.in

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