About IIT Kharagpur

Kharagpur - a dusty town tucked away in the eastern corner of India, famous until 1950 as home to the longest railway platform in the world - became the nursery where the seed of the IIT system was planted in 1951. IIT Kharagpur started its journey in the old Hijli Detention Camp in Eastern India, where some of the country's great freedom fighters toiled and sacrificed their lives for India's independence. Spurred by the success of IIT Kharagpur, four younger IITs sprouted around the country in the two following decades, and from these five came thousands of IITians, the brand ambassadors of modern India. It was the success of this one institution at Kharagpur that wrote India's technological odyssey.

The Institute takes pride in its relentless effort to provide the best platform for both education as well as research in the areas of science and technology, infrastructure designs, entrepreneurship, law, management, and medical science and technology. IITKGP is not just the place to study technology, it is the place where students are taught to dream about the future of technology and beam across disciplines, making differences enough to change the world.

Program Features/ Structure

Classroom lectures – **70%**

Numerical/ Problem solving, Case study and Activity – **30%**

Program Schedule and Venue

1 week, 1 – 7 November 2020 (9:30 AM – 6 PM)

IIT Kharagpur
Department of Civil Engineering

Program Fee

Nil for AICTE-QIP sponsored participants

INR 2500/-+ GST @18% per participant for Students

INR 15,000/-+ GST @18% per participant for Faculty Members from Non-AICTE approved colleges

INR 20000/-+ GST @18% per participant from Industry

Who will benefit (Eligibility)

If you are a faculty member, student, practitioner in Civil Engineering (preferably with M.Tech./M.E.).

Last day of Registration

11

October 2020

Accommodation

Free accommodation will be provided to the AICTE-QIP sponsored participants at the campus Guesthouse. For other participants, the same can be arranged (based on availability) on chargeable basis as per rule.

How to Apply

Use the link: **https://erp.iitkgp.ac.in/CEP/courses.htm** to apply ONLINE.

Signup → Login → Profile Fillup → Choose a Program → Apply Now

Payment if applicable is to be done **ONLINE** after getting short listed for the program.

Contact Us

Dr. Anirban Dhar, Principal Coordinator
Department of Civil Engineering
Email: anirban@civil.iitkgp.ac.in

Dr. Kousik Deb, Co-Coordinator
Department of Civil Engineering
Email: kousik@civil.iitkgp.ac.in

AICTE QIP

QUALITY IMPROVEMENT PROGRAMME

Indian Institute of Technology Kharagpur

2020

Mathematical Methods in Civil Engineering

1 Week

1 – 7 November 2020

Introduction / Overview

With the advancement of computing power and technology, mathematical methods play a crucial role to fully realize the advanced engineering systems. In particular, problems that were beyond our reach few decades ago can now be well tackled in today's context. Moreover, scientific advancement and technological development clearly direct us to refine our knowledge of physical understanding on a scientific/engineering phenomenon. In this context mathematical representation of such complex systems and its solutions become increasingly important in present day situation.

Program Objectives

The course would help the academicians, students as well as practicing professionals to learn mathematical methods and techniques in the context of Civil Engineering. The course will address both theoretical developments and practical applications related to Structural, Geotechnical, Transportation, Hydraulic and Environmental Engineering fields. The course will discuss the application of differential equations, numerical linear algebra, nonlinear optimization, statistical analysis, systems of linear equations, reverse engineering or inverse problem, particle based methods, finite difference method, advanced finite element.

What you will learn

Program Content

Introduction to Mathematical Methods in Civil Engineering

Mathematical Methods in Environmental Engineering

Mathematical Methods in Transportation Engineering

Mathematical Methods in Geotechnical Engineering

Mathematical Methods in Hydraulic Engineering

Mathematical Methods in Structural Engineering

Applications of Linear Algebra

Applications of Multivariate Calculus

Applications of Vector Analysis

Applications of Optimization Methods

Applications of Transforms: Laplace and Fourier

Applications of Numerical Methods: Interpolation, Integration

Applications of Numerical Solution of Differential Equations

Applications of Variational Calculus

About the Faculty

Dr. Amit Shaw, *Structural Engineering*

Dr. Anirban Dhar, *Hydraulic Engineering*

Dr. Biswanath Banerjee, *Structural Engineering*

Dr. Debarghya Chakraborty, *Geotechnical Engineering*

Dr. H. Prashanth Reddy, *Hydraulic Engineering*

Dr. Jahangir Hossain, *Structural Engineering*

Dr. Kousik Deb, *Geotechnical Engineering*

Dr. Kranthi Kumar Kuna, *Transportation Engineering*

Dr. Paramita Bhattacharya, *Geotechnical Engineering*

Dr. Shubha Verma, *Environmental Engineering*