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 – **50%**

Numerical/ Problem solving, Case study– **20%**

Hands-on work with FEM software - **20%**

Labwork- **10%**

Program Schedule and Venue

1 week, 2 – 8 September 2019 (9:30 AM – 6 PM)

IIT Kharagpur – Aerospace Engineering Department

Program Fee

Nil for AICTE-QIP sponsored participants

For students - INR 5,000/- + GST @18% per participant

For others - INR 12,000/- + GST @18% per participant

Who will benefit (Eligibility)

Academicians, students and practicing engineers in the field of mechanical/ aerospace/civil/production /marine engineering with reasonable background in solid mechanics

Last day of Registration

31

July 2019

Accommodation

Accommodation will be provided to the AICTE-QIP sponsored participants at the campus Guest house. For other participants, the same will be provided 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

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AICTE QIP

QUALITY IMPROVEMENT PROGRAMME

Indian Institute of Technology Kharagpur

2019

Analysis and Design of FRP Composite Structures

7 Days

2 – 8 September 2019

Introduction / Overview

Fibre reinforced plastic (FRP) composite materials are rapidly finding application in weight and performance critical structures. Advantages associated with FRP include light weight, corrosion resistance etc. Special features such as shape adaptivity can be achieved by proper design of these structures. However, the analysis and design of such structures are relatively more complex as compared to metallic structures. Realizing the importance, the subject has been incorporated in the undergraduate and post graduate curriculum of several academic institutions

Program Objectives

This seven days course aims at introducing the participants to the mechanical properties of composites materials, methodologies for analysis and design optimization of various composite structures, modern research advancements. Academicians, students and practicing engineers from various disciplines including but not limited to Mechanical Engineering, Aerospace Engineering, Marine Engineering, Civil Engineering, Automobile Engineering, Production Engineering are expected be benefited from the course. After a general introduction, estimation of mechanical properties will be covered. This will be followed by development of the analysis framework and various types of analysis including both laminated and sandwich structures. Finally design cases and various modern advancements in this field will be covered.

What you will learn

Program Content

- Introduction
- FRP processing
- Estimation of mechanical properties of laminae
- 2D constitutive relation
- Mechanics of unidirectional laminae and laminates
- Sandwich composites
- Analysis using approximate analytical and finite element methods (static, dynamic and buckling analysis)
- Failure of composites
- Design optimization
- Research advancements

About the Faculty and Coordinators

Dr. Mohammed Rabius Sunny
Assistant Professor
Aerospace Engineering
Ocean Engineering and Naval Architecture (Associated)

Dr. Mohammed Rabius Sunny received his B.E in Civil Engineering from REC Durgapur (Presently NIT Durgapur) and MTech and PhD in Aerospace Engineering from IIT Kanpur and Virginia Tech, USA respectively. He worked as a Postdoctoral Research Associate at Virginia Tech for two year. Presently he holds a joint appointment in the Department of Aerospace Engineering and the Department of Ocean Engineering and Naval Architecture at IIT Kharagpur. His teaching interest includes courses like Composite Structures, Finite Element Method, Smart Structures etc. He is a active researcher in the fields of composite structures, structural health monitoring, finite element method etc.

Dr. Prasun Jana
Assistant Professor
Aerospace Engineering

Dr. Prasun Jana obtained his BE from IIEST, Shibpur, MS from IIT Madras, and PhD from IIT Kharagpur. He has worked with ISRO and General Electric, for a total of five years, in the area of design and analysis of composite structures. He has also worked as an Assistant Professor in IIT Mandi and IIT (ISM) Dhanbad before joining the Department of Aerospace Engineering in IIT Kharagpur. His research interests include finite element analysis, aerospace structures, composites and functionally graded materials, vibration damping, and stability of structures.