

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 greatest 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.



Course Features

- ❖ Classroom lectures
- ❖ Laboratory visits
- ❖ Hands-on work with various NDT methods

Course Fee

NIL for TEQIP-III sponsored participants

For participants from industry: INR 10,000/- (Ten thousand) + GST @ 18% per participant

For non-IITKGP students: INR 4,000/- (Four thousand) + GST @ 18% per participant

Last date of registration

May 14 2019

How to Apply

Use the link: <https://erp.iitkgp.ac.in/CEP/courses.htm> to apply **ONLINE**. Maximum number of participants is limited to **20 (Twenty)**.



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

Contact Us

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Materials Engineering
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Course Schedule & Venue

3 days, 20 – 22 May 2019
(9.30 AM – 6 PM)

Department of Metallurgical and
Materials Engineering – IIT
Kharagpur

Who will benefit

Faculty members, engineers and students working on failure analysis of engineering components and different non-destructive characterization methods

Accommodation

Accommodation for the complete duration of the course will be arranged at the Campus Guesthouse on a twin sharing basis

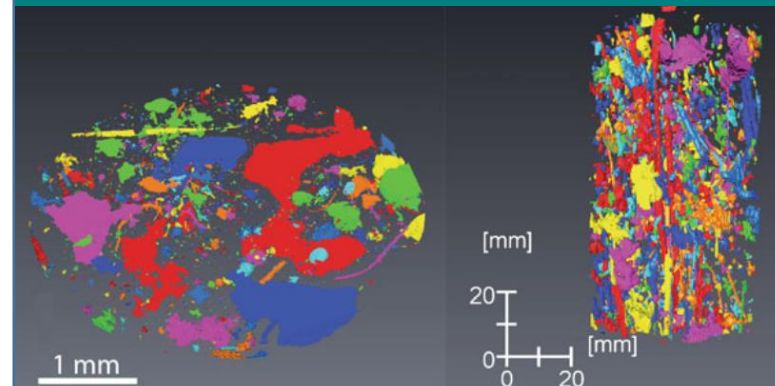


NPIU – A Unit of MHRD, Govt. of India for
Implementation of World Bank Assisted Projects in
Technical Education

Indian Institute of Technology Kharagpur

Non-destructive Testing for Failure Analysis and Prevention

3-day course, 20 – 22 May, 2019



Brief Course Description

All engineering components, starting from semi-finished and finished products to parts built in structures in operation, contain multitude of different defects. Depending upon their dimensions, location and type, these defects may severely impair the functionality of the component and in extreme cases may lead to structural failures with potentially fatal consequences. Hence, for a proper risk management and accurate estimation of the lifetime of a structure under loading conditions, accurate identification of the defects in a component is of utmost importance. Non-destructive testing methods are extremely valuable tools in structural health monitoring as the component being studied is not altered due to testing and it can even be performed while the component is in service, without dismantling it.

Within the scope of this short term course, first the origin of different kinds of defects in metallic structural materials will be discussed followed by failure under different loading (tension, compression, torsion, shearing, tearing, cyclic loading etc.) and environmental conditions (i.e. corrosion). Subsequently, different non-destructive testing methods will be deliberated in detail encompassing the basic theory, advantages, limitations and applications of each method. Finally, the participants will obtain hands-on training in fractographic failure analysis study as well as different non-destructive testing methods.



Course Content

- ❖ Origin of defects in semi-finished and finished engineering components
- ❖ Failure modes of structural materials – tension, compression, torsion, shear, tear, cyclic loading, high temperature failure, corrosion etc.
- ❖ Different destructive testing methods for failure analysis
- ❖ Non-destructive testing methods
 - Visual Testing (VT)
 - Penetrant Testing (PT)
 - Magnetic Particle Testing (MT)
 - Eddy current Testing (ET)
 - Radiography Testing (RT)
 - Computed Tomography (CT)
 - Ultrasonic Testing (UT)
 - Acoustic Emission (AE)
- Fractographic analysis of failed components using Scanning Electron Microscope (SEM)
- Hands-on training on different non-destructive testing techniques

About the Faculty

Dr.-Ing. Siddhartha Roy, Coordinator

Dr. Roy is Assistant Professor at the Department of Metallurgical and Materials Engineering, IIT Kharagpur. He possesses more than 13 years' experience in research and industry in different countries in Europe and India. The main research areas of Dr. Roy are processing and characterization of porous ceramics and composites, non-destructive characterization, elasticity analysis of anisotropic materials, diffraction based stress analysis in hybrid materials, materials aging issues in boiling water reactors (BWR) and pressurized water reactors (PWR) etc. Dr. Roy has published 26 papers in peer reviewed journals and conferences and presented 15 oral presentations.

Prof. Debalay Chakrabarti, Co-Coordinator

Prof. Chakrabarti is Professor at the Department of Metallurgical and Materials Engineering, IIT Kharagpur, having expertise in the fields of industrial processing of metals and alloys, microstructure and texture characterization, microstructure-property correlation, fracture and failure mechanisms of metallic alloys - primarily iron based alloys etc. He has published ninety articles in the peer-reviewed journals. Dr. Chakrabarti has already completed several industrial consultancy and research projects funded by Department of Science and Technology, Department of Atomic Energy, Naval Research Board and the National Mission Projects on the material development for high-temperature applications. Besides academics, Dr. Chakrabarti has experience in working for the industrial R&Ds both in India and in UK.