



Online AICTE Approved Quality Improvement Program-Short Term Course

On

**“Mechanics of Advanced Composite Materials”**

**Feb 09-13, 2021**



ORGANIZED BY

**Civil Engineering Department and  
Mechanical Engineering Department  
Indian Institute of Technology (IIT)  
Varanasi, Uttar Pradesh, India-221005**

## **COURSE OBJECTIVE**

The demand of composite materials is huge in thin walled structural components of aircrafts, submarines, civil, automobiles and other high- performance application areas where weight minimization is a major challenge. Its applications lies in aircraft manufacturing, long span roof structures, tanks and bridges as well as in biomedical industries. The knowledge of composites will allow to understand the issues associated with these materials, as well as to gain insight into how their usage differs from metals, and ultimately be able to use composites to their fullest potential.

This course introduces faculties and professionals to the issues of obtaining optimum performance from fiber-reinforced composite materials through efficient use of fiber architecture within a laminate, based on the fundamental principles of mechanics.

### **Who can attend?**

Faculty members of Universities/ Engineering colleges approved by AICTE working in the departments of Civil/Mechanical/Aerospace Engineering/ Metallurgical/ Materials science/ Ceramic Engineering and other allied departments related to the mentioned area are eligible to attend the course.

## **Course Speakers**

Faculty members of IITs, and Subject experts from other Research Organizations and Industries will be delivering the lectures.

### **Registration Process**

-Sponsored Participants (from AICTE approved institutions): **NO COURSE FEE**

-Intending participants are requested to register their names by filling the attached registration form or by filling the online registration form. Scanned copy of the filled application needs to be uploaded in the form given in the registration link.

### **Google Form for Registration:**

[https://docs.google.com/forms/d/e/1FAIpQLScscVQhDhwPjOF4UnwzPnNVI6H3DikhRUWpec0BDrQxbvjBxg/viewform?usp=pp\\_url](https://docs.google.com/forms/d/e/1FAIpQLScscVQhDhwPjOF4UnwzPnNVI6H3DikhRUWpec0BDrQxbvjBxg/viewform?usp=pp_url)

### **Important dates**

Last date of registration: **February 05, 2021.**

Intimation of Selection by email: **February 06, 2021.**

## **Organisers**

**Dr. Rosalin Sahoo** (Coordinator)

Dept. of Civil Engineering, IIT (BHU)

**Dr. Arnab Sarkar** (Co-Coordinator)

Dept. of Mechanical Engineering,  
IIT (BHU)

## **COURSE CONTENT**

- Basic concept, Configuration and Mechanics of advanced composites, Manufacturing processes of Composites
- Micromechanics of Fibre-reinforced Lamina
- Macromechanics of Laminate
- Mathematical Modelling of composites considering Inter laminar Continuity Effect
- Structural (Static, Buckling, Dynamic and Transient) analysis of composite plates using FEM
- Smart/FGM Composite structures
- Practical applications of Composites:
  - Biomedical applications
  - Bamboo Reinforced Concrete Composite
  - Fibre Reinforced Concrete
- Metamaterials and their applications in Civil Engineering

*Enquires should be addressed to:*

**Dr. Rosalin Sahoo**

Assistant Professor

Department of Civil Engineering, IIT (BHU), Varanasi – 221 005, UP, India

E-mail: [rosalin.civ@iitbhu.ac.in](mailto:rosalin.civ@iitbhu.ac.in)

### **ABOUT THE INSTITUTE:**

The Indian Institute of Technology (Banaras Hindu University) owes its existence to Mahamana Pandit Madan Mohan Malviya, Bharat Ratna-the founder of the first residential university of modern India, the Banaras Hindu University. The three of the erstwhile engineering colleges of BHU, namely BENCO, MINMET and TECHNO, were merged to form the Institute of Technology (IT-BHU) in 1968 to provide an integrated educational base. The IT-BHU has been admitting students through the JEE conducted by the IIT's since 1972, and has been consistently ranked amongst the top few engineering institutions of the country. IT-BHU became IIT (BHU) in June 29, 2012 by an Act of Parliament. The Institute has maintained high academic standard since its inception. It has turned out luminary engineers and administrators who served the nation with great distinction.

### **CIVIL ENGINEERING DEPARTMENT:**

The Civil Engineering Department was established in 1949 (then known as Civil and Municipal Engineering) in BENCO (Banaras Engineering College) which was a part of BHU. The formal sanction of the Visitor of the University to create this Dept. was received in 1956 and the B.Sc Engineering (Civil & Municipal) Degree was recognized by the Govt. of India in 1958. The department was rechristened to the present name in the year 1975.

Presently, it caters its student with various Post Graduate courses like Environmental Engineering, Geotechnical Engineering, Hydraulic Engineering, Structural Engineering, and Transportation Engineering. The department has taken up various research programmes apart from regular teachings and the research activities, namely CSIR, UGC, SAP, HUDCO, DST and AICTE. It has a created cooperation with industries to work for the various tasks given by Govt., Semi-Govt. and other Private organizations.

### **MECHANICAL ENGINEERING DEPARTMENT:**

The Department of Mechanical Engineering came into existence in 1919 under the leadership of Professor Charles A. King, the first Head of the Department and Principal of the erstwhile Banaras Engineering College. Over the last ninety nine years, the department has grown four folds to become the largest department in IIT (BHU), Varanasi. The post-graduate and doctoral program in the department is well-established and infrastructural facilities exist for studies and research for a range of specializations such as Machine Design, Thermal and Fluid Engineering, Production Engineering and Industrial Management.

## **Registration Form**

Name \_\_\_\_\_  
Designation \_\_\_\_\_  
Institute/Organizations \_\_\_\_\_

Gender: Male/Female  
Postal Address \_\_\_\_\_

Email Id \_\_\_\_\_  
Telephone/Mobile No \_\_\_\_\_  
Qualification \_\_\_\_\_

Signature of the candidate (with date)

Prof./Dr./Mr./Ms./Mrs./ \_\_\_\_\_

an employee of our institute/organization. The applicant will be permitted to attend the online QIP short term course on “Mechanics of Advanced Composites” at IIT (BHU), Varanasi, to be held during 09-13 February, 2021.

Signature of the Head of the Department/  
Institution/Organization