

**Eligible candidates:**

Senior UGs, PGs, PhDs, PostDocs  
Teachers of colleges and working  
professionals (with +2 yrs of  
experience)

**Registration and Lunch:**

IITKgp students: Rs3000 (incl. GST),  
Outsider student: Rs 3500 (incl. GST)  
IITKGP faculty: Rs 3500 (incl. GST)  
Outsider faculty: Rs 4000 (incl. GST)  
Industry/research labs: Rs 4500  
(incl. GST)

\*Shared Accommodation and subsistence  
are to be borne by candidates, based on  
availability and prior intimation.

The course will run with a minimum  
of 20 candidates and a maximum  
allowed number is 30 on a 'first-  
come-first-served-basis.'

**Course Registration & online  
payment**

Candidate should apply **online**  
through the following procedure by  
clicking 'how to apply' and 'how to  
pay' on the Short term course SELF  
SPONSORED at the link  
[https://erp.iitkgp.ac.in/CEP/course  
s.htm](https://erp.iitkgp.ac.in/CEP/course_s.htm)

**How to reach IITKGP**

The fully green academic  
campus about 8.5 sqkm is  
located 2 hr 50 min drive  
from Dum Dum International  
Airport, Kolkata and 10 min  
drive from Kharagpur  
Railway Station.

**Course Duration and  
delivery:**

5-day course (cannot be  
booked for one day). Courses  
will be delivered by experts  
in the field of fabrication and  
mechanics of composites.

**Speakers**

Dr Nilanjan Das Chakladar  
Assistant Professor

[https://www.linkedin.com/in/n  
dchakladar/](https://www.linkedin.com/in/n_dchakladar/)

Areas of expertise: composite  
manufacturing

Dr Atul Jain  
Assistant Professor

[https://sites.google.com/view/  
atuljain/home](https://sites.google.com/view/atuljain/home)

Areas of expertise: composite  
mechanics and simulation

**Self-sponsored  
Short Term Course**

**11<sup>th</sup> (Mon)  
- 15<sup>th</sup> (Fri)  
May 2020**

**Manufacturing  
& Mechanics of  
Advanced Composites  
MMAC 2020****Coordinators**

**Dr Nilanjan Das Chakladar**

[ndaschakladar@mech.iitkgp.ac.in](mailto:ndaschakladar@mech.iitkgp.ac.in)

(+913222282926)

**Dr Atul Jain**

[atuljain@mech.iitkgp.ac.in](mailto:atuljain@mech.iitkgp.ac.in)

(+913222282906)



**Department of Mechanical  
Engineering ,  
IIT Kharagpur  
INDIA 721302**



### **Day 1 (9:00 – 17:30)**

- Registration
- History of composite materials
- Basics of polymer and matrices
- Epoxies and hardener
- Micromechanics of short fibre composites

### **Day 2 (9:00 – 17:00)**

- Numerical examples of micromechanics
- Solid mechanics and composites
- Manufacturing of synthetic fibres
- Manufacturing of sandwich cores

### **Day 3 (9:00 – 17:00)**

- Manufacturing of complex moulds
- Liquid and compression moulding of composites
- Understanding anisotropic elasticity
- Damage of laminates

### **Day 4 (09:00 – 17:00)**

- Classical laminate theory
- Workplace health and safety of a composites laboratory
- Resin kinetics, cure and permeability
- Characterization of polymers and fibres

### **Day 5 (9:00 – 17:00)**

- Quality control and characterization of composites
- Recyclability of composites
- Structural health monitor of composites
- Fatigue of composites
- Life cycle analysis of composite structures
- Tutorial and case studies
- Feedback and certificates

## **Self-sponsored Short Term Course MMAC 2020**

**In this course, we will deliver the current stand of advanced composites in India and abroad, understanding the missing link behind its mechanics and manufacturing, building hands-on experience in solving real problems. We look forward to your support and help in growth of composites research both in academia and industries across India – a tiny initiative from IIT Kharagpur, India 721302.**

**Department of  
Mechanical Engineering,  
IIT Kharagpur  
INDIA 721302**

