

## Registration

All the participants have to register online to attend the short term course. There is **No Registration Fee** for the course. To register yourself, you may visit the following web-link, fill the required details and submit.

Link for the registration:

[https://docs.google.com/forms/d/1rH3qViTJ6E6\\_7eVTJ6zQM8iU5DG9aAkDuYI5EvEBZhM/edit](https://docs.google.com/forms/d/1rH3qViTJ6E6_7eVTJ6zQM8iU5DG9aAkDuYI5EvEBZhM/edit)

**Accommodation** can be provided on payment basis (Rs. 300/- per night). Participant who wants the accommodation facility at the institute hostel, may contact Dr. Pravesh C Shukla (Email: pravesh@iitbhilai.ac.in) in advance. They are requested to provide the details of their stay at the institute. Accommodation charges can be paid at the time of arrival for the course.

Participants are requested to attend all the lecture and hand-on sessions. A **course completion certificate** will be provided to all the participants from AICTE Training And Learning (ATAL) Academy program upon successful completion of the course.

## Chief Patron

Prof. Rajat Moona  
Director, IIT Bhilai

## Speakers

Dr. Balkrishna Mehta, IIT Bhilai  
Dr. Rakesh Kumar Maurya, IIT Ropar  
Mr. Sumit Sarkar, CBDA  
Dr. Satyajit Gupta, IIT Bhilai  
Dr. Pravesh C Shukla, IIT Bhilai

## Course Coordinators

Dr Pravesh Chandra Shukla  
&  
Dr Balkrishna Mehta  
Assistant Professor  
Department of Mechanical Engineering  
Indian Institute of Technology Bhilai  
<pravesh@iitbhilai.ac.in>  
<krishnab@iitbhilai.ac.in>

## Contact Details

Dr Pravesh C Shukla  
Assistant Professor  
Department of Mechanical Engineering  
Indian Institute of Technology Bhilai  
<pravesh@iitbhilai.ac.in>

## Faculty Development Program

on

## Experiments in Thermal Sciences and Fuel Characterization

(16-20<sup>th</sup> December 2019)



Organized by

Department of Mechanical Engineering  
Indian Institute of Technology Bhilai

Sponsored by

AICTE Training And Learning (ATAL)  
Academy



# Indian Institute of Technology Bhilai

Department of Mechanical Engineering,  
GEC Campus, Sejbahar, Raipur (C.G.) 492015



## About IIT Bhilai

Indian Institute of Technology Bhilai was established in the state of Chhattisgarh by Ministry of Human Resource and Development in the year 2016. IIT Bhilai is presently housed in its transit campus at Government Engineering College (GEC) Raipur, Chhattisgarh.

IIT Bhilai offers Bachelors of Technology (B.Tech.), Masters of Technology (M.Tech.) and Doctoral programs (PhD) in the department of Mechanical engineering, Computer science and engineering and Electrical engineering. In addition to this, IIT Bhilai also offers M.Sc. and Ph.D. programs in the disciplines of Physics, Chemistry, Mathematics and Ph.D. in Liberal Arts. IIT Bhilai provides a very unique structure of fractal academics wherein students are engaged with advanced topics early in their curriculum without increase in any academic load. This structure provides a natural mechanism for students to indulge in small and large projects along with the courses.

IIT Bhilai, on its roster, has more than 40 faculty members, working in various cutting-edge research areas spread over engineering, mathematical and scientific disciplines. The faculty strength is expected to increase rapidly in the coming months, as the institute is in an active phase of hiring. All the faculty members have exposure to world-class education and research as doctoral students and postdoctoral researchers, in various top-ranking laboratories and institutes in India and abroad.

IIT Bhilai has established a 3-D Printing Lab that constitutes an integral part of 3-D Modeling and Design course, a fabrication lab, an electrical lab, a computer lab and a library in a short duration.

## Department of Mechanical Engineering

The Mechanical department offers a thorough and well decorated academic structure for theoretical understanding and their practical applications, efficiently assisted by futuristic laboratories such as

an Automation lab and a fabrication lab including 3D printing lab, DIY lab with CNC milling, CNC Lathes and laser cutting machine, molding, etc which can convert any idea into reality. The department efficiently covers all the traditional core areas of statics, dynamics, vibrations, structural analysis, materials, thermodynamics, fluid mechanics and heat transfer, design and manufacturing etc. The department started with B.Tech program in August 2016. With advent of session 2017-18, the department looks forward to train M.Tech and Ph.D students in diverse fields of research. We strive to contribute towards national progress by welding together the zeal and enthusiasm of the undergraduates with the knowledge and experience of the post-graduates. Currently, there are 9 faculty members in the department working the various cutting edge research domain such as Computational mechanics, Fracture mechanics, heat transfer, metal cutting, additive manufacturing, friction stir welding, IC Engine, Structure-property Correlationship etc.

## Topics to be Covered

- Basics of Measurement in Thermal Devices
- In-cylinder Measurement Technique in IC Engines
- Performance and Emission Parameters
- Hands-on in the investigation of Combustion, Performance and Emission Parameters
- Biofuel Production and Characterization
- Second Generation Biofuels

## Important Dates

Last date for registration with details	10 <sup>th</sup> December 2019
Last date for accommodation confirmation	10 <sup>th</sup> December 2019
Course Duration:	16 -20 <sup>th</sup> December 2019

## About the Short Term Course

The training and learning course is devised to update the knowledge of post-graduate students and faculty members of various engineering colleges on the recent developments in the field of Experimental Measurements in Thermal Sciences. This course will be broadly classified in three sections which are (a) Diagnostic Techniques for Pressure, Temperature, Velocity and Flow rate etc. in Power Producing Mechanical Systems (b) Experimental and Theoretical Discussion on Combustion and Emission Characteristics, especially in IC Engines (c) Introduction to various Techniques of Biofuel Production, Hands-on Practices on Production and Characterization of Biofuels (Viscosity, Flash point, Calorific value, Trace Metal Analysis etc.). By a combination of lectures and hands-on sessions (Hand-on sessions will be conducted at IIT Bhilai and Chhattisgarh Biofuel Development Authority (CBDA), Raipur), this course presents key insights for the participants to consider for kick-starting research and/or teaching initiatives in their institutes involving Experimental Measurement in various fields of Thermal Sciences.

In particular, this course will enable participants to understand and devise the various diagnostic systems in the field of Thermal Sciences particularly used in the area of IC Engine. IC Engine related experiments are one of the best real-time system which incorporate almost all the complicated measurements available in Thermal Sciences. As none of the process executed in IC Engine are in thermodynamic equilibrium, it always requires a high speed data acquisition system along with the feedback control to govern various sensors and actuator.