GLOBAL INITIATIVE OF ACADEMIC NETWORKS
(GIAN)

Ministry of Human Resource Development
Government of India

# GIAN Course on Advanced Internal Combustion Engines

**May 6 to 17, 2019**
**Organised by**
**Department of Mechanical Engineering,**
**National Institute of Technology, Tiruchirappalli - 620015, Tamil Nadu, India**

## Overview

In the recent past, more emphasis is being given to produce clean energy from various renewable sources due to rise in crude oil price and greenhouse gas emission. In order to mitigate the greenhouse gas emission and other environmental problem and to utilize the available carbon neutral resources like biofuels effectively, various technologies and processes have been developed around the world. This course will provide knowledge on the latest technologies in automobiles such as gasoline engines, diesel engines, gas turbines, fuel cells and lithium battery, including fundamentals of thermodynamics, heat transfer, chemical kinetics and electrochemical reactions. In addition, for internal combustion engines, the after-treatment technologies will be provided with fundamentals of thermodynamics and catalytic chemical kinetics. It will include examples of recent state-of-the-art experimental research carried out all over the world. Course participants will learn these topics through lectures and tutorial sessions that reinforce their understanding, while also getting exposure to the avenues for further research.

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| **Dates for the course** | **May 6 to 17, 2019** |
| **Course Content** | • Automotive Emissions Regulation and Internal Combustion Engine Development<br>• Combustion Mechanism of Controlled Auto Ignition<br>• Modern diesel engine technologies – Fuel Injection Equipment (FIE)<br>• Alternative Fuels Direct-Injection Spark-Ignition (DISI) Engine<br>• Fuel Specifications and Effects on Advanced Combustion<br>• Catalyst Technology for After Treatment Devices<br>• On Board Hydrogen Production for Fuel Cell Powered Automobiles<br>• The Combustion Improvement strategies by Dual Fuel Engine<br>• Laser sparks in internal combustion engines<br>• Microgravity Droplet Combustion |
| **You Should Attend if…** | • You are an Engineers, student at MTech level, PhD researchers from government organizations and R&D laboratories<br>• You are a Faculty from reputed academic institutions and technical institutions working in the area of Internal Combustion Engines<br><br>**Number of participants for the course will be limited to fifty.** |
| **Course Fee** | The participation fee for taking the course is as follows:<br>Participants from abroad: US $500,<br>Participants from Industry : Rs.10,000 /-<br>Government Research Organizations: Rs. 5,000/-<br>Participants from Academic Institutions: Rs. 3,000/- (for faculty), |

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| | Rs.2,000/-(for Full-Time Ph.D. Students),<br>Rs.1,000/-(B.Tech./M.Tech./M.S. students)<br>The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges and working lunch and refreshments. It will be very helpful if you can bring your laptop for the course.<br><br>The participants may be provided hostel accommodation, depending on the availability, on additional payment basis. Request for hostel accommodation may be submitted to: vinoth418.ant@gmail.com |
| **How to Register** | **Stage 1: GIAN Web (Portal) Registration:**<br>**(Individuals who have already registered to GIAN earlier do not need to repeat)**<br><br>Visit GIAN Website at the link: http://www.gian.iitkgp.ac.in/GREGN/index and create login user ID and Password. Fill up the registration form and do web registration by paying Rs.500/- through online Net Banking/ Debit/ Credit Card. Please do not confuse GIAN web registration with course registration. The course registration fee is separate. The candidate has to pay course registration fee as per stage 3 given below.<br><br>Registration to the GIAN portal is one time affair and will be valid for lifetime of GIAN. Once registered in the portal, an applicant will be able to apply for any number of GIAN courses as and when necessary.<br><br>**Stage 2**: **Course Registration (Through GIAN Portal):**<br>Log in to the GIAN portal with the user ID and Password created in Stage 1. Click on "Course Registration" option given at the top of the registration form. Select the Course titled "**Advanced Internal Combustion Engines**" from the list and click on "Save" option. Confirm your registration by Clicking on "Confirm Course".<br><br>**Last date for Registration : 25th April, 2019**<br><br>**Stage 3: Course Fee Payment (Only selected candidates):**<br>Only Selected Candidates will be intimated through E-mail by the Course Coordinator. They have to remit the necessary course fee in the form of DD drawn in favor of "**The Director, NIT, Tiruchirappalli – 620015**" payable at NIT-Tiruchirappalli. **The DD along with the signed hard copy of the filled in application should be sent to the following address**:<br><br>**Dr. R. Anand**<br>The Coordinator<br>Associate Professor<br>Department of Mechanical Engineering<br>National Institute of Technology<br>Tiruchirappalli – 620 015, TamilNadu<br>E-mail: anandachu@nitt.edu<br><br>For any queries, you may contact: Mr. A.Santhosh Kumar.<br>Mobile : 9944496078<br>Email : asankumar88@gmail.com |

## The Faculty

**Prof. Rui Chen** Professor of Low Carbon Power Engineering and the Head of Thermo fluids and Dynamics Research Theme of the department of Aeronautical and Automotive Engineering (AAE) at Loughborough University (LU). Prof. Chen has over 28 years' experience of academic research and industrial development and was elected the fellow of IMechE in 2007. His research covers both modelling and experimental aspects of energy technologies in internal combustion engine, fuel catalytic processing, fuel cell technologies and combustion kinetics. He has published over 200 academic papers. Prof. Chen has led numerous projects including EPSRC-funded project (GR/S97514/01) 'Zero constraint free piston energy converter', TSB-funded project (CHBN/015/00038C) 'Prediction and management of fluid transport in PEM fuel cells', HEFCE-funded 'A centre of excellence test facility for ultra-low emissions for advanced compression ignition engines', TSB (TP/BG011L) project 'LCV ultra-efficient systems for the market advancement of electric and hybrid vehicles: Electric turbo assist for heavy duty diesel hybrid power systems'.

**Dr. R. Anand** is as an Associate Professor in Department of Mechanical Engineering at National Institute of Technology, Trichy. He is a recipient of Australian Endeavour Fellow. His area of specialization is Internal Combustion Engines and it expands to the field of Alternative Fuels, Emission control and Fuel cells. His research-oriented scholarship has facilitated him to publish 30 Science Citation (SCI)/Scopus Indexed research journals and presented papers in several international conferences. He has contributed 2 books and 11 book chapters in renowned publication (Elsevier & Springer). He has received projects from IEI-India, DST-SERB, DST-YSS, DST-UKERI and DRDO.

## Course Coordinator

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## For any Queries

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