Completed registration form should be sent to the following address:

Prof. P. P. Date
Course Coordinator
Department of Mechanical Engineering,
IIT Bombay, Powai, Mumbai – 400 076.

Phone: (022) 2576 7511
Fax: (022) 2572 6875
Email: ppdate[at]gmail.com

Important Dates

Last date for receipt of registration: **Sept. 25, 2017**

Notification of acceptance: **Sept. 27, 2017**

Course dates: **October 03-07, 2017**

Notes:

- Incomplete application forms will not be entertained.
- For multiple registrations, copy the form or type in the given format.
- Registration form can be also downloaded from the following course website

http://www.qip.iitb.ac.in/qipcourse2017.php

Venue for Course:

Course will be held at VMCC, IIT Bombay.

Date & Time of Registration:

Oct. 03, 2017, 9.00 AM at course venue, IIT Bombay.

Registration

There is no registration fee for the course. All short-listed candidates are required to confirm their participation by sending a **Demand Draft of ₹2000/- in the name of "Registrar IIT Bombay"**. The above amount will be refunded to the participant if he / she attends the course. In case a participant does not attend the course, the above amount will be forfeited.

Eligibility

Faculty members of degree level engineering colleges recognized by AICTE, are eligible to attend the course. The faculty member should be teaching or should have taught Auto- mobile courses and course of Mechanical Engg.

Transport, Boarding & Lodging

Participants are entitled for Second Class (Sleeper Class) or III AC railway fare to and fro by the shortest route from college to IIT Bombay. All participants will be given auto fare from Kanjurmarg/Andheri to IIT on the dates of arrival and departure. Local participants will be paid second class railway fare or BEST Bus fare.

Boarding and lodging will also be provided free of cost. Accommodation will be provided in the students Hostels or Guest House on sharing basis. Since accommodation is limited, family members of the participants cannot be accommodated.

Office of
Continuing Education & Quality Improvement Programme
IIT Bombay, Powai, Mumbai–400 076
Phone: (022) 25767048
Email: qip@iitb.ac.in
For further details: http://www.qip.iitb.ac.in

Quality Improvement Programme (QIP)

Short Term Course

E-Mobility and Innovations in Sheet Metal Forming

October 03 - 07, 2017

Course Coordinator

Prof. P.P. Date

Department of Mechanical Engineering

Office of
Continuing Education &
Quality Improvement Programme
Indian Institute of Technology Bombay
Powai, Mumbai - 400 076

Introduction

The World is moving towards E-Mobility. Battery powered cars would give out no emissions whatsoever, would be much lighter, more easily manoueverable and controllable. Fossil fuels will not last too long. E-Mobility is the need of the time necessitated mainly by environmental issues.

For the economical and efficient production of an electric car, it is absolutely necessary to have low weight of body in white, the power train, aerodynamic, aesthetic design and high energy density storage in batteries. Design for manufacturing in BIW as well as the power train carried out mainly by finite element based simulation and Innovation in sheet metal forming processes (material, tooling and processes) play very important role in future car development.

New innovations in sheet metal forming have largely aimed at reducing weight of body in white and at the same time fulfill all crash requirements. Present course will also give an overview of innovations in sheet metal forming mainly in the areas of materials, processes and tooling.

Challenges of E-Mobility is demanding in terms of high power and energy density storage in batteries, fast charging, better management of heat generated and higher mileage per charge. Till a battery operated car reaches its peak development, and infrastructure necessary for that is developed, a hybrid engine concept is seen as an intermediate solution. Such a hybrid engine would have an IC engine as well as a battery drive. Hence it is absolutely essential to think of ightweighting an IC Engine.

Broad Objectives

The primary objectives of the course are as follows:

- Providing exposure to design for manufacturing of lightweight engine and powertrain elements by demonstrating solutions to these problems through simulation tools.
- Highlighting new state of the art manufacturing innovations in sheet metal forming
- Appreciate the future role of E-Mobility powered by Li-Ion batteries and hybrid engines.

Course Contents

The course will be delivered in 2 parts, the first two days will focus on innovations (of immediate relevance to automotive industry) in sheet metal forming, including those at IIT Bombay. The next three days will be on Electric cars, which are of relevance for the future. The innovations relevant to cars will generally be discussed in this program.

The program will have *lectures and tutorials* which will give *hands on experience* to the participants with regard to solving problems and performing calculations.

The course will primarily cover over the first two days, formability concepts and innovations in sheet metal forming. Here, a new index of formability, namely, the Strain Non-uniformity Index (SNI) will be introduced, and its application to industrial automotive components will be discussed. The SNI based failure prediction software developed will be demonstrated. Following this, ideas and efforts towards lightweighting of automobiles, including lightweighting of IC Engine and powertrain components, relevant to the immediate future will be discussed. Developments in raw materials and processes in the manufacture of BIW parts will be brought out. Feasibility of adoption of these innovative developments by the Indian industry will be of interest to all.

Thereafter, design methodology when designing an Electric car (calculations for arriving at the resistance to motion of a car, energy needed to move a car at various speeds), battery specifications, different types of batteries, battery construction and issues with batteries of various kinds, will be covered. Fuel cells as a source of power will also be briefly discussed.

Finally, the future of e-mobility in India will be explored.

QIP Short Term Course on

E-Mobility and Innovations in Sheet Metal Forming

October 03 - 07, 2017

Registration Form

Name* (in block letters): (Mr/Mrs/Ms) _____

_____

Designation*: _____

Organization*: _____

Mailing Address*: _____

_____

Telephone: _____Mobile*:_____

Fax: _____

Email*:_____

Educational Qualifications*:_____

Discipline/Specialization*: _____

Accommodation Required*: YES / NO

Signature of Applicant*:

AICTE Permanent ID*:

Sponsorship & signature of Head of the College / Institute (with date & seal)*.

(IMPORTANT: BY SIGNING ABOVE HEAD OF THE COLLEGE/INSTITUTE CERTIFIES THAT APPLICANT IS A FACULTY MEMBER OF DEGREE LEVEL ENGINEERING COLLEGE RECOGNIZED BY AICTE AND AICTE PERMANENT ID WRITTEN ABOVE IS CURRENTLY VALID).

* Required fields otherwise application will be rejected.