**Call for Registration and Participation**

**Effective methods of teaching the course on 'Internal Combustion Engines and Alternate Power Sources for Automobiles'**

**June 19-24, 2017**

**Coordinators**
- Prof. G. Amba Prasad Rao
- Prof. K. Madhu Murthy
- Dr. G. Naga Srinivasulu

**Organized by**
- Department of Mechanical Engineering
- In Association with
- Teaching-Learning Centre
- National Institute of Technology
- WARANGAL – 506 004 (T.S.), INDIA

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**Confirmation of Participation:**

On receipt of the registration form along with proof of payment of registration fee, eligible participants will be sent confirmation of their participation through Email immediately. As the programme is conducted in an interactive mode with hands-on sessions, the number of participants in the workshop is limited to **50**. Early registration of the candidates is encouraged.

**Address for Correspondence:**

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**Brief Profile of the Department:**
The department of Mechanical Engineering offers an UG program, seven PG programs and a Ph.D program as well. There are 39 qualified and experienced faculty in the department. The department has liaison with reputed industries and R&D organizations like NFTDC, BHEL, DML, DRDL, CMTI, etc. Presently the department is handling several R&D projects and consultancy works. The department has also been recognized as a QIP centre for M. Tech and Ph.D programs.

**Teaching-Learning Centre of NIT Warangal:**
The Teaching-Learning Centre (TLC) is established at NIT Warangal with grants from the MHRD, GoI under the scheme, ‘Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching’ (PMMMNMTT). Many senior and young faculty members across various departments of the Institute are associated with this center as members of the Core-Team. One of the important objectives of the center is to conduct training programs for Aspiring, Newly Inducted and In-Service faculty in Science and Engineering disciplines. Other activities of the TLC include preparation of e-learning materials, offering courses on-line, curriculum development, carrying out research in pedagogy and integrating ICT into teaching-learning process.

**About Warangal:**
Warangal is the second largest city of the new state of Telangana. It is situated at a distance of 140 km from the state capital Hyderabad (Nearest Airport). It is well connected by Rail (Kazipet Junction is two km away and Warangal Station is 12 km away) and by Road (NH 202). Warangal is renowned for its rich historical and cultural heritage. It was the seat of erstwhile Kakatiya dynasty. It is a place of tourist attraction with a number of historical monuments like Thousand Pillars Temple, Warangal Fort, Bhadrakali Temple, Ramappa Temple and Laknavaram Lake.
Preamble:
Energy consumption has become a yardstick to rate a nation whether it is developed or a developing one. Life style has drastically improved and is simplified with the invention of IC Engine. IC engine as a prime mover for the automobile has undergone multitude of developments. Though the fossil fuel driven automobile is serving mankind successfully over the past 2 centuries, many issues have cropped up due to heavy clogging of traffic and associated pollution problems. Efforts are being made in order to make eco-friendly IC Engines by adopting various technologies, using after-treatment devices and alternate fuels. In recent times, hybrid power sources and fuel cells are emerging as potential energy sources for automobiles. In this background, a Faculty Development Program (FDP) is planned to enable the faculty to understand in depth, the subject of IC engines and Alternate Power Sources for automobiles, with an emphasis on fuel cells. This program is further focused to enable the participant to offer courses on Combustion, Alternate Fuels for IC Engines and Alternate Power Sources for Automobiles at their respective institutions.

Objectives of the Course: To enable the participants
- To apply principles of thermodynamics to the engine cycle analysis and combustion phenomenon of SI and CI engines
- To develop experimental skills in testing i) engine performance (ii) emission parameters (iii) bio-fuel properties and (iv) performance characteristics of fuel cells in order to integrate them in their teaching
- To teach the concepts of (i) engine emission control techniques and (ii) viable alternate fuel technologies in automobiles
- To learn advances in fuel cells and their application as alternate power source for automobiles
- To use CONVERGE/STAR-CD software packages for simulation of engine flow processes and apply them in their research pursuits
- To teach effectively courses on (i) Combustion (ii) Alternate fuels for IC engines and (iii) Alternate power sources for automobiles

Topics in the Course:
- Overview of I.C. Engines and the Combustion Phenomenon
- Understanding thermo chemistry and fluid mechanics of IC Engines
- Determination of Performance Characteristics of I.C.Engines and solving the related problems
- Analyzing engine emissions and applying suitable emission control techniques
- Applying emission norms and judging appropriate diesel Particulate Filters
- Modeling of Diesel Engine Combustion
- Using Diesel Engine Modeling Software: STAR-CD/ CONVERGE
- Alternate fuels for IC Engines
- Understanding the new combustion concept: Homogeneous Charge Compression Ignition(HCCI)
- Biodiesel production process and strategies to use Biodiesel in CI engines
- Proton Exchange Membrane Fuel Cell and Direct Methanol Fuel Cell: Fundamentals and applications

Resource Persons:
Faculty from NIT Warangal and reputed institutions/organizations/industries, who are experts in the field of IC Engines and Fuel Cells, will deliver lectures and handle practical sessions. Partial list of external resource persons is as follows:
- Prof. J.M. Mallikarjuna  - Dept. of Mech. Engg, IITM, Chennai
- Prof. Sreedhara Sheshadri  - Dept. of Mech. Engg, IITB, Mumbai
- Dr. Nilesh Gajarlawar  - Senior Manager(Technical), Mahindra Research Valley, Chennai

Registration is Open to:
Faculty of Mechanical engineering and allied disciplines/ Professionals involved in training of mechanical engineering and Research scholars aspiring for an academic career.

Accommodation:
Accommodation for outstation participants will be provided on request in the Institute Hostels.

How to Apply:
Eligible candidates may apply by submitting the scanned copy of the filled in registration form (attached with this mail/ brochure) by Email to ambaprasadrao@gmail.com/gnsnitw@gmail.com on or before 05-06-2017 along with the registration fee.

Registration Fee:

<table>
<thead>
<tr>
<th>Category of Participant</th>
<th>Local and NIT Warangal Participants</th>
<th>Residential participants requiring accommodation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>Rs. 800/-</td>
<td>Rs. 1500/-</td>
</tr>
<tr>
<td>Research Scholars</td>
<td>Rs. 400/-</td>
<td>Rs. 750/-</td>
</tr>
<tr>
<td>Participants from Training Organizations / Consultancy firms/ Coaching Institutes</td>
<td>Rs. 3000/-</td>
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</tbody>
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Note: Registration fee for Faculty and Students of SC/ST category is half of the amounts mentioned above as applicable.

Registration fee may be sent in the form of a DD only taken on the Bank address given below. Local participants may also pay the registration fee in cash to the Coordinator, Mechanical Engineering Department. Scanned copy of the DD with requisite registration fee shall be sent as attachment to the Email: ambaprasadrao@gmail.com gnsnitw@gmail.com, gns@nitw.ac.in

Account Name: DIRECTOR, NIT WARANGAL
Bank: State Bank of India
Branch: REC Warangal (NIT Campus)
Branch Code: 20149
IFSC code: SBHY0020149