



A Five-Day Continuing Education Program on

## Innovative Methods for Teaching Mechanical Engineering (IMTME2018)

**22-26 April, 2018**

Sponsored by TEQIP-III



### Coordinators

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<https://sites.google.com/view/imtme2018>

### Organized by

Department of Mechanical Engineering

National Institute of Technology

WARANGAL – 506 004

Telangana State, INDIA

### About the Program

There is a large gap in *what is taught in engineering institutions* and *what is expected of young graduate engineers*. Shortage of quality teachers in engineering is resulting in graduates with poor abilities in solving real world problems. There is a dire need for training of faculty in engineering both in pedagogical skills and domain knowledge.

Since most of the content of mechanical engineering involves the physics of the real-world, it is possible to explain the concepts in such a way that the students *experience* or *get the feel of it*. Unfortunately, not many books are written in this manner and often subjects are not taught in this way. The concepts are best explained by designing simple and cost effective experiments. Similarly, the concepts of advanced courses like CAD and FEA can be better appreciated by implementing the ideas using a computer code- say in Matlab which can address the limitations faced in hand-calculations/calculator based approach.

This program aims at training of teachers of mechanical engineering and allied disciplines in the best of the methods to teach fundamental and critical topics that constitute basis for mechanical engineering. It also includes *setting up simple experiments to make the students easily learn difficult concepts* in Mechanical engineering. Major part of the course content is based on indigenous teaching methods developed by the faculty of mechanical engineering over a period of time.

The program includes training in outcome based education (OBE), course design and effective research methodology.

Quality of an educational program is determined by student learning outcomes. Awareness on OBE is crucial to design the courses specific to societal and industry needs. *It also helps the institutes to get accredited by NBA, NAAC etc*, owing to effective teaching learning techniques being adopted.

Training in effective research methodology supports faculty to keep abreast with the recent advancements, enabling them to contribute to domain knowledge. *It enables professional development through acquiring externally funded research projects and publications*.

### Course Content:

- ✓ Innovative methods of introducing concepts in subjects like *kinematics and dynamics of machinery, mechanical vibrations, machine design, and courses in thermal and production specializations*.
- ✓ Developing *simple and cost-effective experiments* to teach concepts in mechanical engineering.
- ✓ Use of ICT (power point, **MATLAB** etc) to teach concepts of *engineering drawing, manufacturing engineering, CAD and FEM*.
- ✓ Deeper insights into engineering design concepts.
- ✓ Understanding *OBE and designing course content* for specific student learning outcomes.
- ✓ Steps to conduct effective research including, *literature survey, problem formulation, methodology and writing a good journal paper*.

### Resource Persons

The key resource person is **Prof. R. V. Chalam** who developed many indigenous teaching methods to teach topics in kinematics, dynamics, vibrations and design over a period of 40 years. **He is due for superannuation in April 2018.** He authored two books, one on *Mechanical Vibrations* and one on *Theory of Machines*. He also developed several novel and low-cost experiments to make students easily learn difficult concepts in dynamics of machinery. For example, a simple experiment with threads and beads itself is developed to explain the concept of *Coulomb friction*. Apart from being a popular teacher, he is an *inventor* with *two patents*, has journals papers published in the *International Journal of Mechanical Engineering Education* on some of these concepts. Apart from coordinators of the program, experienced faculty of the department will also contribute as resource persons.

### About the Department and NIT Warangal:

The department of Mechanical Engineering offers a UG program, seven PG programs and a Ph. D program. There are 39 qualified and experienced faculty in the department. The department has liaison with reputed industries and R&D organizations. Presently the department is handling several R & D projects and consultancy works. The department has also been recognized as QIP centre for M. Tech and Ph. D.

NIT Warangal, was established in 1959. Over the years it has developed into a premier institute of higher learning and is ranked among the top technical education institutions in India. There are 14 Departments offering eight undergraduate and 32 post-graduate programs besides doctoral programs. About 5000 students across the country and about 500 international students study in the

### 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 5th 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.

### Registration is open to:

This program is open to the Faculty of mechanical engineering and allied disciplines/ Professionals involved in training of mechanical engineers /Post-Graduate students and Research scholars aspiring for an academic career.

### How to Apply:

Eligible candidates may apply online through <https://sites.google.com/view/imtme20188> and upload the fee payment receipt (soft-copy or scanned copy) on or before **13-04-2018**.

### Registration Fee:

Category	Faculty	Student
Fee with accommodation	2000	500
Fee without accommodation	1000	
Internal Faculty/ Scholar/ Student	500	

Please note that the registration fee includes, kit, food and mid-session tea/snacks.

### Fee Payment Details

Account Name	TEQIP III Funds
Account Number	37583198741
Bank	State Bank of India
Branch	REC Warangal (NIT Campus)
Branch Code	20149
IFSC code	SBIN0020149

### Confirmation of Participation:

On receipt of the online registration form along with proof of payment of registration fee, participants will be sent confirmation of their participation through Email. Participants need **NOT** send the hard-copy of the registration form.

As the program is conducted in an interactive mode with hands-on sessions, the number of participants is limited to **40**. *Candidates are advised to register early to avoid disappointment.*

Participants may bring along their laptops for homework practice.

### Contact details

#### Coordinator, IMTME2018

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