



M.E ENERGY ENGINEERING

(Affiliated to Anna University, Chennai)



Department of Mechanical Engineering

**NATIONAL INSTITUTE OF
TECHNICAL TEACHERS TRAINING AND RESEARCH, CHENNAI**
(Ministry of Education, Govt. of India),
Taramani, Chennai- 600 113, India
www.nitttrc.ac.in

ABOUT NITTTR, CHENNAI

National Institute of Technical Teachers Training and Research (NITTTR), Chennai was established in 1964 by the Government of India as a key catalyst Institution for ensuring quality in Technical Education in South India comprising the states of Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana and Union territory of Pondicherry. This Institute being a Resource Institute offers Educational services in Curriculum / Material / Institutional Development, Instructional Methods, Media, Examination reforms, Continuing Education, Distance Learning, Training and Development, Educational Psychology, Educational Management and Research. The Institute strives continuously and vigorously to achieve greater heights of excellence by actively collaborating with National and International agencies on projects and programmes aimed at quality improvement of Technical Education Systems.





Department of Mechanical Engineering

Activities of the Department

The Department of Mechanical Engineering was established in 1964 to provide academic leadership in content updating courses in existing and emerging technology areas through short term duration programmes. The Department of Mechanical Engineering was started by meeting the requirements of industry 2.0 and has transformed to meet the requirements of industry 4.0 through the action plan mentioned below

- To assist in Curriculum development of Mechanical Engineering subjects by leading and guiding curriculum groups in preparing curricula in Mechanical Engineering subjects scientifically
 - To Promote Learning Resources development in print media through own efforts and by training and guiding technical teacher groups formed for the purpose
 - To Promote laboratory innovations in Mechanical Engineering by developing new experiments, demonstrations etc, and by training Mechanical Engineering teachers
 - To Collaborate with academic bodies to promote innovative changes in course structures such as introduction of competency / flexibility modular programmes
 - To Collaborate with the industry for mutual benefit in the larger interest of technical education
 - To facilitate the introduction of new technology programme in Mechanical Engineering through assistance in teacher training, curriculum development, laboratory facilities development, learning resource development etc.
 - To Promote the skills, know-how and expertise of the faculty and supporting staff of the department through continuously carrying out internal faculty development programme
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Vision

Promote innovations, research and development in Mechanical engineering to provide world class human resources in technology and instructional technology areas.

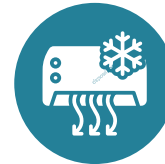
Domain of Short Term Programmes



Renewable
Energy Sources



Automobile
Technology



Refrigeration
& Air Conditioning



Energy &
Environmental Management



Solar & Wind
Energy Applications



Advances in
Manufacturing Techniques



Advances in
Heat Treatment & NDT



Non Traditional
Machining



CAD/CAM



Nanotechnology
& Applications



Trends in Mechatronics
& Industrial Automation



Advances in
Casting & Welding



ABOUT

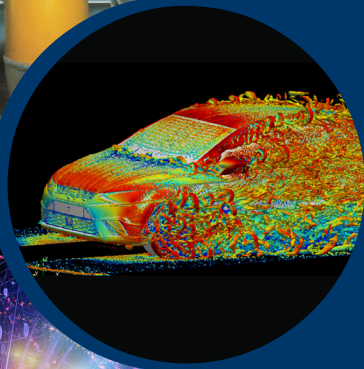
M.E. ENERGY ENGINEERING PROGRAMME

M.E.in Energy Engineering is a multidisciplinary program that aims to meet the current and growing challenge of dwindling fossil fuel resources and the critical demand for alternative, renewable energy sources as global priorities. The program covers fundamental engineering knowledge and skills in such areas as energy generation, conversion, electrical power systems and energy management along with modules on energy sources, energy policy, energy economics and associated environmental issues. The program will provide the student with necessary skills to develop as a professional engineer who specializes in dealing with the breadth of energy systems used to generate, convert, transmit and manage energy. On completion of M. E (Energy Engineering) program, the student will be able to

- Acquire in depth knowledge to design, analyze and evaluate the performance of Renewable and Non-renewable energy / environmental systems considering Indian and global perspective and integrate the knowledge obtained for enhancing the efficiency.
- Analyze critically the increase in energy demand supply gap with time, potential of renewable / non-renewable energy sources, technology gaps, implementation issues for synthesizing information to make intellectual and creative advances in the fields of energy technologies, for conducting research in a wider theoretical, practical and policy context.

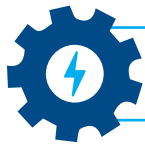
- Quantify the emission from various sources by conducting energy audit for process / engineering industries and building sector using appropriate measurements and evaluate a wide range of potential solutions at feasible and optimal solutions through energy efficient devices / independent or hybrid renewable energy systems considering public health and safety, cultural, societal and environmental factors.
- Extract information pertinent to design, conversion, storage, utilization of renewable / non-renewable energy systems through literature survey and experiments, apply appropriate research methodologies, techniques and tools, design, conduct experiments, analyse and interpret data, demonstrate higher order skills and view things in a broader perspective, contribute individually/in group(s) to the enhancement of scientific / technological knowledge in the fields of renewable / non renewable energy engineering.
- Apply software skills in the field of modelling, analysis and system simulation for performance evaluation and optimization of non renewable / renewable energy systems like bio, wind, solar and hybrid systems.





Core Courses

- Energy Management and Environmental Benefits
- Fluid Mechanics and Heat transfer
- Instrumentation for Energy Systems
- Renewable Energy Systems
- Thermodynamic Analysis of Energy Systems
- Research Methodology and IPR
- Energy Conservation in Industrial Utilities
- Computational Fluid Dynamics for Energy Systems
- Energy Efficient Buildings Design



Elective Courses

- | | |
|---|---|
| ⚙ Design and Analysis of Turbo Machines | ⚙ Design of Heat Exchangers |
| ⚙ Fluidized Bed Systems | ⚙ Hybrid and Electric Vehicles |
| ⚙ Bio Energy Technologies | ⚙ Power Electronics for Renewable Energy Systems |
| ⚙ Energy Forecasting, Modeling and Project Management | ⚙ Wind Energy Systems |
| ⚙ Modeling and Analysis of Energy Systems | ⚙ Advanced Power Plant Engineering |
| ⚙ Power Generation, Transmission and Distribution | ⚙ Hydrogen and Fuel Cell Technologies |
| ⚙ Nuclear Engineering | ⚙ Smart Grid |
| ⚙ Solar Energy Technologies | ⚙ Environmental Engineering and Pollution Control |
| ⚙ Advanced Energy Storage Technologies | ⚙ Industrial Safety |



Facilities

in Mechanical Engineering Department



**Solar Thermal
Training System**



**Solar
Power Meter**



**Solar Module
Analyzer**



**Solar Water
Pump Test Rig**



**Solar Power
Inverter**



THE DIRECTOR

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