M.Tech in Fluid and Thermal Engineering (FTE)

❖ Vision

- To provide specialization in conventional domain of fluid and thermal engineering with emphasis on industrial and social applications.
- To promote skill development in computational fluid dynamics (CFD) and experimental methods in fluid and thermal engineering.
- To develop a strong foundation in energy sectors including solar, wind, thermal, hydro, geothermal, battery and other emerging fields.

❖ Academic Curriculum and Courses

Curriculum:

The course curriculum consists of one-year course work followed a year-long industrial/academic project work. The curriculum is designed to enable students take up a professional or research career in industry and academia.

Total Credits required:70-72 Credits
Dissertation: 32 Credits
Credits Course work: 38-40 Credits

Courses for FTE Branch:

Core

- Advanced Fluid Mechanics
- Applied Computational Fluid Dynamics
- Convective Heat and Mass Transfer
- Experimental Methods in Thermal Engineering
- Advanced Mathematical Techniques for Engineers
- Compressible Flow and Gas Dynamics
- Numerical Methods for Engineering Computation

Contact us

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Other Courses

- Combustion Technology
- Additive Manufacturing
- Research Practicum (Minor Project Work)

Entrepreneurship

- Essentials of Entrepreneurship

Tools

- Simulink
- ANSYS Fluent, OpenFOAM
- Fluidity, LIGGGHTS

Languages

- MATLAB
- Python
- C/C++

❖ Labs and Facilities Available

Thermo-Fluid Lab (Computational and Experimental Lab)

Webpage: http://se.iitmandi.ac.in/thermo_fluid.php

Facilities:
- High Performance Computing(HPC)
- Wind Tunnel
- Bomb Calorimeter
- High Speed Camera and many more…

Energy lab Facilities:
- Parabolic Trough Collector
- Electrochemical work station for characterization of Battery, Supercapacitor, fuel cell etc.
- 1KW On-grid and 1KW Off-grid Solar Photovoltaic Installation
- Device Lab for Manufacturing of Solar Cells

Internal Combustion Engine lab

Facilities:
- Fourier Transform Infrared Spectroscopy (FTIR)
- Engine Exhaust Particle Sizer Spectrometer (EEPS)
- BS-IV Dual Fuel Engine

Solar Thermal Utilization and Thermal Energy Storage Lab

Facilities:
- Solar Parabolic trough collector system
- Pyranometer
- Pyrheliometer
- Data acquisition system

❖ Associated faculties

Course Coordinator:

Dr. Gaurav Bhutani

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❖ Projects By Students

- Monitoring and forecasting of performance and emissions of parallel hybrid electric vehicles
- Co-designing electronics with microfluidics for more sustainable cooling
- Drop Migration due to thermal Marangoni effect
- Design and development of auto changeover device for biogas and LPG
- Investigating the effectiveness of water filtration through xylem tissue of Himalayan Trees, From fundamental to optimization to applications
- Estimation of radiation losses in core Gasifier
- Estimation of radiation losses in Hydrogen Combustion
- Estimation of radiation losses in Methane Combustion
- Development of non-gray scattering coefficient database and Method to solve radiation transfer equation using the database