M.Tech Mechanical - Thermal Engineering Curriculum and Syllabus

(For students admitted in 2022)

M.Tech Thermal Engineering–
(60 credit hrs)

The curriculum for Master of Technology in Thermal Engineering is designed by Dr. Satya pramod jammy, Associate Professor, Dr. Surfarahussain S Halkarni, Assistant Professor and Dr. Lakshmi Sirisha Maganti, Assistant Professor, Prof. Prakash Jadhav in the department of Mechanical Engineering, in consultation with Prof. Gnanavel of SRM Chennai, Dr. Prabhakar S, Intel Corporation USA and Alamelu Brooks, USA.

We are proposing to start MTech Thermal Engineering. As part of the course, centre of electronic cooling will be established and the INTEL company will conduct the training in ICEPAK tools for our students and also will provide internships in the industry. MOU with INTEL in this regard will be signed.

Above curriculum is the base for M.Tech in thermal engineering. Based on the electives chosen by the enrolled student in semester II, III the project in semesters IV the following specializations will be recognized in the degree. These are

1. M. Tech Thermal Engineering with specialization in Electronic Cooling
2. M. Tech Thermal Engineering with specialization in Gas Dynamics
3. M. Tech Thermal Engineering with specialization in Computational Fluid Dynamics

The electives are grouped according to the specialization/stream as given below. A student should successfully complete 4 electives from that group to be eligible for a degree with specialization. If a student chooses electives from various groups, he/she will be awarded M.Tech in Thermal engineering only.

Electives for Gas Dynamics Specialization

S.No	Course name	L-T-P
1	Elements of Gas Dynamics	3-0-0
2	Compressible Fluid Flow	3-0-2
3	Incompressible Fluid Flow	3-0-0
4	Hypersonics and High Temperature Gas Dynamics	3-0-0
5	Elements of Gas Turbine Propulsion	3-0-0
6	Fluid Dynamics of Combustion	3-0-2
7	Turbulence and Shear flows	3-0-0
8	Advanced CFD	3-0-2
9	Numerical methods for conservation laws	3-0-0

Electives for Electronic cooling Specialization

S.No	Course name	L-T-P
1	Thermal Design for electronics equipment	3-0-2
2	Micro and Nanoscale Heat Transfer and fluid	3 - 0 - 0
3	Introduction to Multiphase flows	3-0-0
4	Design of Heat Exchange equipment	3-0-0
5	Conduction and Radiation	3-0-0
6	Transport in Porous Media	3-0-0
7	Turbulence and Shear flows	3-0-0
8	Advanced CFD	3-0-2

Electives for Computational Fluid Dynamics Specialization
S.No Course name L-T-P
1. Incompressible Fluid Flow 3-0-0
2. Compressible Fluid Flow 3-0-2
3 Advanced CFD 3-0-2
4 Turbulence modelling 3-0-0
5 High performance computing in CFD 3-0-2
6 Micro and Nanoscale Heat Transfer and fluid 3 - 0 - 0
7 Numerical methods for conservation laws 3-0-0
8 Fluid structure interaction modelling 3-0-0

Duration • The duration of the course is 2 years comprising of 4 semesters • First two semesters contains class work and labs. • Third and fourth semesters have in house R & D project work.

MTech Thermal Engineering Curriculum

For the batches starting from 2022-23

Semester I	**Subject Code**	**Credits**	**Total**
Advanced Heat & Mass Transfer	**METE 551**	**3-0-0**	**3**
Advanced Fluid Dynamics	**METE 552**	**3-0-0**	**3**
Computational Fluid Dynamics and heat transfer	**METE 553**	**3-0-2**	**4**
Numerical methods in Thermal Engg.	**METE 554**	**3-0-2**	**4**
Measurements in Thermal Engineering	**METE 554**	**3-0-0**	**3**
Seminar-1	**METE 570**	**0-0-2**	**1**
Technical Communication for scientists and Engineers	**EGL 501**	**1-0-0**	**1**
Total credits for semester I			**19**
Semester II			
Technical Elective I		**3-0-2**	**4**
Technical Elective II		**3-0-0**	**3/4**
Technical Elective III		**3-0-0**	**3/4**
Technical Elective IV		**3-0-0**	**3/4**
Research methodology	**use original code**	**2-0-0**	**2**

Total credits for semester II			**15 / 19**
Semester III			
Project Phase I	**use original code**	**0-0-30**	**15**
Total for semester III			**15**
Semester IV			
Seminar -2 (Should present in Conference)**	**use original code**	**0-0-4**	**2**
Final project	**use original code**	**0-0-30**	**15**
Total for semester IV			**17**
Total credits for all semesters			**66/ 69**

HoD Mechanical Engineering

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