Indian Institute of Technology Palakkad
Curriculum

Program : **Master of Technology**
Stream : **Thermofluids Engineering**
Year : **2025 Onwards**

IIT PALAKKAD

The Master of Technology (M. Tech) in Thermofluids engineering is intended to provide a deep understanding of energy conversion processes in mechanical and allied industries, and to highlight the environmental issues associated with energy conversion. With carefully crafted core courses, the basic understanding as well as advanced concepts on heat transfer, fluid mechanics and thermodynamics, will be strengthened. The program will also train students in the theoretical and experimental methodologies to find solutions to complex engineering problems dealing with energy conversion and related environmental issues.

While the core courses provide a strong foundation on energy conversion and related solution methodologies, the elective courses attempt to develop a broad perspective on many upcoming energy technologies. Green and renewable technologies such as solar power, wind turbines, biomass utilization, nuclear power and clean coal technologies will be covered, apart from description of newer fuel options such as hydrogen, CNG and ammonia. With a total 10 courses covered in the first two semesters, the third and fourth semester curriculum involve the completion of a one-year industrially relevant project work. Options for carrying out the project in industry are also available.

The credit requirement of the program is as follows:

Credit requirements :

Category of the course	Credits
Program Core (PMC)	17
Program Electives (PME)	09
Project Based Courses	24
Open Electives (OE)	06
Humanities and Social Sciences Elective (HSE)	0
Communication Skills	1
Technical Writing	1
Total	58

The list of PMC's with their credits is below :

No.	Course code	Course Title	L	T	P	C	Category
1	ME5016	Incompressible Fluid Flows	3	0	0	3	PMC
2	ME5017	Advanced Heat & Mass Transfer	3	0	0	3	PMC
3	ME5024	Advanced Thermodynamics	3	0	0	3	PMC
4	ME5023	Numerical Methods in Heat Transfer & Fluid Flow	2	0	3	4	PMC
5	ME5025	Experimental Methods for Thermal Systems	2	0	3	4	PMC
6	ME5xxx	Internship	0	0	0	0	CWC

The course plan is sufficiently flexible to allow student interest for acquiring knowledge within the overall specialization of the Thermofluids engineering in the Mechanical Engineering. At the end of the first semester, the student can select a project guide and depending on his/her interest, the student has wide options to select elective courses in consultation with the guide. The requirement for obtaining the MTech. Thermofluids degree is successful completion of core courses and completion of 54-60 total credits of course work, including the project work. Within this frame work, many options are possible. Some of the elective courses may be selected from the design or manufacturing streams of Mechanical Engineering and some electives may be selected from other departments also.

Semester I

No.	Course code	Course Title	L	T	P	C	Category
1	ME5016	Incompressible Fluid Flows	3	0	0	3	PMC
2	ME5017	Advanced Heat & Mass Transfer	3	0	0	3	PMC
3	ME5024	Advanced Thermodynamics	3	0	0	3	PMC
4	ME5023	Numerical Methods in Heat Transfer & Fluid Flow	2	0	3	4	PMC
5		Open Elective 1	3	0	0	3	OE
6	GNxxxx	Communication skills	1	0	0	1	Institute Common Course (ICC)
		Semester Total				17	

Semester II

No.	Course code	Course Title	L	T	P	C	Category
1	ME5025	Experimental Methods for Thermal Systems	2	0	3	4	PMC
2	MExxxx	Professional Major Elective 1	3	0	0	3	PME
3	MExxxx	Professional Major Elective 2	3	0	0	3	PME
4	MExxxx	Professional Major Elective 3	3	0	0	3	PME
5		Open Elective 2	3	0	0	3	OE
6	GNxxxx	Technical Writing	1	0	0	1	ICC
		Semester Total				**17**	

Summer Recess/Break

No.	Course code	Course Title	L	T	P	C	Category
1	ME5xxx	Internship	0	0	0	0	CWC, Pass/Fail
		Semester Total				0	

Semester III

No.	Course code	Course Title	L	T	P	C	Category
1	MExxxx	MTP Stage 1	0	0	30	12	Project based course
		Semester Total				**12**	

Semester IV

No.	Course code	Course Title	L	T	P	C	Category
1	MExxxx	MTP Stage 2	0	0	30	12	Project based course
		Semester Total				**12**	

A list of approved PME's can be found below :

No.	Course code	Course Title	L	T	P	C	Category
1	ME5626	Advanced Refrigeration and Air Conditioning	3	0	0	3	PME
2	ME4507	Alternative & Renewable Energy Technologies	3	0	0	3	PME
3	ME5632	Computational methods for inverse problems	3	0	0	3	PME
4	ME5640	Combustion Technology	3	0	0	3	PME
5	ME5018	Gas Turbine Technology	3	0	0	3	PME
6	ME5019	Computational Fluid Dynamics	3	0	0	3	PME
7	ME5011A	Mathematics for Engineers	3	0	0	3	PME
8	ME5641	Fire Dynamics	3	0	0	3	PME