Syllabus for Master of Technology in Thermal Engineering

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

M.Tech Specialization in Thermal Engineering

Program Objective

The objective of this course is to facilitate the students to pursue their specialization in the area of Thermal engineering. This course curriculum enhances the student knowledge and their exposure in the area of thermal and fluid sciences. The content and syllabus of the course are shaped based on the need for industry and research. The course structure provides in-depth knowledge building in thermal and fluid sciences by keeping viscous flow, turbulence and advanced heat transfer. To develop the capability to analyze and design the thermo-fluidic systems, the courses: computational fluid dynamics, design of thermal equipments and mechanical measurement in thermo-fluidic systems also included in the curriculum. The program caters to its students with experienced academician, state-of-the- art laboratories and projects.

Vision of the Department

To emerge as a renowned center in mechanical engineering by following the best practices in teaching, learning and research

Mission of the Department

1. Provide good academic environment for pursuing high quality undergraduate, Post graduate and Doctoral programmes in mechanical engineering that will prepare our graduates for outstanding professional careers
2. Provide service to practicing engineers, industry, government, educational and technical societies through effective engagement with these groups and by providing professional knowledge.
3. Ensure that our students are well trained in interpersonal skills, team work, professional ethics, practical industrial training and participate in professional society activities.
4. Conduct and proliferate high quality research work to students for lifetime of learning.

Program Outcomes for M.Tech. Thermal Engineering Programme

At the end of the M. Tech. Thermal Engineering programme, the post graduate will be able to acquire:

PO1: An ability to independently carry out research /investigation and developmental work to solve practical problems by applying the advanced concepts of thermal engineering and perform tests on thermal energy conversion devices to improve performance and interpret results.

PO2: An ability to write and present a substantial technical report/document for research proposal preparation, technical papers for publishing in scientific journals, present research findings in conferences, following the design and analysis of the performance of thermal systems such as gas turbines, propulsion devices, IC engines, etc.

PO3: An ability to demonstrate a degree of mastery over the various courses of thermal engineering such as IC engines, R & AC, CFD and Heat transfer.

PO4: An ability to identify sources of harmful engine emissions to develop pollution abatement techniques and adapt viable renewable energy sources in order to develop appropriate ways to harness them.

PO5: An ability to engage in lifelong learning for career and professional growth with ethical concern for society and environment.

PO6: Demonstrate knowledge and understanding of the engineering and management principles and apply these to their profession to finalize technical and financial aspects of a project and to manage in multidisciplinary areas.

UNIVERSITY OF ENGINEERING AND MANAGEMENT, JAIPUR

First Year – First Semester

S.No	Sub Code	Subjects	Contact Hours / Week			
			L	T	P	Total
1	TE101	Advanced Heat and Mass Transfer	3	1	0	4
2	TE102	Advanced Thermodynamics	3	1	0	4
3	TE103	Advanced Fluid Mechanics	3	1	0	4
4	TE104	Applied Mathematics for Mechanical Engineers	3	1	0	4
Total Theory						16
			Contact Hours / Week			
S.No	**Sub Code**	**Subjects**	**L**	**T**	**P**	**Total**
5	TE191	Thermal Engineering Lab	0	0	3	3
Total Practical						3
Total Semester			12	4	3	19

First Year – Second Semester

S.No	Sub Code	Subjects	Contact Hours / Week			
			L	T	P	Total
1	TE201	Computational Fluid Dynamics	3	1	0	4
2	TE202	Thermal and Nuclear Power Plant	3	1	0	4
3	TE203	Simulation, Modelling & Analysis	3	1	0	4
4	TE204	Solar Energy Technology	3	1	0	4
Total Theory						16
			Contact Hours / Week			

S.No	Sub Code	Subjects	L	T	P	Total
5	TE291	Simulation Modeling & Analysis Lab	0	0	3	3
		Total Practical				3
		Total Semester	12	4	3	19

Second Year – Third Semester

S.No	Sub Code	Subjects	Contact Hours / Week			
			L	**T**	**P**	**Total**
1	TE301	Optimization Techniques & Design Of Experiments	3	1	0	4
2	TE302	Theory and Design of Heat Exchangers	3	1	0	4
Total Theory						8
			Contact Hours / Week			
S.No	**Sub Code**	**Subjects**	**L**	**T**	**P**	**Total**
3	TE391	Seminar-I	0	2	0	1
4	TE392	Project – Part 1 (Dissertation I + Defence of Project - I)	0	0	18	4+8=12
		Total Practical				13
		Total Semester				21

Second Year – Fourth Semester

S.No	Sub Code	Subjects	Contact Hours / Week			
			L	**T**	**P**	**Total**
1	TE491	Project–Part-II (Dissertation II + Defence of Project - II)	0	0	24	6+18=24
Total						24