M.Tech. in Mechanical Engineering with
Thermal EngineeringCourses

Academic Scheme
Academic Year 2022-23

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058
Academic Book
Year: 2022-23

Scheme for M.Tech. (Mechanical Engineering) with Thermal Engineering Courses (Semester – I) Academic year 2022-23

Sr. No	Course Type	Course Code	Course Name	Course Plan for Each Week (Hrs)			Credits	Evaluation (Points)						Total
				L	P	T		Test 1	Test 2	End Semester		End Semester Weightage (%)	In Semester Evaluation	
										Points	Duration			
1	Core I	PC-MTTH101	Transport Phenomena	3	--	--	3	20	20	100	3	60	--	100
2	Core II	PC-MTTH102	Energy Resources, Storage and management	3	--	--	3	20	20	100	3	60	--	100
3	Program Elective	EC-THPE$	Program Elective-I	3	--	--	3	20	20	100	3	60	--	100
4	Program Elective	EC-THPE$	Program Elective-II	3	--	--	3	20	20	100	3	60	--	100
5	Program Elective	EC-THPE$	Program Elective-III	3	--	--	3	20	20	100	3	60	--	100
6	Core Lab I	PC-MTTH103	Thermal Laboratory-I	--	4	--	2	--	--	--	--	--	50	50
7	Core Lab II	PC-MTTH104	Thermal Laboratory-II	--	4	--	2	--	--	--	--	--	50	50
8	Core	MC-MTTH105	Research Methodology and IPR	2	--	---	2	20	20	100	3	60	--	100
9	Audit	THAU#	Audit-I	2	--		AU	20	20	100	3	60	--	100
10	Online	EC-THPE$	Evaluation as per Swayam/NPTEL, Re-examination as per institute guidelines. (Refer note number 2)											
		TOTAL		19	08		21	--	--	--	--	--	--	800

NOTE –(1) Duration of Test 1, Test 2 is of 1 hour. For passing, student must secure minimum 50% marks in each course with all heads of passing taken together and minimum 50% marks in the end semester examination. (2) Department will offer online course as Program Elective or Open Elective courses subject to availability of a course on https://swayam.gov.in/, and NPTEL and availability of internal resources. Course will be offered for enrollment of at least 5 students opting for the course and maximum online courses can be 20% of total credit. The assesement criteria for these courses will be as per swayam / NPTEL.Afterevalauation grades will be awarded as per institute criteria. 2, 3 Credits will be assigned for online courses of 8 and 12 weeks respectively.(3) Student must choose threeprogram elective courses from those offered by the department in the semester. (4) Assesement criteria for Laboratory/Tutorial work i.e. weightage for assesement shall be as follows: (i) Attendance in Laboratory/Tutorial = 20% (ii) Journal/Drawing sheet/Sketch book = 40% (iii) MCQ/oral/test = 40% (5) L – Lecture P – Lab T - Tutorial

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Scheme for M.Tech. (Mechanical Engineering) withThermal Engineering Courses(Semester – II) Academic year 2022-23

Sr. No	Course Type	Code	Course Name	Course Plan for Each Week (Hrs)			Credits	Evaluation (Points)						Total
				L	P	T		Test 1	Test 2	End Semester		End Semester Weightage (%)	In Semester Evaluation	
										Points	Duration			
1	Core III	PC-MTTH201	Design of Heat Exchangers	3	--	--	3	20	20	100	3	60	--	100
2	Core IV	PC-MTTH202	Computational Fluid Dynamics	3	--	--	3	20	20	100	3	60	--	100
3	Program Elective	EC-THPE$	Program Elective-III	3	--	--	3	20	20	100	3	60	--	100
4	Program Elective	EC-THPE$	Program Elective-IV	3	--	--	3	20	20	100	3	60	--	100
5	Open Elective	EC-OP#	Open Elective-I	3	--	---	3	20	20	100	3	60	--	100
5	Core Lab III	PC-MTTH203	Thermal Laboratory-III	--	4	--	2	--	--	--	--	--	50	50
6	Core Lab IV	PC-MTTH204	Thermal Laboratory-IV	--	4	--	2	--	--	--	--	--	50	50
7	Core V	MTTH299*	Seminar/ MiniProject	--	4	--	2	--	--	--	--	--	100*	100
8	Audit	AU#	Audit -II	2	--	--	AU	20	20	100	3	60	--	100
9	Online	EC-THPE$	Evaluation as per Swayam/NPTEL, Re-examination as per institute guidelines. (Refer note number 2)											
		Total		17	12	--	21	--	--	--	--	--		800

NOTE –(1) Duration of Test 1, Test 2 is of 1 hour. For passing, student must secure minimum 50% marks in each course with all heads of passing taken together and minimum 50% marks in the end semester examination. . (2) Department will offer online course as Program Elective or Open Elective courses subject to availability of a course on https://swayam.gov.in/, and NPTEL and availability of internal resources. Course will be offered for enrollment of at least 5 students opting for the course and maximum online courses can be 20% of total credit. The assesement criteria for these courses will be as per swayam / NPTEL.Afterevalauation grades will be awarded as per institute criteria. 2, 3 Credits will be assigned for online courses of 8 and 12 weeks respectively. (3) Student must choose two program elective and one open elective courses from those offered by the department in the semester. (4) Assesement criteria for Laboratory/Tutorial work i.e. weightage for assesement shall be as follows: (i) Attendance in Laboratory/Tutorial = 20% (ii) Journal/Drawing sheet/Sketch book = 40% (iii) MCQ/oral/test = 40% (5) L – Lecture P – Lab T – Tutorial

* 50 Marks for seminar / mini project evaluation and 50 for presentation. The seminar / mini project report should be evaluated by supervisor and at least one internal examiner.

List of Program Elective – I, II, III, IV and VCourses (EC-THPE$)

Sr. No.	Code	Elective	Sr. No.	Code	Elective
1.	THPE01	Refrigeration System Design	8.	THPE08	Advanced Turbo-machinery
2.	THPE02	Advanced Combustion Techniques	9.	THPE09	Advanced Fluid Dynamics
3.	THPE03	Fuel Cells	10.	THPE10	Experimental Analysis and Instrumentation
4.	THPE04	Design and Analysis of Thermal Systems	11.	THPE11	Piping Engineering
5.	THPE05	Fundamentals of Gas Dynamics	12.	THPE12	Nuclear Engineering
6.	THPE06	Hydraulic and Pneumatic Control System	13.	THPE13	Cryogenics Engineering
7.	THPE07	Air-Conditioning System Design	14.	THPE14	Advanced I. C. Engines

List of Audit Courses (AU#)

Sr. No.	Code	Audit Courses	Sr. No.	Code	Audit Courses
1	AU1	English for research paper writing	5	AU5	Value Education
2	AU2	Constitution of India	6	AU6	Pedagogy Studies
3	AU3	Disaster Management	7	AU7	Personality Development through Life Enlightenment Skills.
4	AU4	Stress Management by Yoga	8	AU8	NPTEL/SWAYAM Courses

List of Open Elective Courses (EC-OP#)

	Code	Course	Sr. No.	Code	Course
1	EC-OP301	Industrial Safety	2	EC-OP302	Operations Research
3	EC-OP303	Cost Management of Engineering Projects	4	EC-OP304	Waste to Energy
5	EC-OP305	Essentials for product designer	6	EC-OP306	Advanced simulation
7	EC-OP307	Composite structure and Assembly	8	EC-OP308	Collaborative Engineering using Team center
9	EC-OP309	Technomatix process	10	EC-OP310	Thermal Flow and Stress analysis
11	EC-OP311	Internet of things (IoT)	12	EC-OP312	Introduction to Big Data Analytics
13	EC-OP313	Introduction to AI and Machine Learning	14	EC-OP314	Introduction to Augmented Reality
15	EC-OP315	Composite Materials	16	EC-OP316	Digital Twin
17	EC-OP317	Industry 4.0	18	EC-OP318	Generative Design
19	EC-OP319	NPTEL/SWAYAM Courses			

Scheme for M.Tech. (Mechanical Engineering) withThermal Engineering Courses (Semester – III) Academic year 2022-23

Sr. No.	Course Type	Course Code	Course Plan for Each Week (Hrs)	Credits	Evaluation				Total
					Report1	Report2	Seminar 1	Seminar 2	
1	Dissertation Phase I	DS-MTTH 301	4+24$	14	50*	100*	50*	100*	300

For passing, Student must secure minimum 50% marks in all heads of passing taken together
* Examined by supervisor and at least one internal examiner.
$ - Contact hours with supervisor/mentor/guide = 4, Self learning hours = 24
Report 1 and Seminar 1 shall be based on Literature Survey on selected topic.
Report 2 and Seminar 2 shall be based on research gap, problem definition and methodology.

Scheme for M.Tech. (Mechanical Engineering) with Thermal Engineering Courses (Semester – IV) Academic year 2022-23

Sr. No.	Course Type	Course Code	Course Plan for Each Week (Hrs)	Credits	Evaluation				Total
					Report1	Report2	Seminar 1	Seminar 2	
1	Dissertation Phase II	DS-MTTH 401	4+24$	14	50*	100**	50*	100**	300

For passing, Student must secure minimum 50% points in all heads of passing taken together.
Final Dissertation Viva-Voce will be conducted only if candidate has passed all lower semester examinations.
* Examined by supervisor and at least one internal examiner
** Examined by supervisor and one approved external examiner.
$ -Contact hours with mentor/supervisor/guide=4, -Self learning hours=24
Report 1 and Seminar 1 shall be based on pre synopsis
Report 2 and Seminar 2 shall be based on Final presentation and dissertation viva voce

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