Bharatiya Vidya Bhavan's

SARDAR PATEL COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute under Mumbai University)

Andheri (W), Mumbai - 400058

M.Tech. in Mechanical Engineering with

Thermal Engineering Courses

Academic Evaluation Scheme/Credit System

Year: 2023-2024

Regulation 23 (R23)

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058
Year: 2023-24

Scheme for F.Y.M.Tech. in Mechanical Engineering with Thermal Engineering Courses, (Semester - I) R23
Academic Year 2023-24

Sr No	Course Name	Code	Course Plan per Week (Hrs)			Credits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage (%)	Term work / Practical	Total Points
			L	P	T		T1	T2	IE	Points	Time (Hrs)			
Core Courses														
1	Transport Phenomena	PC-MTTH101	3	--	--	3	15	15	20	100	3	50%	0	100
2	Energy Resources, Storage and management	PC-MTTH102	3	--	--	3	15	15	20	100	3	50%	0	100
3	Research Methodology and IPR	PC-MTTH103	2	--	1	3	15	15	20	100	3	50%	0	100
Program Elective Courses														
4	Program Elective-I	EC-THPE$$	3	--	--	3	15	15	20	100	3	50%	0	100
5	Program Elective-II	EC-THPE$$	3	--	--	3	15	15	20	100	3	50%	0	100
6	Program Elective-III	EC-THPE$$	3	--	--	3	15	15	20	100	3	50%	0	100
Laboratory Courses														
7	Thermal Laboratory-I	PC-MTTH151	--	4	--	2	--		--	--	--	--	50	50
8	Thermal Laboratory-II	PC-MTTH152	--	4	--	2	--		--	--	--	--	50	50
Indian Knowledge System Course														
9	Indian Knowledge System Course	IK-MTTH#	2	--	--	2	15	15	20	50	2	50%	0	100
	TOTAL		**19**	**8**	**1**	**24**				650			100	800

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058
Year: 2023-24

Sr. No.	Course Name	Code	Course Plan per Week (Hrs)			Credits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage (%)	Term work / Practical	Total Points
			L	P	T		T1	T2	IE	Points	Time (Hrs)			
Scheme for F.Y.M.Tech. in Mechanical Engineering with Thermal Engineering Courses, (Semester - II) R23 Academic Year 2023-24														
Core Courses														
1	Design of Heat Exchangers	PC-MTTH201	3	0	0	3	15	15	20	100	3	50%	0	100
2	Computational Fluid Dynamics	PC-MTTH202	3	0	0	3	15	15	20	100	3	50%	0	100
3	Seminar/ MiniProject	PC-MTTH203*	--	4	--	2	15	15	--	--	--	--	100*	100*
Program Elective Course														
4	Program Elective-IV	PE-MTTH$$	3	--	0	3	15	15	20	100	3	50%	0	100
5	Program Elective-V	PE-MTTH$$	3	--	0	3	15	15	20	100	3	50%	0	100
Open Elective Course														
6	Open Elective	OE-MTTH#	3	--	--	3	30		20	100	3	50%	0	100
Vocational and Skill Enhancement														
7	Skill Based Thermal Lab-I	SE-MTTH201	--	4	--	2	--		--	--	--	--	50	50
8	Skill Based Thermal Lab-II	SE-MTTH202	--	4	--	2	--		--	--	--	--	50	50
Ability Enhancement Courses														
9	Ability Enhancement Course	AE-MTTH#	2			2	15	15	20	100	3	50%	0	100
	TOTAL		**17**	**12**	**0**	**23**				600			200	800

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058
Year: 2023-24

Sr. No.	Course Name	Code	Course Plan per Week (Hrs)			Credits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage (%)	Term work / Practical	Total Points
			L	**P**	**T**		**T1**	**T2**	**IE**	**Points**	**Time (Hrs)**			
Scheme for F.Y.M.Tech. in Mechanical Engineering with Thermal Engineering Courses, (Semester - III) R23 Academic Year 2023-24													

Scheme for F.Y.M.Tech. in Mechanical Engineering with Thermal Engineering Courses, (Semester - III) R23
Academic Year 2023-24

Sr. No.	Course Name	Code	L	P	T	Credits	T1	T2	IE	Points	Time (Hrs)	End semester weightage (%)	Term work / Practical	Total Points
Value Education Course														
1	Value Education Course	VE-MTTH301	2	-	-	2	15	15	20	50	--	50%	0	100
Field or Community Engagement Project														
2	Field or Community Engagement Project	MT-CEP/FP01				2	\$\$\$\$Continuos evaluation shall be defined by course instructor or activity evaluator							100
Internship or Project														
							Report1		Report2		Seminar 1	Seminar 2		
3	Internship /Dissertaion	DS-MTTH 301	4+24$			14	50*		100*		50*	100*		300
	TOTAL		**06**	**--**	**24**	**18**								500

* 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.

Sr. No.	Course Name	Code	Course Plan per Week (Hrs)			Credits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage (%)	Term work / Practical	Total Points
			L	**P**	**T**		**T1**	**T2**	**IE**	**Points**	**Time (Hrs)**			
Scheme for F.Y.M.Tech. in Mechanical Engineering with Thermal Engineering Courses, (Semester - IV) R23 Academic Year 2023-24													
							Cocurricular Activity							
1	Co curricular course/activity/ Stress Management by Yoga	CC-MTTH401	-	-	1	1	\$\$\$\$Continuos evaluation shall be defined by course instructor or activity evaluator							100
							Internship or Project							
							Report1			Report2		Seminar 1	Seminar 2	
2	Dissertation	DS-MTTH 401	4+24\$			14	50*			100*		50*	100**	300
	TOTAL		**04**	**-**	**25**	**15**								400

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

List of Program Elective – I, II, III, IV and V Courses (PE-MTTH$$)

Sr. No.	Code	Elective Course Name	Sr. No.	Code	Elective Course Name
1.	PE-MTTH01	Refrigeration System Design	8.	PE -MTTH08	Advanced Turbo-machinery
2.	PE-MTTH02	Advanced Combustion Techniques	9.	PE -MTTH09	Advanced Fluid Dynamics
3.	PE-MTTH03	Fuel Cells	10.	PE -MTTH10	Experimental Analysis and Instrumentation
4.	PE-MTTH04	Design and Analysis of Thermal Systems	11.	PE -MTTH11	Piping Engineering
5.	PE-MTTH05	Fundamentals of Gas Dynamics	12.	PE -MTTH12	Nuclear Engineering
6.	PE-MTTH06	Hydraulic and Pneumatic Control System	13.	PE -MTTH13	Cryogenics Engineering
7.	PE-MTTH07	Air-Conditioning System Design	14.	PE -MTTH14	Advanced I. C. Engines

List of Indian Knowledge System (IK-MTTH#)

Sr. No.	Code	IKS Courses	Sr. No.	Code	IKS Courses
1	IK-MTTH101	Constitution of India	2	IK-MTTH102	Related NPTEL/SWAYAM Courses

List of Ability Enhancement Courses (AE-MTTH#)

Sr. No.	Code	AEC Course Name	Sr. No.	Code	AEC Course Name
1	AE-MTTH201	English for research paper writing	3	AE-MTTH203	Pedagogy Studies
2	AE-MTTH202	Personality Development through Life Enlightenment Skills.	4	AE-MTTH204	Related NPTEL/SWAYAM Courses

List of Value Education Course (VE-MTTH#)

Sr. No.	Code	VEC Course Name	Sr. No.	Code	VEC Course Name
1	VE-MTTH301	Disaster Management	2	VE-MTTH302	Value Education

List of Open Elective Courses (OE-MTTG #)

Sr. No.	Code	Open Elective Course Name	Sr. No.	Code	Open Elective Course Name
1	OE-MTTH201	Industrial Safety	2	OE-MTTH202	Operations Research
3	OE-MTTH203	Cost Management of Engineering Projects	4	OE-MTTH204	Waste to Energy
5	OE-MTTH205	Internet of things (IoT)	6	OE-MTTH206	Introduction to Big Data Analytics
7	OE-MTTH207	Introduction to AI and Machine Learning	8	OE-MTTH208	Introduction to Augmented Reality
9	OE-MTTH209	Composite Materials	10	OE-MTTH210	Digital Twin
11	OE-MTTH211	Industry 4.0	12	OE-MTTH212	Generative Design
13	OE-MTTH213	Thermal and Flow analysis	14	OE-MTTH214	NPTEL/SWAYAM Courses

Evaluation for R23

(1) 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. The assesement criteria for these courses will be as per swayam / NPTEL. After evalauation 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 three program 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.

* Note 1: 50 Marks for seminar / mini project evaluation and 50 for presentation. Note 2: The seminar report should be evaluated by supervisor and at least one internal examiner.

1. T1, T2: The courses under the category "Theory courses (PC, PE, OE)" and "Ability Enhancement Courses (AE)". the evaluation is based on Test of 15 points each for one hour duration. Tentatively the first two modules of the course content will be covered in T1 and third and fourth modules of the course content will be covered in T2. Any change in the same will be informed by the course instructor.

   The courses under the category "Skill Enhancement", "Value Education" and Indian Knowledge system", the evaluation is based on activity (Presentation, Test, Mini project, Field project, Practical Examination) of 15 points each. This evaluation shall be conducted by course instructor.

2. IE: Internal Evaluation will be carried out by course instructor for 20 points. It is the continuous evaluation through out the semester.

   The evaluation will be based on minimum three of the following activities decided by course instructor. The maximum points that can be assigned to one activity will be 07. The course instructor needs to inform the students and head of the department about the activities those will be considered for IE and the points assigned to them in first week of semester. The course instructor will submit the internal evaluation points (out of 20 with activity wise break up) to examination section before the beginning of End Semester examination.

   List of Activities: 1. Class Involvement 2. Assignments 3. Problem Solving 4. Mini project 5. Quizzes 6. Presentation 7. Oral

3. End semester evaluation: The courses under the category "Theory courses" and "Ability Enhancement Courses". the evaluation is based on End semester examination of 100 points. **The end semester examination will cover all the modules of the course content.**

   The courses under the category "Skill Enhancement", "Value Education" and "Indian knowledge system", the evaluation is based on activity (Presentation, Test, Mini project, Field project, Practical Examination).

4. $$$$ The evaluation for Co curricular course/ activity shall be defined by course instructor or activity evaluator. The evaluation of points shall be carried out through out the semester and the grade Pass/ No pass will be awarded which will not be considered for CPI calculation.

Note: Refer Academic and Examination rules and regulations for further details.