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 Machine Design Courses

Academic Course Credit and Evaluation Scheme

Year: 2025-2026

Regulation 2023 (R23)

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058
Year: 2025-26

Scheme for F.Y.M.Tech. in Mechanical Engineering with Machine Design Courses, (Semester - I) R23 Academic Year 2025-26																
Sr No	**Course Name**	**Code**	**Course Plan per Week (Hrs)**			**SL/Sem. (Hrs)**	**Credits**	**In semester Evaluation (Points)**			**End Semester Evaluation (Points)**		**End semester weightage (%)**	**Term work / Practical**	**Total Points**
			L	**P**	**T**			**Mid term**	**Time (Hrs)**	**IE**	**Points**	**Time (Hrs)**			
	Core Courses														
1	Advanced Stress Analysis	PC-MTMD101	3	--	--	48	3	30	1.5	20	100	3	50%	0	100
2	Computer Aided Design	PC-MTMD102	3	--	--	48	3	30	1.5	20	100	3	50%	0	100
3	Research Methodology and IPR	PC-MTMD103	2	--	1	48	3	30	1.5	20	100	3	50%	25	125
Program Elective Courses															
4	Program Elective-I	PE-MTMD**	3	--	--	48	3	30	1.5	20	100	3	50%	0	100
5	Program Elective-II	PE-MTMD**	3	--	--	48	3	30	1.5	20	100	3	50%	0	100
6	Program Elective-III	PE-MTMD**	3	--	--	48	3	30	1.5	20	100	3	50%	0	100
Laboratory Courses															
7	Design Lab-I	PC-MTMD151	--	4	--	32	2	--	--	25	25	--	--	--	50
8	Design Lab-II	PC-MTMD152	--	4	--	32	2	--	--	25	25	--	--	--	50
Indian Knowledge System Course															
9	Indian Knowledge System Course	IK-MTMD#	2	--	--	32	2	30	1.0	20	50	2	100%	0	100
	TOTAL						**24**								

L: Lecture, T: Tutorial, P: Practical, SL: Self Learning

1 credit corresponds to 30 Hours of student engagement in a semester. Apart from actual contact hours (L T P), the remaining hours are used for term wok and self-learning by students.

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058
Year: 2025-26

Scheme for F.Y.M.Tech. in Mechanical Engineering with Machine Design Courses, (Semester - II) R23 Academic Year 2025-26															
Sr. No.	**Course Name**	**Code**	**Course Plan per Week (Hrs)**			**SL/Sem. (Hrs)**	**Credits**	**In semester Evaluation (Points)**			**End Semester Evaluation (Points)**		**End semester weightage (%)**	**Term work / Practical**	**Total Points**
			L	**P**	**T**			**Mid Term**	**Time (Hrs)**	**IE**	**Points**	**Time (Hrs)**			
Core Courses															
1	System Modeling and Synthesis of Mechanisms	PC-MTMD201	3	0	0	48	3	30	1.5	20	100	3	50%	0	100
2	Advance Finite Element Methods	PC-MTMD202	3	0	0	48	3	30	1.5	20	100	3	50%	0	100
3	Seminar/ Mini Project	PC-MTMD 203	--	4	--	32	2	--	--	--	--	--	--	100*	100*
Program Elective Course															
4	Program Elective-IV	PE-MTMD201-	3	--	1	64	4	30	1.5	20	100	3	50%	0	100
5	Program Elective-V	PE-MTMD201-	3	--	1	64	4	30	1.5	20	100	3	50%	0	100
Open Elective Course															
6	Open Elective	OE-MTMD#	3	--	--	48	3	30	1.5	20	100	3	50%	0	100
Vocational and Skill Enhancement															
7	Skill Based Design Lab-I	SE-MTMD201	--	4	--	32	2	-	-	-	-	--	--	50	50
8	Skill Based Design Lab-II	SE-MTMD202	--	4	--	32	2	-	-	-	--	--	--	50	50
Ability Enhancement Course															
9	Ability Enhancement Course	AE-MTMD#	2			32	2	30	1.5	20	100	3	50%	0	100
	TOTAL						**25**								

L: Lecture, T: Tutorial, P: Practical, SL: Self Learning

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Sardar Patel College of Engineering Andheri (West), Mumbai 400 058
Year: 2025-26

Scheme for F.Y.M.Tech. in Mechanical Engineering with Machine Design Courses, (Semester - III) R23 Academic Year 2025-26																
Sr. No.	**Course Name**	**Code**	**Course Plan per Week (Hrs)**			**SL/Sem. (Hrs)**	**Credits**	**In semester Evaluation (Points)**			**End Semester Evaluation (Points)**		**End semester weightage (%)**	**Term work / Practical**	**Total Points**
			L	**P**	**T**			**Mid Term**	**Time (Hrs)**	**IE**	**Points**	**Time (Hrs)**			
Value Education Course															
1	Value Education Course	VE-MTMD301	2	-	-	32	2	30	1.5	20	50	--	100%	0	100
Field or Community Engagement Project															
2	Field or Community Engagement Project	CEP-MTMD301		4			2	Continuos evaluation shall be defined by course instructor or activity evaluator							100
Internship or Project															
3	Internship /Dissertaion	DS-MTMD 301	$4^{\#}+38$				14			100*	200^{S}				300
	TOTAL						**18**								500

L: Lecture, T: Tutorial, P: Practical, SL: Self Learning

1 credit corresponds to 30 Hours of student engagement in a semester. Apart from actual contact hours (L T P), the remaining hours are used for term wok and self-learning by students.

Note:

- Contact hours with supervisor/mentor/guide = 4

* - Evaluation shall be based on one or more presentations during the semester. 50% weightage shall be for the report and remaining 50% shall be for presentations. The evaluation shall be carried out by the allotted guide and at least one internal examiner

$ - 50% weightage shall be for the report and remaining 50% shall be for presentation. The evaluation shall be carried out by the allotted guide and at least one internal examiner

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058
Year: 2025-26

Scheme for F.Y.M.Tech. in Mechanical Engineering with Machine Design Courses, (Semester - IV) R23 Academic Year 2025-26														
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**		**Mid Term**	**Time (Hrs)**	**IE**	**Points**	**Time (Hrs)**			
Cocurricular Activity														
1	Co curricular course/activity/ Stress Management by Yoga	CC-MTMD401	-	-	1	1	$ Continuos evaluation shall be defined by course instructor or activity evaluator							100
Internship or Project														
2	Dissertation	DS-MTMD 401	$4^{\#}$+38			14			100*	$200^{\$\$}$				300
	TOTAL		**04**	**-**	**25**	**15**								400

Note:

- Contact hours with supervisor/mentor/guide = 4

* - Evaluation shall be based on one or more presentations during the semester. 50% weightage shall be for the report and remaining 50% shall be for presentations. The evaluation shall be carried out by the allotted guide and atleast one internal examiner

$$ - 50% weightage shall be for the report and remaining 50% shall be for presentation. The evaluation shall be carried out by the allotted guide and at least one external examiner

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

Sr. No.	Code	Elective	Sr. No.	Code	Elective
1.	PE-MTMD01	Machine Dynamics and Advance Vibration	9.	PE-MTMD09	Entrepreneurship Development and Management
2.	PE-MTMD02	Additive Manufacturing	10.	PE-MTMD10	Design of Power Transmission Systems
3.	PE-MTMD03	Design for Manufacturing and Assembly	11.	PE-MTMD11	Optimization Techniques in Design
4.	PE-MTMD04	Tribology in Design	12.	PE-MTMD12	Advanced Engineering Materials
5.	E-MTMD05	Reliability Engineering and Design of Experiments	13.	PE-MTMD13	Mechanics of Composite Materials
6.	PE-MTMD06	System Modeling and Analysis	14.	PE-MTMD14	Robotics
7.	PE-MTMD07	Process Equipment Design	15.	PE-MTMD15	Advance Fracture Mechanics
8.	PE-MTMD08	Micro Electro Mechanical Systems			

List of Indian Knowledge System

Sr. No.	Code	Audit Courses	Sr. No.	Code	Audit Courses
1	IK-MTMD101	Constitution of India	2	IK-MTMD102	Related NPTEL/SWAYAM Courses

List of Ability Enhancement Courses (AE-MTMD#)

Sr. No.	Code	Audit Courses	Sr. No.	Code	Audit Courses
1	AE-MTMD201	English for research paper writing	4	AE-MTMD203	Pedagogy Studies
2	AE-MTMD202	Personality Development through Life Enlightenment Skills.	5	AE-MTMD204	Related NPTEL/SWAYAM Courses

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List of Value Education Course

Sr. No.	Code	Audit Courses	Sr. No.	Code	Audit Courses
1	VE-MTMD301	Disaster Management	2	VE-MTMD302	Value Education

List of Open Elective Courses (OE-MTMD-#)

Sr. No.	Code	Course	Sr. No.	Code	Course
1	OE-MTMD201	Industrial Safety	2	OE-MTMD202	Operations Research
3	OE-MTMD203	Cost Management of Engineering Projects	4	OE-MTMD204	Waste to Energy
5	OE-MTMD205	Internet of things (IoT)	6	OE-MTMD206	Introduction to Big Data Analytics
7	OE-MTMD207	Introduction to AI and Machine Learning	8	OE-MTMD208	Introduction to Augmented Reality
9	OE-MTMD209	Composite Materials	10	OE-MTMD210	Digital Twin
11	OE-MTMD211	Industry 4.0	12	OE-MTMD212	Generative Design
13	OE-MTMD213	NPTEL/SWAYAM Courses	14		

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 assessment criteria for these courses will be as per swayam / NPTEL. After evaluation grades will be awarded as per institute criteria. 2, 3 Credits will be assigned for online courses of 8 and 12 weeks respectively.

3. Assessment criteria for Laboratory/Tutorial work i.e. weightage for assessment shall be as follows: (i) Participation 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.

4. Mid-Semester: The courses under the category “Theory courses (PC, PE, OE)” and “Ability Enhancement Courses (AE)”. The evaluation is based on Mid Term Exam having 30% weightage. 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 , lab work, Presentation, Test, Mini project, Field project, Practical Examination, viva. This evaluation shall be conducted by course instructor.

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

6. 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 lab assignment/ activity (Presentation, Test, Mini project, Field project, Practical Examination).

7. $$$$ The evaluation for Co-curricular course/ activity shall be defined by course instructor or activity evaluator. The evaluation of points shall be carried out throughout 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.