

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058  
Academic Book  
Year: 2020-21

Draft

**M.Tech. in Mechanical Engineering with  
Machine Design Courses**

**Academic Scheme**  
**Year 2020-21**

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**Academic Book**  
**Year: 2020-21**

**Scheme for M.Tech. (Mechanical Engineering) with Machine Design Courses (Semester – I) Academic year 2020-21**

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-MTMD101	Advanced Stress Analysis	3	--	--	3	20	20	100	3	60	--	100
2	Core II	PC-MTMD102	Computer Aided Design	3	--	--	3	20	20	100	3	60	--	100
3	Program Elective	EC-MDPE\$	Program Elective-I	3	--	--	3	20	20	100	3	60	--	100
4	Program Elective	EC-MDPE\$	Program Elective-II	3	--	--	3	20	20	100	3	60	--	100
5	Core Lab I	PC-MTMD103	Design Lab-I	--	4	--	2	--	--	--	--	--	50	50
6	Core Lab II	PC-MTMD104	Design Lab-II	--	4	--	2	--	--	--	--	--	50	50
7	Core	MC-MTMD105	Research Methodology and IPR	2	--	---	2	20	20	100	3	60	--	100
8	Audit	MDAU#	Audit Course-I	2	--		AU	20	20	100	3	60	--	100
11	Online	EC-MDPE\$	Evaluation as per Swayam/NPTEL, Re-examination as per institute guidelines. (Refer note number 2)											
		TOTAL		16	08		18	--	--	--	--	--	--	700

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 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) Student must choose two program elective courses from those offered by the department in the semester. (4) Assessment criteria for Laboratory/Tutorial work i.e. weightage for assessment 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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**List of Program Elective – I, II, III, IV and V Courses (EC-MDPE\$)**

Sr. No.	Code	Elective	Sr. No.	Code	Elective
1.	EC-MDPE01	Machine Dynamics and Advance Vibration	9.	EC-MDPE9	Entrepreneurship Development and Management
2.	EC-MDPE02	Additive Manufacturing	10.	EC-MDPE10	Design of Power Transmission Systems
3.	EC-MDPE03	Design for Manufacturing and Assembly	11.	EC-MDPE11	Optimization Techniques in Design
4.	EC-MDPE04	Tribology in Design	12.	EC-MDPE12	Advanced Engineering Materials
5.	EC-MDPE05	Reliability Engineering and Design of Experiments	13.	EC-MDPE13	Mechanics of Composite Materials
6.	EC-MDPE06	System Modeling and Analysis	14.	EC-MDPE14	Robotics
7.	EC-MDPE07	Process Equipment Design	15.	EC-MDPE15	Advance Fracture Mechanics
8.	EC-MDPE08	Micro Electro Mechanical Systems			

**List of Audit Courses (MDAU#)**

Sr. No.	Code	Audit Courses	Sr. No.	Code	Audit Courses
1	MDAU1	English for research paper writing	3	MDAU3	Disaster Management
2	MDAU2	Constitution of India	4	MDAU4	Stress Management by Yoga

**List of Open Elective Courses (EC-OP#)**

Sr. No.	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 NX 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 and Flow 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

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**Scheme for M. Tech. (Mechanical Engineering) with Machine Design Courses (Semester – II) Academic year 2020-21**

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-MTMD203	System Modeling and Synthesis of Mechanisms	3	--	--	3	20	20	100	3	60	--	100
2	Core IV	PC-MTMD204	Advanced Finite Element Methods	3	--	--	3	20	20	100	3	60	--	100
3	Program Elective	EC-MDPE\$	Program Elective-III	3	--	--	3	20	20	100	3	60	--	100
4	Program Elective	EC-MDPE\$	Program Elective-IV	3	--	--	3	20	20	100	3	60	--	100
5	Core Lab III	PC-MTMD205	Design Lab-III	--	4	--	2	--	--	--	--	--	50	50
6	Core Lab IV	PC-MTMD206	Design Lab-IV	--	4	--	2	--	--	--	--	--	50	50
7	Core V	PC-MTMD 299	Seminar/ Mini Project	--	4	--	2	--	--	--	--	--	100*	100
8	Audit	MDAU#	Audit Course -II	2	--	--	AU	20	20	100	3	60	--	100
11	Online	EC-MDPE\$	Evaluation as per Swayam/NPTEL, Re-examination as per institute guidelines. (Refer note number 2)											
Total				14	12	--	18	--	--	--	--	--	--	700

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 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) Student must choose two program elective courses from those offered by the department in the semester. (4) Assessment criteria for Laboratory/Tutorial work i.e. weightage for assessment 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.

\* 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.

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**Scheme for M. Tech. (Mechanical Engineering) with Machine Design Courses (Semester – III) Academic year 2020-21**

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		Report	Seminar	
1	Program Elective	EC-MDPE\$	Program Elective - V	3	--		3	20	20	100	3	60	--	--	100
2	Open Elective	EC-OP#	Open Elective-I	3	--	---	3	20	20	100	3	60	--	--	100
3	Dissertation	DS- MTMD398	Seminar on Literature Review	---	---	4 + 16 <sup>\$</sup>	4	---	---	---	---	--	50	50*	100
4		DS- MTMD399	Dissertation Seminar Stage – I	---	---		6	---	---	---	---	--	50	50*	100
<b>Total</b>				6	--	20	16						100	100	400

**For passing, Student must secure minimum 50% marks in each course with all head of passing taken together and minimum 50% marks in the end semester examination**

\* Examined by supervisor and at least one internal examiner.

\$ - Contact hours with supervisor/mentor/guide = 4, Self learning hours = 16

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 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) Student must choose one program elective and one open elective course from those offered by the department in the semester.

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**Scheme for M.Tech. (Mechanical Engineering) with Machine Design Courses (Semester – IV) Academic year 2020-21**

Sr No	Course Type	Code	Course Name	Course Plan for Each Week (Hrs)			Credits								Total
				L	P	T		Test 1	Test 2	End Semester		End Semester Weightage (%)	In Semester Evaluation		
										Points	Duration		Report	Seminar	
1	Dissertation	DS- MTMD498	Dissertation Seminar Stage – II	--	--	4 + 28 <sup>\$</sup>	2	---	---	---	---	--	50	50*	100
2		DS- MTMD499	Dissertation Viva-Voce	--	--		14	---	---	---	---	--	100	100**	200
<b>Total</b>				--	--	32	16						150	150	300

**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. 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 supervisor/mentor/guide = 2, Self learning hours = 28

Total Course Credits = 18 + 18 + 16 + 16 = 68

Note: L- Lecture, P- Lab, T-Tutorial

