M.Tech. in Mechanical Engineering with Machine Design Courses

Academic Scheme
Year 2022-23

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

Scheme for M.Tech. (Mechanical Engineering) withMachine DesignCourses(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-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	Program Elective	EC-MDPE$	Program Elective-III	3	--	--	3	20	20	100	3	60	--	100
6	Core Lab I	PC-MTMD103	Design Lab-I	--	4	--	2	--	--	--	--	--	50	50
7	Core Lab II	PC-MTMD104	Design Lab-II	--	4	--	2	--	--	--	--	--	50	50
8	Core III	MC-MTMD105	Research Methodology and IPR	2	--	---	2	20	20	100	3	60	--	100
9	Audit	MDAU#	Audit Course-I	2	--		AU	20	20	100	3	60	--	100
10	Online	EC-MDPE$	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 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

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Scheme for M.Tech. (Mechanical Engineering) withMachine Design 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 IV	PC-MTMD203	System Modeling and Synthesis of Mechanisms	3	--	--	3	20	20	100	3	60	--	100
2	Core V	PC-MTMD204	Advanced Finite Element Methods	3	--	--	3	20	20	100	3	60	--	100
3	Program Elective	EC-MDPE$	Program Elective-IV	3	--	--	3	20	20	100	3	60	--	100
4	Program Elective	EC-MDPE$	Program Elective-V	3	--	--	3	20	20	100	3	60	--	100
5	Open Elective	EC-OP#	Open Elective	3	--	--	3	20	20	100	3	60	--	100
6	Core Lab III	PC-MTMD205	Design Lab-III	--	4	--	2	--	--	--	--	--	50	50
7	Core Lab IV	PC-MTMD206	Design Lab-IV	--	4	--	2	--	--	--	--	--	50	50
8	Core VI	PC-MTMD 299	Seminar/ Mini Project	--	4	--	2	--	--	--	--	--	100*	100
9	Audit	MDAU#	Audit Course -II	2	--	--	AU	20	20	100	3	60	--	100
10	Online	EC-MDPE$	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.
* 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.

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	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

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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
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			

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Scheme for M.Tech. (Mechanical Engineering) with Machine Design 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-MTMD 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 Machine Design 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-MTMD 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