

M. Tech. in Electrical Engineering with Power Electronics and Power System Course

Academic Scheme

Applicable from the Academic Year 2022-2023

Sardar Patel College of Engineering, Andheri (West), Mumbai 400058
Academic Book year 2022-23

Credit System for M. Tech Electrical Engineering in Power Electronics and Power System (Semester - I) Year 2022-2023

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	Hours			
1	Core I	PC-MTPX101	Advanced Power Electronics	3	--	--	3	20	20	100	3	60	--	100
2	Core II	PC-MTPX102	Computer Aided Power System Analysis	3	--	--	3	20	20	100	3	60	--	100
3	Programme Elective I	PE-MTPX 101-110	Programme Elective-I	3	--	1	4	20	20	100	3	60	25	125
4	Programme Elective II	PE-MTPX 101-110	Programme Elective-II	3	--	1	4	20	20	100	3	60	25	125
5	Programme Elective III	PE-MTPX 101-110	Programme Elective-III	3	--	1	4	20	20	100	3	60	25	125
6	Core Lab I	PL-MTPX101	Advanced Power Electronics Laboratory	--	2	--	1	--	--	--	--	--	50	50
7	Core Lab II	PL-MTPX102	Computer Aided Power System Analysis Laboratory	--	2	--	1	--	--	--	--	--	50	50
8	Mandatory	MC-MTPX101	Research Methodology and IPR	2	--	--	2	20	20	100	3	60	--	100
9	Audit	AU-MTPX101-102	Audit -I	2	--	--	AU	20	20	100	3	60	--	100
10	Online Course I	OL-MTPX101	Evaluation as per Swayam/NPTEL, Re-examination as per institute guidelines. (Refer note number 2)											
	Total			19	4	3	22	--	--	--	--	--	--	875

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 enrolment 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 three 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

List of Programme Electives I, II and III

Sr. No.	Code	Elective	Sr. No.	Code	Elective
1.	PE-MTPX101	Distributed Generation and Micro Grid	6	PE-MTPX106	Artificial Intelligence
2.	PE-MTPX102	Power Electronics Applications to Renewable Energy	7	PE-MTPX107	Optimization Techniques
3.	PE-MTPX103	Modelling and Analysis of Electrical Machine	8	PE-MTPX108	Electric Vehicle Technology
4.	PE-MTPX104	Reliability Assessment of Power System	9	PE-MTPX109	Advance course on Smart AC drives
5.	PE-MTPX105	Restructured power system	10	PE-MTPX110	Linear Algebra and Matrix Computation

List of Audit Courses– I

Sr. No.	Code	Elective
1.	AU-MTPX101	English for research paper writing
2.	AU-MTPX102	Constitution of India

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Credit System for M. Tech Electrical Engineering in Power Electronics and Power System (Semester-II) Year 2022-2023

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	Hours			
1	Core I	PC-MTPX 201	Power System Dynamics and Control	3	--	--	3	20	20	100	3	60	--	100
2	Core II	PC-MTPX 202	Advanced Control of Electrical Drives	3	--	--	3	20	20	100	3	60	--	100
3	Programme Elective IV	PE-MTPX 201-206	Programme Elective - IV	3	--	1	4	20	20	100	3	60	25	125
4	Programme Elective V	PE-MTPX 201-206	Programme Elective - V	3	--	1	4	20	20	100	3	60	25	125
5	Open Elective	OE-MTPX 201-205	Open Elective	3	--	--	3	20	20	100	3	60	--	100
6	Core Laboratory I	PL-MTPX201	Power system dynamics and control Laboratory	--	2	--	1	--	--	--	--	--	50	50
7	Core Laboratory II	PL-MTPX202	Advanced Control of Electrical Drives Laboratory	--	2	--	1	--	--	--	--	--	50	50
8	Core Lab III	PL-MTPX203	Digital Simulation of Power Electronics System Laboratory	--	2	--	1	--	--	--	--	--	50	50
9	Audit CourseII	AU-MTPX 201-202	Audit course- II	2	--	--	AU	20	20	100	--	--	--	100
10	Online Course II	OL-MTPX201	Evaluation as per Swayam/NPTEL, Re-examination as per institute guidelines. (Refer note number 2)											--
	Total			17	6	2	20	--	--	--	--	--	--	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 enrolment 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

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

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Programme Electives IV and V

Sr. No.	Code	Elective
1.	PE-MTPX201	Advanced techniques in power system protection
2.	PE-MTPX202	Smart Grid Technologies
3.	PE-MTPX203	Mathematical methods for Power Engineering
4.	PE-MTPX204	DSP Control in Power Electronics
5.	PE-MTPX205	Power Quality
6.	PE-MTPX206	Nonlinear control Theory

Open Electives

Sr. No.	Code	Elective
1.	OE-MTPX201	Business Analytics
2.	OE-MTPX202	Industrial Safety
3.	OE-MTPX203	Operations Research
4.	OE-MTPX204	Cost Management of Engineering Projects
5.	OE-MTPX205	Waste to Energy

Audit Course– II

Sr. No.	Code	Elective
1.	AU-MTPX201	Disaster Management
2.	AU-MTPX202	Stress Management by Yoga

Credit System for M. Tech Electrical Engineering in Power Electronics and Power System (Semester - III) Year 2022-2023

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-MTPX 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.

Credit System for M. Tech Electrical Engineering in Power Electronics and Power System (Semester -IV) Year 2022-2023

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-MTPX 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

Total Course Credits = 22+20+14+14 = 70