

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



**Bharatiya Vidya Bhavan's**  
**SARDAR PATEL COLLEGE OF ENGINEERING**

(Government Aided Autonomous Institute under Mumbai University)

Andheri (W), Mumbai - 400058



# **M. Tech. in Power Electronics and Power System (PEPS)**

## **Department of Electrical Engineering**

**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 Power Electronics and Power System (PEPS), (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	Advanced Power Electronics	PC-MTPX101	3	--	--	3	15	15	20	100	3	50%	0	100
2	Computer Aided Power System Analysis	PC-MTPX102	3	--	--	3	15	15	20	100	3	50%	0	100
3	Research Methodology and IPR	PC-MTPX103	2	--	1	3	15	15	20	100	3	50%	25	125
	Program Elective Courses													
4	Program Elective-I	PE-MTPX 101-107	3	--	--	3	15	15	20	100	3	50%	0	100
5	Program Elective-II	PE-MTPX 101-107	3	--	--	3	15	15	20	100	3	50%	0	100
6	Program Elective-III	PE-MTPX 101-107	3	--	--	3	15	15	20	100	3	50%	0	100
	Laboratory Courses													
7	Advanced Power Electronics Laboratory	PL-MTPX101	--	4	--	2	--	--	--	--	--	--	50	50
8	Computer Aided Power System Analysis Laboratory	PL-MTPX102	--	4	--	2	--	--	--	--	--	--	50	50
	Indian Knowledge System Course													
9	Indian Knowledge System Course	IK-MTPX#	2	--	--	2	15	15	20	50	2	100%	0	100
	<b>TOTAL</b>		<b>19</b>	<b>8</b>	<b>1</b>	<b>24</b>				<b>700</b>			<b>125</b>	<b>825</b>

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

Scheme for F.Y. M.Tech. in Power Electronics and Power System (PEPS), (Semester - II) 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)			
<b>Core Courses</b>														
1	Power System Dynamics and Control	PC-MTPX 201	3	0	0	3	15	15	20	100	3	50%	0	100
2	Advanced Control of Electrical Drives	PC-MTPX 202	3	0	0	3	15	15	20	100	3	50%	0	100
3	Seminar/ Mini Project	PC-MTPX 203	--	4	--	2	15	15	--	--	--	--	100*	100*
<b>Program Elective Course</b>														
4	Program Elective-IV	PE-MTPX 201-206	3	--	1	4	15	15	20	100	3	50%	0	100
5	Program Elective-V	PE-MTPX 201-206	3	--	1	4	15	15	20	100	3	50%	0	100
<b>Open Elective Course</b>														
6	Open Elective	OE-MTPX 201-208	3	--	--	3	15	15	20	100	3	50%	0	100
<b>Vocational and Skill Enhancement</b>														
7	Power system dynamics and control Laboratory	SE-MTPX201	--	4	--	2	-	-	-	-	--	--	50	50
8	Advanced Control of Electrical Drives Laboratory	SE-MTPX202	--	4	--	2	-	-	-	--	--	--	50	50
<b>Ability Enhancement Courses</b>														
9	Ability Enhancement Course	AE-MTPX#	2			2	15	15	20	100	3	50%	0	100
	<b>TOTAL</b>		<b>17</b>	<b>12</b>	<b>2</b>	<b>25</b>				<b>600</b>			<b>200</b>	<b>800</b>

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

Scheme for S.Y. M.Tech. in Power Electronics and Power System (PEPS), (Semester - III) 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)			
Value Education Course														
1	Value Education Course	VE-MTPX301	2	-	-	2	15	15	20	50	--	100%	0	100
Field or Community Engagement Project														
2	Field or Community Engagement Project	CEP-MTPX301				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-MTPX 301	4+24 <sup>\$</sup>			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.

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

Scheme for S.Y. M.Tech. in Power Electronics and Power System (PEPS), (Semester - IV) 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)			
Cocurricular Activity														
1	Co curricular course/activity/ Stress Management by Yoga	CC-MTPX401	-	-	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-MTPX 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

**Sardar Patel College of Engineering Andheri (West), Mumbai 400 058**  
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**List of Program Elective – I, II, and III Courses (PE-MTPX101-107)**

<b>Sr. No.</b>	<b>Code</b>	<b>Elective</b>	<b>Sr. No.</b>	<b>Code</b>	<b>Elective</b>
1.	PE-MTPX101	Distributed Generation and Micro Grid	6	PE-MTPX106	Optimization Techniques
2.	PE-MTPX102	Power Electronics Applications to Renewable Energy	7	PE-MTPX107	Electric Vehicle System Design
3.	PE-MTPX103	Modelling and Analysis of Electrical Machine	8		
4.	PE-MTPX104	Reliability Assessment of Power System	9		
5.	PE-MTPX105	Restructuring and Deregulation of Power System	10		

**List of Program Elective – IV and V Courses (PE-MTPX201-206)**

<b>Sr. No.</b>	<b>Code</b>	<b>Elective</b>
1.	PE-MTPX201	Advanced techniques in power system protection
2.	PE-MTPX202	Smart Grid Technologies
4.	PE-MTPX203	DSP Control in Power Electronics
5.	PE-MTPX204	Power Quality and FACTS
6.	PE-MTPX205	Nonlinear Control Theory
7.	PE-MTPX206	Renewable Energy Sources and Grid Integration

**Sardar Patel College of Engineering Andheri (West), Mumbai 400 058**  
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**List of Ability Enhancement Courses (AE-MTPX#)**

<b>Sr. No.</b>	<b>Code</b>	<b>Name of Course</b>	<b>Sr. No.</b>	<b>Code</b>	<b>Name of Course</b>
1	AE-MTPX201	English for research paper writing	3	AE-MTPX203	Pedagogy Studies
2	AE-MTPX202	Personality Development through Life Enlightenment Skills.	4	AE-MTPX204	Related NPTEL/SWAYAM Courses

**List of Indian Knowledge System (IK-MTPX#)**

<b>Sr. No.</b>	<b>Code</b>	<b>Name of Course</b>	<b>Sr. No.</b>	<b>Code</b>	<b>Name of Course</b>
1	IK-MTPX101	Constitution of India	2	IK-MTPX102	Related NPTEL/SWAYAM Courses

**List of Value Education Course (VE-MTPX#)**

<b>Sr. No.</b>	<b>Code</b>	<b>Name of Course</b>	<b>Sr. No.</b>	<b>Code</b>	<b>Name of Course</b>
1	VE-MTPX301	Disaster Management	2	VE-MTPX302	Value Education

**Sardar Patel College of Engineering Andheri (West), Mumbai 400 058**  
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**List of Open Elective Courses (OE-MTPX201-208)**

<b>Sr. No.</b>	<b>Code</b>	<b>Elective</b>
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
6.	OE-MTPX206	Linear Algebra and Matrix Computation
7.	OE-MTPX207	Project Management
8.	OE-MTPX208	Artificial Intelligence

**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.

5. 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.

6. 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

7. 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).

8. \$\$\$\$ 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.**