



Bharatiya Vidya Bhavan's
SARDAR PATEL COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute under Mumbai University)

Andheri (W), Mumbai - 400058



Second Year B.Tech. in Electrical Engineering with Minor in [**]**

Academic Evaluation Scheme/Credit System

Year: 2026-2027

Regulation 23 (R23)

Courses Offered to Second Year B.Tech. in Electrical Engineering (SEMESTER-III) under Regulation-23

Sr. No.	Course Name	Code	Course Plan per Week (Hrs)				Credits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage	Total Points
			L	T	P	SL/sem		Mid term points	Mid term time (Hrs)	IE	Points	Time (Hrs)		
Core Courses														
1	Laplace Transform, Vector calculus & Linear Algebra	BS-BTE301	2	1	0	48	3	30	1.5	20	100	3	50%	100
2	Analog Circuits	PC-BTE301	3	0	0	48	3	30	1.5	20	100	3	50%	100
3	Electrical Networks	PC-BTE302	2	0	0	32	2	30	1.5	20	100	3	50%	100
4	Digital Electronics	PC-BTE303	3	0	0	48	3	30	1.5	20	100	3	50%	100
5	Electromagnetic Field and Waves	PC-BTE304	3	0	0	48	3	30	1.5	20	100	3	50%	100
Laboratory Courses														
6	Analog Circuits Lab	PC-BTE351	0	0	2	2	1	0	0	25	25	0	100%	50
7	Electrical Networks Lab	PC-BTE352	0	0	2	2	1	0	0	25	25	0	100%	50
8	Digital Electronics Lab	PC-BTE353	0	0	2	2	1	0	0	25	25	0	100%	50
9	Electromagnetic Field and Waves Lab	PC-BTE354	0	0	2	2	1	0	0	25	25	0	100%	50
10	Environmental Science and Sustainability	VE-BTE001	2	0	0		2	30	1.5	20	50		50%	100
	TOTAL		15	1	8		20							800

Courses Offered to Second Year B.Tech. in Electrical Engineering (SEMESTER-IV) under Regulation-23

Sr. No.	Course Name	Code	Course Plan per Week (Hrs)				Credits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage	Total Points
			L	T	P	SL		Mid term points	Mid term time (Hrs)	IE	Points	Time (Hrs)		
Core Courses														
1	Transforms, Statistics and Probability	BS-BTE401	2	1	0	48	3	30	1.5	20	100	3	50%	100
2	Power Generation, Transmission and Distribution	PC-BTE401	3	1	0	64	4	30	1.5	20	100	3	50%	100
3	Measurement & Instrumentation	PC-BTE402	3	0	0	48	3	30	1.5	20	100	3	50%	100
4	Electrical Machines - I	PC-BTE403	3	0	0	48	3	30	1.5	20	100	3	50%	100
5	Microprocessor and Microcontroller	PC-BTE404	3	0	0	48	3	30	1.5	20	100	3	50%	100
6	Signals and Systems	PC-BTE405	3	0	0	48	3	30	1.5	20	100	3	50%	100
Laboratory Courses														
7	Measurement & Instrumentation Lab	PC-BTE451	0	0	2	2	1	0	0	25	25	0	100%	50
8	Electrical Machines - I Lab	PC-BTE452	0	0	2	2	1	0	0	25	25	0	100%	50
9	Microprocessor and Microcontroller Lab	PC-BTE453	0	0	2	2	1	0	0	25	25	0	100%	50
10	Minor-1	MI-BT0x1	2	0	0		2	30		20	100	3	50%	100
	TOTAL		19	2	6		24							850

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 work and self-learning by students

Evaluation for R23

1. The Evaluation of any course shall be such that all Course Outcomes are properly mapped.
2. Mid term: The courses under the category “Theory courses”, the evaluation is based on Mid Term of 30 points for 1.5 hours duration. Tentatively the first four modules of the course content will be covered in Mid Term. Any change in the same will be informed by the course instructor. The courses under the category “Skill Enhancement”, “Value Education”, the evaluation is based on activity (Presentation, Test, Mini project, Field project, Practical Examination) of 30 points each.
3. IE: Internal Evaluation will be carried out by the 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.
4. End semester evaluation: The course under the category “Theory 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”, the evaluation is based on activity (Presentation, Test, Mini project, Field project, Practical Examination) of 50/100 points.
5. The evaluation of the laboratory courses include internal evaluation IE of 25 points and End semester evaluation of 25 points. The internal evaluation is based on [10 points: Laboratory Attendance, 15 points: Laboratory work] and End semester evaluation is based on [25 points: Quizzes/ Presentation/ Practical Examination/ Mini project/Oral may be any two activities]
6. The co-curricular course credits in semester VIII can be earned through participation in various activities during his/ her graduation. The co-curricular course credits are not considered for CPI calculation.
7. The evaluation of Field project/ Project/ Internship shall be as mentioned in Academic Rules.

Note: Refer [Academic](#) and [Examination rules and regulations](#) for further details.



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Third Year B.Tech. in Electrical Engineering with Minor in [**]**

Academic Evaluation Scheme/Credit System

Year: 2026-2027

Regulation 23 (R23)

Scheme for T.Y.B.Tech. In Electrical Engineering with Minor in [**], (Semester - V) R23**
Academic Year 2026-27

Scheme for T.Y.B.Tech. In Electrical Engineering with Minor in [****], (Semester - V) R23 Academic Year 2026-27														
Sr. No.	Course Name	Code	Course Plan per Week (Hrs)				Cre dits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage	Total Points
			L	T	P	SL/ se m		Mid term point s	Mid term time (Hrs)	IE	Poi nts	Time (Hrs)		
Core Courses														
1	Power Electronics	PC-BTE501	3	0	0	48	3	30	1.5	20	100	3	50%	100
2	Control System I	PC-BTE502	3	0	0	48	3	30	1.5	20	100	3	50%	100
3	Electrical Machines II	PC-BTE503	3	0	0	48	3	30	1.5	20	100	3	50%	100
4	Power System Analysis	PC-BTE504	3	0	0	48	3	30	1.5	20	100	3	50%	100
5	Communication Engineering	PC-BTE505	3	0	0	48	3	30	1.5	20	100	3	50%	100
Laboratory Courses														
7	Power Electronics Lab	PC-BTE551	0	0	2	2	1	0	0	25	25	0	100%	50
8	Control System I Lab	PC-BTE552	0	0	2	2	1	0	0	25	25	0	100%	50
9	Electrical Machines II Lab	PC-BTE553	0	0	2	2	1	0	0	25	25	0	100%	50
10	Electrical Simulation Lab	PC-BTE554	0	0	2	2	1	0	0	25	25	0	100%	50
Minor Course														
11	Minor II	MI-BT0x2	3	1	0		4	30		20	100	3	50%	100
	TOTAL		18	1	8		23							800

Scheme for T.Y.B.Tech. In Electrical Engineering with Minor in [**], (Semester - VI) R23**
Academic Year 2026-27

Scheme for T.Y.B.Tech. In Electrical Engineering with Minor in [****], (Semester - VI) R23 Academic Year 2026-27														
Sr. No.	Course Name	Code	Course Plan per Week (Hrs)				Credits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage	Total Points
			L	T	P	SL/ se m		Mid term point s	Mid term time (Hrs)	IE	Poi nts	Time (Hrs)		
Core Courses														
1	Electric Drives	PC-BTE601	3	0	0	48	3	30	1.5	20	100	3	50%	100
2	Switchgear and Protection	PC-BTE602	3	0	0	48	3	30	1.5	20	100	3	50%	100
3	Control System II	PC-BTE603	2	0	0	32	2	30	1.5	20	100	3	50%	100
Laboratory Courses														
4	Electric Drives Lab	PC-BTE651	0	0	2	2	1	0	0	25	25	0	100%	50
5	Switchgear and Protection Lab	PC-BTE652	0	0	2	2	1	0	0	25	25	0	100%	50
6	System Analysis and Design Lab	PC-BTE653	0	0	2	2	1	0	0	25	25	0	100%	50
Minor Course														
8	Minor III	MI-BT0x2	3	1	0	64	4	30	1.5	20	100	3	50%	100
Professional Elective courses														
9	Professional Elective -I	PE-BTE6xx	3	1	0	64	4	30	1.5	20	100	3	50%	100
Community /Field Project														
10	Field Project	FP-BTE601	0	4*	0		2	30		20	50		100%	100
	TOTAL		14	6	6		21							750

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

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Evaluation for R23

1. **The Evaluation of any course shall be such that all Course Outcomes are properly mapped.**
2. Mid term: The courses under the category “Theory courses”, the evaluation is based on Mid Term of 30 points for 1.5 hours duration. Tentatively the first four modules of the course content will be covered in Mid Term. Any change in the same will be informed by the course instructor. The courses under the category “Skill Enhancement”, “Value Education”, the evaluation is based on activity (Presentation, Test, Mini project, Field project, Practical Examination) of 30 points each.
3. IE: Internal Evaluation will be carried out by the 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.
4. End semester evaluation: The course under the category “Theory 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”, the evaluation is based on activity (Presentation, Test, Mini project, Field project, Practical Examination) of 50/100 points.
5. The evaluation of the laboratory courses include internal evaluation IE of 25 points and End semester evaluation of 25 points. The internal evaluation is based on [10 points: Laboratory Attendance, 15 points: Laboratory work] and End semester evaluation is based on [25 points: Quizzes/ Presentation/ Practical Examination/ Mini project/Oral may be any two activities]
6. The co-curricular course credits in semester VIII can be earned through participation in various activities during his/ her graduation. The co-curricular course credits are not considered for CPI calculation.
7. The evaluation of Field project/ Project/ Internship shall be as mentioned in Academic Rules.

Note: Refer [Academic](#) and [Examination rules and regulations](#) for further details.



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Final Year B.Tech. in Electrical Engineering with Minor in [**]**

Academic Evaluation Scheme/Credit System

Year: 2026-2027

Regulation 23 (R23)

Scheme for Final Year B.Tech. In Electrical Engineering with Minor in [****], (Semester - VII) R23 Academic Year 2026-27														
Sr. No.	Course Name	Code	Course Plan per Week (Hrs)				Credits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage	Total Points
			L	T	P	SL/sem		Mid term points	Mid term time (Hrs)	IE	Poi nts	Time (Hrs)		
Core Courses and open Electives														
1	Power System Operation and Control	PC-BTE701	3	0	0	48	3	30	1.5	20	100	3	50%	100
2	Research Methodology and Ethics	IC-BT701	2	0	0	32	2	30	1.5	20	100	3	50%	100
Laboratory Courses														
3	Power System Operation and Control lab	PC-BTE751	0	0	2	2	1	0	0	25	25	0	100%	50
Professional Elective courses														
4	Professional Elective -II	PE-BTE7xx	3	1	0	64	4	30	1.5	20	100	3	50%	100
5	Professional Elective -III	PE-BTE7xx	3	1	0	64	4	30	1.5	20	100	3	50%	100
Open Elective-I Course														
6	Open Elective –I	OE-BTE7xx	3	0	0	48	3	30	1.5	20	100	3	50%	100
Minor Course														
7	Minor IV	MI-BT0x4	3	1	0	64	4	30	1.5	20	100	3	50%	100
Major Project														
8	Project	PR-BTE701	0	0	8*		4	30		20	50		100%	100
	TOTAL		17	3	10		25							750

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Scheme for Final Year B.Tech. In Electrical Engineering with Minor in [****], (Semester - VIII) R23 Academic Year 2026-27														
Sr. No.	Course Name	Code	Course Plan per Week (Hrs)				Cre dits	In semester Evaluation (Points)			End Semester Evaluation (Points)		End semester weightage	Total Points
			L	T	P	SL		Mid term point s	Mid term time (Hrs)	IE	Poi nts	Time (Hrs)		
Professional Elective courses														
1	Professional Elective -IV *	PE-BTE8xx	3	0	0	48	3	30	1.5	20	100	3	50%	100
Open Elective Courses														
2	Open Elective –II*	OE-BTE8xx	3	0	0	48	3	30	1.5	20	100	3	50%	100
Ability Enhancement Courses														
3	AES (Modern Indian Language)	AE-BT801-803	1	0	0	16	1	--	--	50	50	--	100%	100
Cocurricular Activity														
4	Co-curricular course III	CC-BTE801					2	\$\$\$\$						
Internship														
5	Internship	IN-BTE801					10	100	--	--	200		100%	300
	TOTAL		7	0			19							700

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

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*PE-IV and OE-II may be an online course.

Evaluation for R23

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5. The evaluation of the laboratory courses include internal evaluation IE of 25 points and End semester evaluation of 25 points. The internal evaluation is based on [10 points: Laboratory Attendance, 15 points: Laboratory work] and End semester evaluation is based on [25 points: Quizes/ Presentation/ Practical Examination/ Mini project/Oral may be any two activities]
6. The co-curricular course credits in semester VIII can be earned through participation in various activities during his/ her graduation. The co-curricular course credits are not considered for CPI calculation.
7. The evaluation of Field project/ Project/ Internship shall be as mentioned in Academic Rules.
8. If Open Elective -II is chosen from those offered by the college, then Mid-Sem and IE will be considered similar to previous semesters. If NPTEL/ SWAYAM is chosen then their marking scheme will be followed and grades will be allotted as per Academic and/or Examination rules.

Note: Refer [Academic](#) and [Examination rules and regulations](#) for further details.

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058

Year: 2026-27

List of Professional Electives

Professional Elective-I	Professional Elective-II	Professional Elective-III	Professional Elective-IV
Sem VI	Sem VII	Sem VII	Sem VIII
ELECTRIC VEHICLES & POWER ELECTRONICS TRACK			
Basics of Automotive Systems PE-BTE601	Advanced Electric Drives PE-BTE701	Vehicular systems and Control of EV drives PE-BTE721	Energy storage and Vehicle Management System PE-BTE801
	Electrical Machine Design PE-BTE702		Modelling and Analysis of Electrical Machine PE-BTE802
POWER SYSTEM & POWER ELECTRONICS TRACK			
Design of Power Electronics Converters PE-BTE602	Power Quality & FACTS PE-BTE703	Distributed generation and Micro-grid PE-BTE722	Computer Aided Power System Analysis PE-BTE803
Sensors and Actuators PE-BTE603	Restructuring and Deregulation of Power System PE-BTE704	High Voltage Engineering PE-BTE723	Advanced Techniques in Power System Protection PE-BTE804
Renewable Energy Sources and grid integration PE-BTE604	Design, Management & Audit of Electrical Systems PE-BTE705		Smart Grid PE-BTE805
CONTROL SYSTEM TRACK			
Digital Signal Processing PE-BTE605	Embedded System PE-BTE706	Digital Control Design PE-BTE725	Non-linear control system PE-BTE806
AI-ML Applications in Electrical Engineering PE-BTE606	VLSI Circuits PE-BTE707	Industrial Automation PE-BTE726	Robotics PE-BTE807

Sardar Patel College of Engineering Andheri (West), Mumbai 400 058
Year: 2026-27

List of Open Electives (To be decided at institute level)

Open Elective -1	Open Elective -2
Sem VII	Sem VIII
Image Processing OE-BTE701	Project Management OE-BTE801
Linear Algebra and Matrix Computation OE-BTE702	Computer Network OE-BTE802
Engineering Economics OE-BTE703	Lean Management OE-BTE803
Internet of Things OE-BTE704	
Artificial Intelligence OE-BTE705	

List of Ability Enhancement Course (Modern Indian Language)

Sr. No.	Course Code	Course Title
1	AE BT801	Hindi
2	AE-BT802	Sanskrit
3	AE-BT803	Marathi

Bridge Courses- For branch transfer (compulsory)

1) Basic Electrical Engineering / Fundamentals of Electrical Engineering by Prof. DEBAPRIYA DAS

Course content: https://archive.nptel.ac.in/content/syllabus_pdf/108105112.pdf

Course lectures - <https://archive.nptel.ac.in/courses/108/105/108105112/>

2) Basic Electronics- by Dr. M. B. Patil

Course content: https://archive.nptel.ac.in/content/syllabus_pdf/108101091.pdf

Course lectures - <https://archive.nptel.ac.in/courses/108/101/108101091/>

Exit Courses: The students after FY, SY, TY has to earn extra 8 credits through skill based courses/ Mini project/ internship for claiming UG certificate, UG diploma or B. Vocational respectively. The skill based courses can be selected from the courses offered by National Skill Training Institute with prior approval from the department course committee.

Table GATE-MAP

Sr. No.	Topics from GATE Syllabus	Related Core Courses in Electrical Engineering. Semester
1	Section 1 Engineering Mathematics	Applied Mathematics I, II, III, IV
2	Section 2 Electric Circuits	Electrical Networks
3	Section 3 Electromagnetic Fields	Electromagnetic Fields and Waves
4	Section 4 Signals and Systems	Signals and Systems
5	Section 5 Electrical Machines	Electrical Machines I and II
6	Section 6 Power Systems	Power Generation, Transmission and Distribution Power System Analysis Power System Operation and Control
7	Section 7 Control Systems	Control System I and II
8	Section 8 Electrical and Electronic Measurements	Electrical and Electronic Measurements
9	Section 9 Analog and Digital Electronics	Electronic Circuits, Digital Electronics
10	Section 10 Power Electronics	Power Electronics

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Year: 2026-27