

ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, ACCREDITED BY NAAC WITH 'A' Grade

PROGRAMME SCHEME 2021 – 2022

B. TECH. (Electrical Engineering)

• About the Department

The Department of Electrical Engineering was established in 2004. It has experienced and qualified teaching and non teaching Staff. Department is accredited by National Board of Accreditation (NBA), independent body set up by AICTE, New Delhi. The department has MoUs with many industries to bridge the gap between institute and industry through internships, training programs, guest lectures ,industry based projects and other interaction programs.

• Vision

To develop professionally competent and socially conscious Electrical Engineers ready to face challenges in a global environment.

• Mission

- 1. To impart knowledge through curricular & co-curricular programs to understand modern electrical technologies.
- 2. To develop technically strong and safety conscious electrical engineers with leadership qualities to meet industry needs.
- 3. To inculcate ethical values, discipline and team work in students, to become successful global professionals.

• Program Education Objectives (PEOs)

To facilitate students to:

- **PEO1** : Have a sound foundation in the mathematical, scientific and engineering fundamentals necessary to formulate, solve and analyze engineering problems.
- **PEO 2 :** Acquire the necessary communication and leadership skills to function effectively in a multi- disciplinary environment, to cater the public service and industry needs.
- **PEO3** : Demonstrate high standard of ethical conduct, positive attitude, societal and environmental

responsibilities for sustainable progress of the society.

PEO4 : Pursue advanced education for professional development relevant to their career growth and to create enthusiasm for life-long learning.

• Program Outcomes (POs)

Engineering Graduates will be able to:

- **PO1:Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **PO2: Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

- **PO3: Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- **PO4: Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- **PO5 : Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- **PO6: The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- **PO7: Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- **PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- **PO9 : Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO10: Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- **PO11: Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- **PO12 : Life-Long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

• Program Specific Outcomes (PSOs)

- **PSO1 :** An ability to apply Basic Sciences, Humanities & Multidisciplinary skills in the area of Electrical Engineering.
- **PSO2 :** An ability to demonstrate knowledge, technical skills and problem solving techniques in Electrical Engineering.

PSO3 : An ability to explore innovative ideas in the area of Power Electronics & Drives, Electrical

Power System, Control System & Instrumentation and Green Technology.

• Scheme (First Semester to Eighth Semester)

ANNEXURE – I

ST VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY ELECTRICAL ENGINEERING

Credit Structure for Undergraduate program in Electrical Engineering

Sr. No	Category	Credits
1	Humanities, Social Sciences & Management courses	15
2	Basic Science courses	23
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	18
4	Professional core courses	60
5	Professional Elective courses relevant to chosen specialization/branch	15
6	Open subjects – Electives from other technical and /or emerging subjects	12 / 18
7	Project work, seminar and internship in industry or elsewhere	21 / 15
8	Mandatory Courses [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Knowledge Tradition]	Audit Course
9	Comprehensive Courses [Industry Training and Skill Development, Capstone Course]	4
	TOTAL	170

(B. Tech Electrical Engineering)

Semester Pattern

III Semester B. Tech. (Electrical Engineering)

Sr	Course	Course Title	Hours per Week			Credits	Maximum Marks		
No	Code		L	Т	Р		Continual Assessment	End Sem Examination	Total
1	AS301T	Applied Mathematics – III	3	1		4	30	70	100
2	EE 301T	Electrical Measurement	3	1		4	30	70	100
3	EE301P	Electrical Measurement			2	1	25	25	50
4	EE302T	Network Analysis	3	1		4	30	70	100
5	EE302P	Network Analysis			2	1	25	25	50
6	EE303T	Renewable Energy Sources	2			2	15	35	50
7	EE303P	Renewable Energy Sources			2	1	25	25	50
8	EE304T	Transformer testing and Maintenance	2			2	15	35	50
9	EE304P	Transformer testing and Maintenance			2	1	25	25	50
10	EE305P	Electrical Engineering Drawing & Simulation			2	1	25	25	50
11	AS302T	Constitution of India	2			0	15	35	50
12	EE306P	Sports, Yoga, & Career Development-I *			2	0			
Total		Total	15	3	12	21	260	440	700

* Career Development-I (Interpersonal Skills, Aptitude, and Logical Thinking)

Semester Pattern

Sr	Course	Course Title		Hours per Week			Maximum Marks		
No	Code		L	Т	Р		Continual Assessment	End Sem Examination	Total
1	EE401T	Elements of Electromagnetics	3	1		4	30	70	100
2	ET401T	Electronics Devices &Circuits	2	1		3	30	70	100
3	EE402T	Electrical Power System	2	1		3	30	70	100
4	EE403T	Electrical Machines-1	3	1		4	30	70	100
5	EE403P	Electrical Machines-1			2	1	25	25	50
6	EE404T	Programming in Electrical Engineering	3			3	30	70	100
7	EE404P	Programming in Electrical Engineering			2	1	25	25	50
8	EE405P	Industrial Visit , Seminar & Report Writing			2	1	25	25	50
9	H 102	Universal Human Values - 2	3			3	15	35	50
10	EE406P	Technical Skill Development-I			2	1	50		50
11	EE407P	Career Development-II *			2	0			
			16	4	10	24	290	460	750

IV Semester B. Tech. (Electrical Engineering)

* Career Development-II (Interpersonal Skills, Aptitude, and Logical Thinking)

Semester Pattern

V Semester B. Tech. (Electrical Engineering)

Sr	Course		Hour	s per	Week	Credits	Maximum Marks		
No	Code	Course Title		Т	Р		Continual Assessment	End Sem Examination	Total
1	EE501T	Power Electronics	2	1		3	30	70	100
2	EE501P	Power Electronics			2	1	25	25	50
3	EE502T	Electrical Machines-11	2	1		3	30	70	100
4	EE502P	Electrical Machines-11			2	1	25	25	50
5	EE503P	Seminar on emerging Trends in Electrical Engineering			2	1	25	25	50
6	EE504T	Open Elective - I	3			3	30	70	100
7	EE504P	Open Elective - I (Lab)			2	1	25	25	50
8	EE- ET505T	Elective - I	2	1		3	30	70	100
9	AS 501T	Economics and Management	4			4	30	70	100
10	AS502T	English for Engineers	2			2	15	35	50
11	EE506P	Technical Skill Development- II			2	1		50	50
12	EE507P	Career Development-III *			4	0			
13	H103-4T	Foundational Humanities Elective	2			0			
			17	3	14	23	280	535	800

* Career Development-III (Interpersonal Skills and Aptitude)

	Open Elective - I
EE504T(i)	MATLAB Programming
EE504T(ii)	PLC & SCADA Systems

	Elective - I
EE505T(i)	Advanced Power System
ET505T(i)	Linear Electronics Circuits
ET505T(ii)	Signals & Systems
EE505T(ii)	Electrical Machine Design

	Foundational Humanities Elective
H-103	Development of Societies
H 104	Philosophy

Semester Pattern

Sr	Course		Hours per Week			Credits	Maximum Marks		
No	Code	Course Title	L	Т	Р		Continual Assessment	End Sem Examination	Total
1	EE601T	Switchgear & Protection	2	1		3	30	70	100
2	EE601P	Switchgear & Protection			2	1	25	25	50
3	EE602T	Control System Engineering	2	1		3	30	70	100
4	EE602P	Control System Engineering			2	1	25	25	50
5	EE- ET603T	Elective - II	2	1		3	30	70	100
6	EE604T	Elective - III	2	1		3	30	70	100
7	EE604P	Elective - III (Lab)			2	1	25	25	50
8	EE605T	Open Elective-II	3	1		4	30	70	100
9	EE606P	Electrical Engineering Workshop			2	1	25	25	50
10	EE607P	Project - I			4	2	50	50	100
11	EE608P	Career Development-IV*			4	0			
12	EE609P	Capstone Course-I **			2	1	25	25	50
			11	5	18	23	325	525	850

VI Semester B. Tech. (Electrical Engineering)

* Career Development – IV(Interpersonal Skills and Aptitude)

** Capstone Course – I (Comprehensive knowledge gained in Electrical Engineering)

	Elective - II
EE603T(i)	Power Station Practice
ET603T(i)	Digital Signal Processing
EE603T(ii)	Power Quality

	Elective - III
EE604T(i)	Micro-controller Application in Electrical Engineering
EE604T(ii)	Numerical Methods in Power System
EE604T(iii)	Electric Drives & Their Control

	Open Elective - II
EE605T(i)	Instrumentation
EE605T(ii)	Principles of Electrical Sciences

Semester Pattern

VII Semester B. Tech. (Electrical Engineering)

Sr	Course	Course Title	Hours per Week			Credits	Maximum Marks		
No	Code		L	Т	Р		CAE	ESE	Total
1	EE701T	High Voltage Engineering	2	1		3	30	70	100
2	EE701P	High Voltage Engineering Lab			2	1	25	25	50
3	EE702P	Power System Simulation Lab			2	1	25	25	50
4	EE703T	Electrical Installation & Design	2			2	15	35	50
5	EE703P	Electrical Installation & Design			2	1			
6	EE704T	Elective - IV	2			2	15	35	50
7	EE704P	Elective - IV (Lab)			2	1	25	25	50
8	EE705T	Elective - V	2			2	15	35	50
9	EE706T	Open Elective - III	4			4	30	70	100
10	EE707P	Project - II			6	3	75	75	150
11	EE708P	Summer / Winter Internship *				2			
12	EE709P	Capstone Course-II **			2	1	25	25	50
			12	1	18	22	280	470	750

* Summer / Winter Internship (Evaluation of 4-6 weeks Internship Completion till 6th Semester)

** Capstone Course – II (Comprehensive knowledge gained in Electrical Engineering)

	Elective - IV
EE704T(i)	Power Semiconductor based Drives
EE704T(ii)	Solar PV Energy Systems
EE704T(iii)	Advanced Control System

	Elective - V
EE705T(i)	Flexible AC Transmission Systems
EE705T(ii)	Electrical Distribution System
EE705T(iii)	HVDC Transmission system

	Open Elective - III
EE706T(i)	Energy Management & Audit
EE706T(ii)	Utilization of Electrical Energy

VIII Semester B. Tech. (Electrical Engineering)

Option A

Sr	Course	Course Title	Hours per		S	Credits	May			
No	Code	course rule	V	Veel	k	creates				
			L	L Т Р			Continual	End Sem	Total	
					-		Assessment	Examination	Iotui	
1	EE801P	Project based on one semester internship in Industry/Rese arch Institute/ National Laboratories/ Incubation Center				12	200	200	400	
Total			0	0	0	12	200	200	400	

* End semester examination will consist of evaluation of seminar & project report

Option B

Sr Course	Course	Course Title	Hours per Week		Credits	Maximum Marks			
No	Code			Т	Р		Continual Assessment	End Sem Examination	Total
1	EE-801T	Open Elective - IV	3			3	30	70	100
2	EE802T	Open Elective -V	3			3	30	70	100
3	EE803P	Project based on Research/ Industry/ Entrepreneurship			12	6	100	100	200
			6	0	12	12	160	240	400

*Open electives can be MOOCs or Courses offered by department in Online/Offline mode

	Open Elective – IV
EE801T(i)	Electricity & Safety Measures
EE801T(ii)	Design of PV System

	Open Elective - V
EE802T(i)	Industrial Automation and Control
EE802T(ii)	Electric Vehicles and Renewable Energy

Semester Pattern

Smart Grid (Honors)

Sr No	Sem	Course Code	Course Title	Hour	Hours per Week		Credits	Maximum Marks		
				L	Т	Р		Continual Assessment	End Sem Examination	Total
1	IV	EEH401T	Introduction to Smart Grid	4			4	30	70	100
2	V	EEH501T	Distributed Generation	4			4	30	70	100
3	VI	EEH601T	Advanced Power Electronics	3			3	30	70	100
4	VI	EEH601P	Advanced Power Electronics (Lab)			2	1	25	25	50
5	VII	EEH701T	Power System Dynamics , Control & Monitoring	4			4	30	70	100
6	VIII	EEH801T	Microgrid Planning & Management	3			3	30	70	100
7	VIII	EEH802P	Advanced Power System Simulation			2	1	25	25	50
				17	0	4	20	200	400	600

Semester Pattern

Power Electronics & Drives (Minors)

Sr No	Sem	Course Code	Course Title	Hours per Week		Credits	Maximum Marks			
				L	Т	Р		Continual Assesment	End Sem Examination	Total
1	IV	EEM401T	Electrical Machines	3			3	30	70	100
2	IV	EEM401P	Electrical Machines (Lab)			2	1	25	25	50
3	v	EEM501T	Power Electronics	3			3	30	70	100
4	v	EEM501P	Power Electronics (Lab)			2	1	25	25	50
5	VI	EEM601T	Electric Drives & their control	4			4	30	70	100
6	VII	EEM701T	Power Semiconductor Based Drives	4			4	30	70	100
7	VIII	EEM801T	Industrial Automation and Control	4			4	30	70	100
				18	0	4	20	200	400	600