B.N.M Institute of Technology

An Autonomous Institution Under VTU
Approved by AICTE, Accredited as Grade A Institution by NAAC.
All UG branches – CSE, ECE, EEE, ISE & Mech.Engg Accredited by NBA for academic years 2018-19 to 2024-25 & valid upto 30.06.2025
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Department of Electrical and Electronics Engineering

Proposed 2022 Scheme for Autonomous Program

Summary of Semester wise Credits

Sl. No.	Semester	Credits
1	1	20
2	2	20
3	3	22
4	4	21
5	5	22
6	6	23
7	7	16
8	8	16
	Total	160

Semester: III EEE

Sl. No.	Course and Course Code		Course Title	Teaching Department	Teaching Hours/week					Credits	Examination		
					Theory Lecture	Tutorial	Practical	Project	Total Hours		CIA	SEA	Total
					L	T	P	J					
1	BSC	22MAC131	Fourier Series, Transforms and Statistical Techniques	Mathematics	2	2	--	--	4	**3**	50	50	100
2	PCC	22EEE132	Generation, Transmission and Distribution	EEE	2	2	--	--	4	**3**	50	50	100
3	PCC	22EEE133	Network Analysis	EEE	2	2	--	--	4	**3**	50	50	100
4	PCI	22EEE134	Transformers and Induction Motors	EEE	3	--	2	--	5	**4**	50	50	100
5	PCI	22EEE135	Analog and Digital Electronics	EEE	3	--	2	--	5	**4**	50	50	100
6	PBL	22EEE136	Python Programming for Electrical Engineers	EEE	--	--	2	2	4	**2**	50	50	100
7	HSS	22CIP137	Constitution of India and Professional Ethics	HSS	--	2	--	--	2	**1**	100	--	100
8	AEC	22SFT138	Soft Skills -1	HSS	--	2	--	--	2	**1**	100	--	100
9	IPL	22EEE139	Innovative Project Lab (Social Concern)	EEE	--	--	--	2	2	**1**	100	--	100
			Total		12	10	6	4	32	**22**	600	300	900

++ **L-Theory lecture, T – Tutorial, P – Practical, J – Project**

CIA: Continuous Internal Assessment, SEA: Semester End Assessment, NCMC: Non Credit Mandatory Course

AICTE Activity points to be earned by students admitted to BE day college programme

Over and above the academic grades, every day college regular student admitted to the 4 year Degree programme and every student entering 4 years degree programme though lateral entry, shall earn 100 and 75 activity points respectively for the award of degree through AICTE activity programme. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, minimum hour's requirement should be fulfilled. Activity points have no effect on SGPA/CGPA and shall not be considered for vertical progression.

Semester: IV EEE

Sl. No.	Course and Course code		Course Title	Teaching Department	Teaching Hours/week					Credits	Examination		
					Theory Lecture	Tutorial	Practical/ Training	Project	Total Hours		CIA	SEA	Total
					L	T	P	J					
1	BSC	22MAC141	Complex Analysis, Probability and Random Process	Mathematics	2	2	--	--	**4**	3	50	50	100
2	PCC	22EEE142	Linear Control Systems	EEE	2	2	--	--	**4**	3	50	50	100
3	PCI	22EEE143	Electrical Motors and Synchronous Machines	EEE	3	--	2	--	**5**	4	50	50	100
4	PCI	22EEE144	Power Electronic Devices and Circuits	EEE	3	--	2	--	**5**	4	50	50	100
5	PBL	22EEE145	Simulation of Electrical and Electronic Circuits	EEE	--	--	2	2	**4**	2	50	50	100
6	PCC	22EEE146	Electronic Instrumentation and measurements	EEE	2	--	--	--	**2**	2	50	50	100
7	AEC	22SFT147	Soft Skills - 2	HSS	--	2	--	--	**2**	1	100	--	100
8	INT	22EEE148	Internship- 1 / Innovative Project Lab	EEE	--	--	2	2	**4**	2	100	--	100
			Total		12	6	8	4	30	**21**	500	300	800

Internship: All the students registered to II year of BE shall have to undergo mandatory internship of 4 weeks during II semester or III semester vacation. Continuous Internal Assessment will be conducted in IV semester and the prescribed credit will be included. Internship shall be considered as a head of passing and shall be considered for the award of degree.

AICTE Activity points to be earned by students admitted to BE day college programme

Over and above the academic grades, everyday college regular student admitted to the 4 year Degree programme and every student entering 4 years degree programme though lateral entry, shall earn 100 and 75 activity points respectively for the award of degree through AICTE activity programme. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, minimum hour's requirement should be fulfilled. Activity points have no effect on SGPA/CGPA and shall not be considered for vertical progression.

Semester: V EEE

Sl. No.	Course and Course code		Course Title	Teaching Department	Teaching Hours/week					Credits	Examination		
					Theory Lecture	Tutorial	Practical/ Training	Project	Total Hours		CIA	SEA	Total
					L	T	P	J					
1	PCC	22EEE151	Power System Analysis and Stability	EEE	2	2			4	**3**	50	50	100
2	PCC	22EEE152	Electromagnetic Fields and Wave Theory	EEE	2	2	--	--	4	**3**	50	50	100
3	PCI	22EEE153	Introduction to AI & ML	EEE	3	--	2	--	5	**4**	50	50	100
4	PCI	22EEE154	Digital Signal Processing	EEE	3	--	2	--	5	**4**	50	50	100
5	PBL	22EEE155	ARM processors and Applications	EEE	--	--	2	2	4	**2**	50	50	100
6	POE	22EEE156X	Open Elective course	EEE	3	--	--	--	3	**3**	50	50	100
7	AEC	22EEE157	Employability Skills -1 (Technical)	T & P	--	2	--	--	2	**1**	100	--	100
8	INT	22EEE158	Internship- 2	EEE	--	--	4	--	4	**2**	100	--	100
			Total		13	6	10	2	31	**22**	500	300	800

Open Elective Course			
22EEE1561	Energy Audit and Energy ManagementSystem	22EEE1563	Fundamentals of Hybrid and Electric Vehicles
22EEE1562	Non-Conventional Energy Resources	22EEE1564	Sensors and Transducers

Internship: All the students registered to III year of BE shall have to undergo mandatory internship of 4 weeks during IV semester vacation. Continuous Internal Assessment will be conducted in V semester and the prescribed credit will be included. The internship shall be slated for CIA only and will not have SEA. Internship shall be considered as a head of passing and shall be considered for the award of degree. Internship of 04 weeks during the intervening period of IV and V semesters; The letter grade earned through CIA shall be included in the V semester grade card. Those, who do not take up / complete the internship shall be considered under F(fail) grade and shall have to complete subsequently after satisfying the internship requirements.

AICTE Activity points to be earned by students admitted to BE day college programme

Over and above the academic grades, every day college regular student admitted to the 4 year Degree programme and every student entering 4 years degree programme though lateral entry, shall earn 100 and 75 activity points respectively for the award of degree through AICTE activity programme. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, minimum hour's requirement should be fulfilled. Activity points have no effect on SGPA/CGPA and shall not be considered for vertical progression.

Semester: VI EEE

Sl. No.	Course and Course code		Course Title	Teaching Department	Teaching Hours/week					Credits	Examination		
					Theory Lecture	Tutorial	Practical/ Training	Project	Total hours		CIA	SEA	Total
					L	T	P	J					
1	PCC	22EEE161	Switchgear & Protection	EEE	2	2	--	--	4	**3**	50	50	100
2	PCI	22EEE162	Computer Techniques in Power System	EEE	2	2	2	--	6	**4**	50	50	100
3	PCI	22EEE163	High Voltage Engineering	EEE	3	--	2	-	5	**4**	50	50	100
4	PBL	22EEE164	Simulation of Electric vehicle and Alternate energy systems	EEE	--	--	2	2	4	**2**	50	50	100
5	PEC	22EEE165X	Professional Elective Course	EEE	3	--	--	--	3	**3**	50	50	100
6	PEC (Online Courses)	22EEE166X	Professional Elective (online Courses)	EEE	3	--	--	--	3	**3**	50	50	100
7	POE	22EEE167X	Open Elective course	EEE	3	--	--	--	3	**3**	50	50	100
8	AEC	22EEE168	Employability Skills – 2 (Technical)	T & P	--	2	--	--	2	**1**	100	--	100
			Total		16	6	6	2	30	**23**	450	350	800

Professional Elective Courses			
22EEE1651	Renewable Energy Sources	22EEE1655	Introduction to UNIX Programming
22EEE1652	Sensors and Transducers	22EEE1656	Principles of Fuzzy Logic
22EEE1653	Fundamentals of Electric and Hybrid Electric Vehicles	22EEE1657	Strategic Management
22EEE1654	Embedded Systems		

Professional Elective Courses (Online Courses)			
22EEE1661	Operation and Planning of Power Distribution Systems	22EEE1665	Programming in JAVA
22EEE1662	Industrial Automation and Drives	22EEE1666	Data Mining
22EEE1663	Battery Technology and Battery Management System	22EEE1667	Digital Marketing
22EEE1664	Digital Design with Verilog		

Open Elective Courses			
22EEE1671	PLC and SCADA	22EEE1673	Industrial Motor control and Automation
22EEE1672	Fuel Cell Technology	22EEE1674	Solar Photo Voltaic Systems

Semester: VII EE

Sl. No.	Course and Course code		Course Title	Teaching Department	Teaching Hours/week					Credits	Examination		
					Theory Lecture	Tutorial	Practical/ Training	Project	Total Hours		CIA	SEA	Total
					L	T	P	J					
	PCC	22EEE171	Engineering project Management and Finance	EEE	3	--	--	--	3	**3**	50	50	100
2	PEC	22EE172X	Professional Elective Course	EEE	3	--	--	--	3	**3**	50	50	100
3	PEC (Online Courses)	22EEE173X	Professional Elective (online Courses)	EEE	3	--	--	--	3	**3**	50	50	100
4	AEC	22EEE174	Research Methodology and IPR	EEE	1	2	--	--	3	**2**	50	50	100
5	PPW	22EEE175	Main Project- Phase 1	EEE	--	--	--	10	10	**5**	50	50	100
			Total		10	2	--	10	22	**16**	250	250	500

Professional Elective Courses			
22EEE1721	Electrical Estimation and Costing	22EEE1725	Data Base Management System
22EEE1722	Utilization of Electrical Power	22EEE1726	Artificial Neural Network
22EEE1723	Advanced Techniques in Electric Vehicles	22EEE1727	Accounts & Financing for Engineers
22EEE1724	Industrial Internet of Things		

Professional Elective Courses (Online Courses)			
22EEE1731	Advances in UHV Transmission and Distribution	22EEE1735	Big Data Computing
22EEE1732	Digital Control systems for Industrial applications	22EEE1736	Deep Learning
22EEE1733	Charging Infrastructure	22EEE1737	Operations and Supply Chain Management
22EEE1734	Drone Systems and Control		

Project work: Based on the abilities of the students and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.

Semester: VIII EEE

Sl. No.	Course and Course code		Course Title	Teaching Department	Teaching Hours/week					Credits	Examination		
					Theory Lecture	Tutorial	Practical/ Training	Project	Total Hours		CIA	SEA	Total
					L	T	P	J					
1	PEC (Online Courses)	22EEE181X	Professional Elective (online Courses)	EEE	3	--	--	--	3	**3**	50	50	100
2	INT	22EEE182	Internship-3	EEE	--	--	8	--	8	**4**	50	50	100
3	PPW	22EEE183	Main Project Work- Phase 2	EEE	--	--	--	20	20	**9**	50	50	100
			Total		3	--	8	20	31	**16**	150	150	300

Professional Elective Courses (Online Courses)			
22EEE1811	Smart Grid	22EEE1815	Blockchain and its Applications
22EEE1812	Computer-Aided Design of Electrical Machines	22EEE1816	Natural Language Processing
22EEE1813	Simulation of Electric and Hybrid Electric Vehicle	22EEE1817	Business Analytics for Management Decision
22EEE1814	VLSI Design		

Project work: Based on the abilities of the students and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.

Internship: All the students admitted to IV year of BE shall have to undergo mandatory internship of 16 weeks during the vacation of VI semester and during VII semester. End Assessment will be conducted in VIII semester and the prescribed credit shall be included. Internship shall be considered as a head of passing and shall be considered for the award of degree.

AICTE Activity points to be earned by students admitted to BE day college programme

Over and above the academic grades, every day college regular student admitted to the 4 year Degree programme and every student entering 4 years degree programme though lateral entry, shall earn 100 and 75 activity points respectively for the award of degree through AICTE activity programme. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, minimum hour's requirement should be fulfilled. Activity points have no effect on SGPA/CGPA and shall not be considered for vertical progression.

Professional Elective courses: (PEC)

I.	**Power engineering stream: PE**	**V.**	**Information Technology – IT**
22EEE1651	Renewable Energy Sources (Professional Elective Course)	22EEE1655	Introduction to UNIX Programming (Professional Elective Course)
22EEE1661	Operation and Planning of Power Distribution Systems (MOOC)	22EEE1665	Programming in JAVA (MOOC)
22EEE1721	Electrical Estimation and Costing (Professional Elective Course)	22EEE1725	Data Base Management System (Professional Elective Course)
22EEE1731	Advances in UHV Transmission and Distribution (MOOC)	22EEE1735	Big Data Computing(MOOC)
22EEE1811	Smart Grid (MOOC)	22EEE1815	Blockchain and its Applications (MOOC)
II.	**General Electrical stream: GE**	**VI.**	**AI & ML stream: AI**
22EEE1652	Sensors and Transducers (Professional Elective Course)	22EEE1656	Principles of Fuzzy Logic (Professional Elective Course)
22EEE1662	Industrial Automation and Drives (MOOC)	22EEE1666	Data Mining (MOOC)
22EEE1722	Utilization of Electrical Power (Professional Elective Course)	22EEE1726	Artificial Neural Network (Professional Elective Course)
22EEE1732	Digital Control systems for Industrial applications (MOOC)	22EEE1736	Deep Learning (MOOC)
22EEE1812	Computer-Aided Design of Electrical Machines (MOOC)	22EEE1816	Natural Language Processing (MOOC)
III.	**Electric vehicle stream: EV**	**VII.**	**Management Stream:**
22EEE1653	Fundamentals of Electric and Hybrid Electric Vehicles (Professional Elective Course)	22EEE1657	Strategic Management (Professional Elective Course)
22EEE1663	Battery Technology and Battery Management System (MOOC)	22EEE1667	Digital Marketing (MOOC)
22EEE1723	Advanced Electric Drive Vehicles (Professional Elective Course)	22EEE1727	Accounts & Financing for Engineers (Professional Elective Course)
22EEE1733	Charging Infrastructure (MOOC)	22EEE1737	Operations and Supply Chain Management (MOOC)
22EEE1813	Simulation of Electric and Hybrid Electric Vehicle (MOOC)	22EEE1817	Business Analytics for Management Decision (MOOC)
IV.	**Interface stream: ES**		
22EEE1654	Embedded System (Professional Elective Course)		
22EEE1664	Digital Design with Verilog (MOOC)		
22EEE1724	Industrial Internet of Things (Professional Elective Course)		
22EEE1734	Drone Systems and Control (MOOC)		
22EEE1814	VLSI Design (MOOC)		

Open Elective -1 (V semester)			**Open Elective – 2 (VI semester)**		
1.	Energy Audit and Energy Management System	22EEE1561	1.	PLC and SCADA	22EEE1671
2.	Non-Conventional Energy Resources	22EEE1562	2.	Fuel Cell Technology	22EEE1672
3.	Fundamentals of Hybrid and Electric Vehicles	22EEE1563	3.	Industrial Motor control and Automation	22EEE1673
4.	Sensors and Transducers	22EEE1564	4.	Solar Photo Voltaic Systems	22EEE1674