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
Post box no. 7087, 27th cross, 12th Main, Banashankari 2nd Stage, Bengaluru- 560070, INDIA
Ph: 91-80- 26711780/81/82 Email: principal@bnmit.in, www. bnmit.org

Department of Electrical and Electronics Engineering

Proposed 2023 Scheme for Autonomous Program

Summary of Semester wise Credits

Sl. No.	Semester	Credits
1	1	20
2	2	20
3	3	22
4	4	20
5	5	22
6	6	23
7	7	16
8	8	17
	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	23MAE131	Fourier Series, Transforms and Statistical Techniques	Mathematics	2	2	--	--	4	**3**	50	50	100
2	PCC	23EEE132	Generation, Transmission and Distribution	EEE	2	2	--	--	4	**3**	50	50	100
3	PCC	23EEE133	Network Analysis	EEE	2	2	--	--	4	**3**	50	50	100
4	PCI	23EEE134	Transformers and Induction Motors	EEE	3	--	2	--	5	**4**	50	50	100
5	PCI	23EEE135	Analog and Digital Electronics	EEE	3	--	2	--	5	**4**	50	50	100
6	PBL	23EEE136	Data Structures Using C	EEE	--	--	2	2	4	**2**	50	50	100
7	HSS	23CIP137	Constitution of India and Professional Ethics	HSS	1	--	--	--	1	**1**	100	--	100
8	AEC	23SFT138	Soft Skills -1	HSS	--	2	--	--	2	**1**	100	--	100
9	IPL	23EEE139	Innovative Project Lab (Social Concern)	EEE	--	--	--	2	2	**1**	100	--	100
			Total		13	8	6	4	31	**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	23MAE141	Complex Analysis, Probability and Random Process	Mathematics	2	2	--	--	4	**3**	50	50	100
2	PCC	23EEE142	Electromagnetic Fields and Wave Theory	EEE	2	2	--	--	4	**3**	50	50	100
3	PCI	23EEE143	Electrical Motors and Synchronous Machines	EEE	3	--	2	--	5	**4**	50	50	100
4	PCI	23EEE144	Linear Control Systems	EEE	3	--	2	--	5	**4**	50	50	100
5	PBL	23EEE145	ARM processors and Applications	EEE	--	2	1	1	4	**2**	50	50	100
6	PCC	23EEE146	Data Base Management System	EEE	1	2	--	--	3	**2**	50	50	100
7	INT	23EEE147	Internship-1/Innovative Project Lab	EEE	--	--	2	2	4	**1**	100	--	100
8	AEC	23SFT148	Soft Skills - 2	HSS	--	2	--	--	2	**1**	100	--	100
			Total		11	8	8	4	**31**	**20**	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 (CIA) 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	23EEE151	AI & ML applications in Electrical systems	EEE	2	2			4	**3**	50	50	100
2	PCC	23EEE152	Digital Signal Processing	EEE	2	2	--	--	4	**3**	50	50	100
3	PCI	23EEE153	Real Time Operating System	EEE	2	--	4	--	6	**4**	50	50	100
4	PCI	23EEE154	Power Electronic Devices and Circuits	EEE	3	--	2	--	5	**4**	50	50	100
5	PBL	23EEE155	Design of digital controllers using Programmable logic controllers.	EEE	--	2	1	1	4	**2**	50	50	100
6	POE	23EEE156X	Open Elective course	EEE	2	2	--	--	4	**3**	50	50	100
7	AEC	23EEE157	Employability Skills -1 (Technical)	T & P	--	2	--	--	2	**1**	100	--	100
8	INT	23EEE158	Internship- 2	EEE	--	--	4	--	4	**2**	100	--	100
			Total		11	8	12	2	33	**22**	500	300	800

Open Elective Course			
23EEE1561	Energy Audit and Energy Management System	23EEE1563	Fundamentals of Hybrid and Electric Vehicles
23EEE1562	Non-Conventional Energy Resources	23EEE1564	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 CIE shall be included in the VI 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	23EEE161	Object Oriented Programming using Java	EEE	2	2	--	--	4	**3**	50	50	100
2	PCI	23EEE162	Computer Techniques in Power System	EEE	2	2	2	--	6	**4**	50	50	100
3	PCI	23EEE163	High Voltage & Power System Protection	EEE	3	--	2	-	5	**4**	50	50	100
4	PBL	23EEE164	Simulation of Electric vehicle and Alternate energy systems	EEE	--	--	2	2	4	**2**	50	50	100
5	PEC	23EEE165X	Professional Elective Course	EEE	3	--	--	--	3	**3**	50	50	100
6	PEC (Online Courses)	23EEE166X	Professional Elective (online Courses)	EEE	3	--	--	--	3	**3**	50	50	100
7	POE	23EEE167X	Open Elective course	EEE	2	2	--	--	4	**3**	50	50	100
8	AEC	23EEE168	Employability Skills – 2 (Technical)	T & P	--	2	--	--	2	**1**	100	--	100
			Total		15	8	6	2	31	**23**	450	350	800

Professional Elective Courses			
23EEE1651	Renewable Energy Sources	23EEE1655	Introduction to UNIX Programming
23EEE1652	Energy Audit and Energy Management System	23EEE1656	Fuzzy Logic and its applications
23EEE1653	Fundamentals of Electric and Hybrid Electric Vehicles	23EEE1657	Strategic Management
23EEE1654	Embedded Systems		

Professional Elective Courses (Online Courses)			
23EEE1661	Microgrids and distributed generation	23EEE1665	Cyber Security and Privacy
23EEE1662	Industrial Automation and Drives	23EEE1666	Data Mining
23EEE1663	Advanced Power electronics Design	23EEE1667	Digital Marketing
23EEE1664	Industrial Internet of Things		

Open Elective Courses			
23EEE1671	PLC and SCADA	23EEE1673	Industrial Motor control and Automation
23EEE1672	Fuel Cell Technology	23EEE1674	Solar Photo Voltaic Systems

Semester: VII 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	23EEE171	Engineering project Management and Finance	EEE	3	--	--	--	3	**3**	50	50	100
2	PEC	23EE172X	Professional Elective Course	EEE	3	--	--	--	3	**3**	50	50	100
3	PEC (Online Courses)	23EEE173X	Professional Elective (online Courses)	EEE	3	--	--	--	3	**3**	50	50	100
4	AEC	23EEE174	Research Methodology and IPR	EEE	1	2	--	--	3	**2**	50	50	100
5	PPW	23EEE175	Main Project- Phase 1	EEE	--	--	--	10	10	**5**	50	50	100
			Total		10	2	--	10	22	**16**	250	250	500

Professional Elective Courses			
23EEE1721	Electrical Estimation and Costing	23EEE1725	Data Visualization
23EEE1722	Utilization of Electrical Power	23EEE1726	ANN and its applications to Electrical Systems
23EEE1723	Advanced Techniques in Electric Vehicles	23EEE1727	Accounts & Financing for Engineers
23EEE1724	Digital Design through Verilog		

Professional Elective Courses (Online Courses)			
23EEE1731	Advances in UHV Transmission and Distribution	23EEE1735	Big Data Computing
23EEE1732	Digital Control systems for Industrial applications	23EEE1736	Deep Learning
23EEE1733	Charging Infrastructure	23EEE1737	Operations and Supply Chain Management
23EEE1734	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)	23EEE181X	Professional Elective (online Courses)	EEE	3	--	--	--	3	**3**	50	50	100
2	INT	23EEE182	Internship-3	EEE	--	--	8	--	8	**4**	50	50	100
3	PPW	23EEE183	Main Project Work- Phase 2	EEE	--	--	--	20	20	**10**	50	50	100
			Total		3	--	8	20	31	**17**	150	150	300

Professional Elective Courses (Online Courses)			
23EEE1811	Smart Grid	23EEE1815	Blockchain and its Applications
23EEE1812	Computer-Aided Design of Electrical Machines	23EEE1816	Natural Language Processing
23EEE1813	Battery Technology and Battery Management System	23EEE1817	Business Analytics for Management Decision
23EEE1814	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**	
23EEE1651	Renewable Energy Sources (Professional Elective Course)	23EEE1655	Introduction to UNIX Programming (Professional Elective Course)
253EE1661	Microgrids and distributed generation (MOOC)	23EEE1665	Cyber Security and Privacy (MOOC)
23EEE1721	Electrical Estimation and Costing (Professional Elective Course)	23EEE1725	Data Visualization
23EEE1731	Advances in UHV Transmission and Distribution (MOOC)	23EEE1735	Big Data Computing (MOOC)
23EEE1811	Smart Grid (MOOC)	23EEE1815	Blockchain and its Applications (MOOC)
II. General Electrical stream: GE		**VI. AI & ML stream: AI**	
23EEE1652	Energy Audit and Energy Management System (Professional Elective Course)	23EEE1656	Fuzzy Logic and its applications (Professional Elective Course)
23EEE1662	Industrial Drives and Automation (MOOC)	23EEE1666	Data Mining (MOOC)
23EEE1722	Utilization of Electrical Power (Professional Elective Course)	23EEE1726	ANN and its applications to Electrical Systems (Professional Elective Course)
23EEE1732	Digital Control systems for Industrial applications (MOOC)	23EEE1736	Deep Learning (MOOC)
23EEE1812	Computer-Aided Design of Electrical Machines (MOOC)	23EEE1816	Natural Language Processing (MOOC)
III. Electric vehicle stream: EV		**VII. Management Stream:**	
23EEE1653	Fundamentals of Electric and Hybrid Electric Vehicles (Professional Elective Course)	23EEE1657	Strategic Management (Professional Elective Course)
23EEE1663	Advanced Power electronics Design (MOOC)	23EEE1667	Digital Marketing (MOOC)
23EEE1723	Advanced Techniques in Electric Vehicles (Professional Elective Course)	23EEE1727	Accounts & Financing for Engineers (Professional Elective Course)
23EEE1733	Charging Infrastructure (MOOC)	23EEE1737	Operations and Supply Chain Management (MOOC)
23EEE1813	Battery Technology and Battery Management System (MOOC)	23EEE1817	Business Analytics for Management Decision (MOOC)
IV. **Interface stream: ES**			
23EEE1654	Embedded Systems and IoT (Professional Elective Course)		
23EEE1664	Industrial Internet of Things (MOOC)		
23EEE1724	Digital Design through Verilog (Professional Elective Course)		
23EEE1734	Drone Systems and Control (MOOC)		
23EEE1814	VLSI Design (MOOC)		

Open Elective -1 (V semester)			**Open Elective – 2 (VI semester)**
23EEE1561	1. Energy Audit and Energy Management System	23EEE1671	1. PLC and SCADA
23EEE1562	2. Non-Conventional Energy Resources	23EEE1672	2. Fuel Cell Technology
23EEE1563	3. Fundamentals of Electric and Hybrid Vehicles	23EEE1673	3. Industrial Motors and Control
23EEE1564	4. Sensors and Transducers	23EEE1674	4. Solar Photo Voltaic Systems