B.E. in Electrical and Electronics Engineering

Semester: I (Electrical & Electronics Engineering Stream) **(Physics Cycle)**

Sl. No	Type of Course	Course Code	Course Title	Teaching Dept, (TD) / Question Paper Setting Board (PSB)	Teaching Hrs/Week				Examination				Credits
					L	T	P	S	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
1	ASC (IC)	BMATE101	Mathematics-I for EEE Stream	Maths	2	2	2	0	03	50	50	100	4
2	ASC (IC)	BPHYE102	Applied Physics for EEE Stream	Physics	2	2	2	0	03	50	50	100	4
3	ESC	BEEE103	Elements of Electrical Engineering	EEE	2	2	0	0	03	50	50	100	3
4	ESC-I	BESCK104x	Engineering Science Course-I	EEE	3	0	0	0	03	50	50	100	3
					OR								
					2	0	2	0					
5	ETC-I	BETCK105x	Emerging Technology Course-I	Any Dept.	3	0	0	0	03	50	50	100	3
	OR				*OR*								
	PLC-I	BPLCK105x	Programming Language Course-I		2	0	2	0	03				
6	AEC	BENGK106	Communicative English	Humanities	1	0	0	0	-	50	-	50	1
		OR											
		BPWSK106	Professional Writing Skills in English										
7	HSMC	BKSKK107/ BKBKK107	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	0	-	50	-	50	1
		OR											
		BICOK107	Indian Constitution										
8	AEC /SDC	BIDTK158	Innovation and Design Thinking	Any Dept.	1	0	0	0	-	50	-	50	1
		OR											
		BSFHK158	Scientific Foundations of Health										
									Total	**400**	**250**	**650**	**20**

Legend:

1 ASC - Applied Science Course
2 ESC - Engineering Science Course
3 ETC - Emerging Technology Course
4 PLC - Programming Language Course
5 AEC - Ability Enhancement Course
6 SDC - Skill Development Course
7 IC - Intergrated Course [Theory Course Integrated with Practical Course]
8 HSMC - Humanity and Social Science and Management Course
9 MC - Mandatory Course (Non-Credit)
10 Lecture (L)/ Tutorial (T)/ Practical (P)/ Skill Development Activity (S)

Engineering Science Courses-I				
Code	Course Title	Teaching Hrs/Week		
		L	T	P
BESCK104A	Introduction to Civil Engineering	3	0	0
BESCK104B	Introduction to Electrical Engineering	3	0	0
BESCK104C	Introduction to Electronics Communication	3	0	0
BESCK104D	Introduction to Mechanical Engineering	3	0	0
BESCK104E	Introduction to C Programming	2	0	2

Programming Language Courses-I				
Code	Course Title	Teaching Hrs/Week		
		L	T	P
BPLCK105A	Introduction to Web Programming	2	0	2
BPLCK105B	Introduction to Python Programming	2	0	2
BPLCK105C	Introduction to JAVA programming	2	0	2
BPLCK105D	Introduction to C++ Programming	2	0	2

Emerging Technology Courses-I				
Code	Course Title	Teaching Hrs/Week		
		L	T	P
BETCK105A	Smart Materials and Systems	3	0	0
BETCK105B	Green Buildings	3	0	0
BETCK105C	Introduction to Nano Technology	3	0	0
BETCK105D	Introduction to Sustainable Engineering	3	0	0
BETCK105E	Renewable Energy Sources	3	0	0
BETCK105F	Waste Management	3	0	0
BETCK105G	Emerging Applications of Biosensors	3	0	0
BETCK105H	Introduction to Internet of Things (IOT)	3	0	0
BETCK105I	Introduction to Cyber Security	3	0	0
BETCK105J	Introduction to Embedded System	3	0	0
BETCK105P	Infrastructure for Smart City	3	0	0
BETCK105Q	Geographic Information Technologies	3	0	0
BETCK105R	Introduction to Building Environment	3	0	0
BETCK105S	Introduction to Robotics, Electric Vehicle System and 3D printing	3	0	0
BETCK105T	Renewable Energy Technology	3	0	0
BETCK105U	Introduction to Smart City	3	0	0
BETCK105V	Introduction to Database Management Systems	3	0	0

Semester: II (Electrical & Electronics Engineering Stream)														(Chemistry Cycle)
Sl. No	Type of Course	Course Code	Course Title	Teaching Dept, (TD) / Question Paper Setting Board (PSB)	Teaching Hrs/Week				Examination				Credits
					L	T	P	S	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
1	ASC (IC)	BMATE201	Mathematics-II for EEE Stream	Maths	2	2	2	0	03	50	50	100	4
2	ASC (IC)	BCHEE202	Chemistry for EEE Stream	Chemistry	2	2	2	0	03	50	50	100	4
3	ESC	BCEDK203	Computer-Aided Engineering Drawing	ME	2	0	2	0	03	50	50	100	3
4	ESC-II	BESCK204x	Engineering Science Course-II	EEE	2	0	2	0	03	50	50	100	3
					OR								
					3	0	0	0					
5	PLC-II	BPLCK205x	Programming Language Course-II	Any Dept.	2	0	2	0	03	50	50	100	3
	OR				*OR*								
	ETC-II	BETCK205x	Emerging Technology Course-II		3	0	0	0	03				
6	AEC	BPWSK206	Professional Writing Skills in English	Humanities	1	0	0	0	-	50	-	50	1
		OR											
		BENGK206	Communicative English										
7	HSMC	BICOK207	Indian Constitution	Humanities	1	0	0	0	-	50	-	50	1
		OR											
		BKSKK207/ BKBKK207	Samskrutika Kannada/ Balake Kannada										
8	AEC/ SDC	BSFHK258	Scientific Foundations of Health	Any Dept.	1	0	0	0	-	50	-	50	1
		OR											
		BIDTK258	Innovation and Design Thinking										
									Total	**400**	**250**	**650**	**20**

Legend:

1 ASC - Applied Science Course
2 ESC - Engineering Science Course
3 ETC - Emerging Technology Course
4 PLC - Programming Language Course
5 AEC - Ability Enhancement Course
6 SDC - Skill Development Course
7 IC - Intergrated Course [Theory Course Integrated with Practical Course]
8 HSMC - Humanity and Social Science and Management Course
9 MC - Mandatory Course (Non-Credit)
10 Lecture (L)/ Tutorial (T)/ Practical (P)/ Skill Development Activity (S)

Engineering Science Courses-II				
Code	Course Title	Teaching Hrs/Week		
		L	T	P
BESCK204A	Introduction to Civil Engineering	3	0	0
BESCK204B	Introduction to Electrical Engineering	3	0	0
BESCK204C	Introduction to Electronics Communication	3	0	0
BESCK204D	Introduction to Mechanical Engineering	3	0	0
BESCK204E	Introduction to C Programming	2	0	2

Programming Language Courses-II				
Code	Course Title	Teaching Hrs/Week		
		L	T	P
BPLCK205A	Introduction to Web Programming	2	0	2
BPLCK205B	Introduction to Python Programming	2	0	2
BPLCK205C	Introduction to JAVA programming	2	0	2
BPLCK205D	Introduction to C++ Programming	2	0	2

Emerging Technology Courses-II				
Code	Course Title	Teaching Hrs/Week		
		L	T	P
BETCK205A	Smart Materials and Systems	3	0	0
BETCK205B	Green Buildings	3	0	0
BETCK205C	Introduction to Nano Technology	3	0	0
BETCK205D	Introduction to Sustainable Engineering	3	0	0
BETCK205E	Renewable Energy Sources	3	0	0
BETCK205F	Waste Management	3	0	0
BETCK205G	Emerging Applications of Biosensors	3	0	0
BETCK205H	Introduction to Internet of Things (IOT)	3	0	0
BETCK205I	Introduction to Cyber Security	3	0	0
BETCK205J	Introduction to Embedded System	3	0	0
BETCK205P	Infrastructure for Smart City	3	0	0
BETCK205Q	Geographic Information Technologies	3	0	0
BETCK205R	Introduction to Building Environment	3	0	0
BETCK205S	Introduction to Robotics, Electric Vehicle System and 3D printing	3	0	0
BETCK205T	Renewable Energy Technology	3	0	0
BETCK205U	Introduction to Smart City	3	0	0
BETCK205V	Introduction to Database Management Systems	3	0	0

TABLE OF SCHEME AND EXAMINATION FOR III SEMESTER (2022-26 Batch)

Sl. No	Type of Course	Course Code	Course Title	Teaching Department (TD)	Question Paper setting Board (PSB)	Teaching Hrs/Week				Examination				Credits
						L	T	P	S	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
1	PCC	BEE301	Electric Power Generation, Transmission and Distribution	EE		3	0	0		3	100	100	100	**3**
2	IPCC	BEE302	Digital Electronics	EE		3	0	2		3	100	100	100	**4**
3	PCC	BEE303	Electrical Machines	EE		3	0	0		3	100	100	100	**3**
4	PCC	BEE304	Analog Electronics	EE		3	2	0		3	100	100	100	**4**
5	PCCL	BEEL305	Electrical Machines Lab	EE		0	0	2		3	100	100	100	**1**
6	ESC	BXX306x	ESC/ ETC/ PLC	EE		3	0	0		3	100	100	100	**3**
7	UHV	BSCK307	Social Connect & Responsibility	EE		0	0	2		1	100	_	100	**1**
8	AEC/ SEC	BEE358x	Ability Enhancement Course (AEC)/Skill Enhancement Course (SEC) – III	EE		If the course is a Theory					100	100	100	**1**
						1	0	0		1				
						If the course is a Laboratory								
						0	0	2		2				
9	MC	BNSK359	National Service Scheme (NSS)	NSS Coordinator		0	0	2		_	100	_	100	**0**
		BPEK359	Physical Education (PE) Sports & Athletics	PED										
		BYOK359	Yoga	Yoga Teacher										
Engineering Science Course (ESC/ETC/PLC)														
1	ESC	BEE306A	Mathematics for Signal Processing	EE		3	0	0		3	100	100	100	**3**
2	ESC	BEE306B	Electrical Measurements and Instrumentation	EE		3	0	0		3	100	100	100	**3**
3	ESC	BEE306C	Electromagnetic Fields	EE		3	0	0		3	100	100	100	**3**
4	ETC	BEE306D	Semiconductor Devices	EE		3	0	0		3	100	100	100	**3**
Ability Enhancement Course – III														
1	SEC	BEE358A	Design and Fabrication of Electronic Circuits	EE		0	0	2		2	100	100	100	**1**
2	SEC	BEE358B	PCB Design using ORCAD/Any other tool	EE		0	0	2		2	100	100	100	**1**
3	AEC	BEE358C	Electrical Safety and Risk Management	EE		1	0	0		2	100	100	100	**1**
4	SEC	BEE358D	Introduction to Verilog /VHDL coding	EE		0	0	2		2	100	100	100	**1**

Note:*Total Marks = CIE out of 100 marks scaled down to 50 marks + SEE out of 100 marks scaled down to 50 marks.*
Total Marks = CIE out of 100 marks, for courses with no SEE.

TABLE OF SCHEME AND EXAMINATION FOR IV SEMESTER (2022-26 Batch)

Sl. No	Type of Course	Course Code	Course Title	Teaching Department (TD)	Question Paper setting Board (PSB)	Teaching Hrs/Week				Examination				Credits
						L	T	P	S	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
1	PCC	BEE401	Power Electronics	EE		3	0	0		3	100	100	100	**3**
2	IPCC	BEE402	Analysis of Electrical Machines	EE		3	0	2		3	100	100	100	**4**
3	PCC	BEE403	Electrical Network Analysis	EE		3	2	0		3	100	100	100	**4**
4	PCCL	BEEL404	Power Electronics Lab	EE		0	0	2		3	100	100	100	**1**
5	ESC	BEE405x	ESC/ ETC/ PLC	EE		3	0	0		3	100	100	100	**3**
6	AEC/ SEC	BEE456x	Ability Enhancement Course (AEC)/Skill Enhancement Course (SEC) – IV	EE		If the course is a Theory 1	1	1		1 If the course is a Laboratory 2	100	100	100	**1**
						0	0	0						
7	BSC	BBOK407	Biology for Engineers	EE/Basic Science		3	0	0		3	100	100	100	**3**
8	UHV	BUHK408	Universal Human Values Course	EE		1	0	0		1	100	100	100	**1**
9	MC	BNSK459	National Service Scheme (NSS)	NSS Coordinator		0	0	2		–	100	–	100	**0**
		BPEK459	Physical Education (PE) Sports & Athletics	PED										
		BYOK459	Yoga	Yoga Teacher										
Engineering Science Course (ESC/ETC/PLC)														
1	ESC	BEE405A	Introduction to VLSI circuits	EE		3	0	0		3	100	100	100	**3**
2	PLC	BEE405B	ARM Microcontrollers	EE		3	0	0		3	100	100	100	**3**
3	ESC	BEE405C	Communication Engineering	EE		3	0	0		3	100	100	100	**3**
4	ESC	BEE405D	Distributed Generation and Microgrid	EE		3	0	0		3	100	100	100	**3**
Ability Enhancement Course – III														
1	SEC	BEE456A	Circuit Laboratory using PSPICE	EE		0	0	2		2	100	100	100	**1**
2	SEC	BEE456B	ARM Microcontroller Programming	EE		0	0	2		2	100	100	100	**1**
3	AEC	BEE456C	Testing of Electrical Apparatus	EE		0	0	2		2	100	100	100	**1**
4	SEC	BEE456D	Design and Implementation of SMPS	EE		0	0	2		2	100	100	100	**1**

Note:*Total Marks = CIE out of 100 marks scaled down to 50 marks + SEE out of 100 marks scaled down to 50 marks.*
Total Marks = CIE out of 100 marks, for courses with no SEE.

TABLE OF SCHEME AND EXAMINATION FOR V SEMESTER (2021-25 Batch)

V Semester											
Sl. No	Course Code	Course Title	Category	Teaching Department	Teaching Hours / Week			Examination			Credits
					Theory Lecture	Tutorial	Practical/ Drawing				
					L	T	P	CIE Marks	SEE Marks	Total Marks	
1	21EE5C01	Management and Entrepreneurship	PC	EEE	3	0	0	50	100	100	3
2	21EE5C02	Power System Analysis-I	PC	EEE	3	0	0	50	100	100	3
3	21EE5C03	ARM Microcontrollers	PC	EEE	3	0	0	50	100	100	3
4	21EE5C04	Control Systems	PC	EEE	3	0	0	50	100	100	3
5	21EE5C05	Digital Signal Processing	PC	EEE	3	0	0	50	100	100	3
6	21EE5L01	Control Systems Lab	PC	EEE	0	0	2	50	50	100	1
7	21EE5L02	ARM Microcontroller Lab	PC	EEE	0	0	2	50	50	100	1
8	21EEOXX	Open Elective - 1	OE	Other than EEE	3	0	0	50	100	100	3
9	21EE5A01	Research Methodology & IPR	AEC	EEE	2	0	0	50	50	100	2
10	21HS5C01	Physical Education/Yoga & NSS	HSC	PE	-	-	-	50	0	100	0
11	21EE5V01	Design and Implementation of Switched Mode Power Converters*	VAC	EEE	1	0	2	100	-	100	0
TOTAL											**22**

Note: Total Marks = CIE marks out of 50 + SEE marks out of 100 scaled down to 50 (for courses with L:T:P-3:0:0)
Total Marks = CIE marks out of 50 + SEE marks out of 50 (for courses with L:T:P-2:0:0 or 0:0:2)
Total Marks = CIE marks out of 50 scaled up to 100 (for courses with no SEE)

**Non-credited, Value-Added Course*

V Semester Open Electives Offered by the Department											
Sl. No	Course Code	Course Title	Category	Teaching Department	Teaching Hours / Week			Examination			Credits
					Theory Lecture	Tutorial	Practical/ Drawing				
					L	T	P	CIE Marks	SEE Marks	Total Marks	
1	21EE5O01	Computer Control of Industrial Process	OE	EEE	3	0	0	50	100	100	3
2	21EE5O02	Industrial Automation	OE	EEE	3	0	0	50	100	100	3
3	21EE5O03	Introduction to Electric Vehicle Technology	OE	EEE	3	0	0	50	100	100	3
4	21EE5O04	Sensors and Signal Conditioning	OE	EEE	3	0	0	50	100	100	3
5	21EE5O05	Optimization Techniques	OE	EEE	3	0	0	50	100	100	3

TABLE OF SCHEME AND EXAMINATION FOR VI SEMESTER (2021-25 Batch)

VI Semester											
Sl. No	Course Code	Course Title	Category	Teaching Department	Teaching Hours / Week			Examination			Credits
					Theory Lecture	Tutorial	Practical/ Drawing				
					L	T	P	CIE Marks	SEE Marks	Total Marks	
1	21EE6C01	Electric Vehicles	PC	EEE	3	0	0	50	100	100	3
2	21EE6C02	Switchgear and Protection (Integrated with Lab)	PC	EEE	3	0	2	50	100	100	4
3	21EE6C03	Power System Analysis-II	PC	EEE	3	0	0	50	100	100	3
4	21EE6EXX	Elective 1	PC	EEE	3	0	0	50	100	100	3
5	21EE6L01	Power System Analysis Lab	PC	EEE	0	0	2	50	50	100	1
6	21EE6OXX	Open Elective-2	OE	Other than EEE	3	0	0	50	50	100	3
7	21EE6P01	Minor Project	PI	EEE	0	0	2	50	0	100	2
8	21EE6A01	PCB Design and Fabrication	AEC	EEE	0	0	2	50	0	100	1
9	21HS6C01	Environment Studies	HSC	Civil	-	-	-	50	0	100	0
10	21HS6C02	Physical Education/ Yoga & NSS	HSC	Physical Ed.	-	-	-	50	0	100	0
11	21EE6I01	Summer Internship 2	PI	Completed during IV Sem Vacation				50	0	100	2
TOTAL											**22**

Note: Total Marks = CIE marks out of 50 + SEE marks out of 100 scaled down to 50 (for courses with L:T:P-3:0:0)
Total Marks = CIE marks out of 50 + SEE marks out of 50 (for courses with L:T:P-2:0:0 or 0:0:2)
Total Marks = CIE marks out of 50 scaled up to 100 (for courses with no SEE)

VI Semester – List of Electives											
Sl. No	Course Code	Course Title	Category	Teaching Department	Teaching Hours / Week			Examination			Credits
					Theory Lecture	Tutorial	Practical/ Drawing				
					L	T	P	CIE Marks	SEE Marks	Total Marks	
1	21EE6E01	Industrial Control and Automation	PC	EEE	2	0	2	50	50	100	3
2	21EE6E02	Python programming	PC	EEE	2	0	2	50	50	100	3
3	21EE6E03	Embedded Controllers for Power Converters	PC	EEE	1	2	2	50	50	100	3
4	21EE6E04	Biomedical Instrumentation	PC	EEE	3	0	0	50	100	100	3
5	21EE6E05	Electric Machine Design	PC	EEE	3	0	0	50	100	100	3
6	21EE6E06	Machine Learning	PC	EEE	3	0	0	50	100	100	3
7	21EE6E07	Electric Drives	PC	EEE	3	0	0	50	100	100	3
8	21EE6E08	Data Analytics and IoT	PC	EEE	3	0	0	50	100	100	3
List of Open Electives Offered by the Department											
1	21EE6 O01	Introduction to Smart grid	OE	EEE	3	0	0	50	100	100	3
2	21EE6O02	Soft Computing Techniques	OE	EEE	3	0	0	50	100	100	3
3	21EE6O03	Renewable Energy	OE	EEE	3	0	0	50	100	100	3
4	21EE6O04	Industry 4.0	OE	EEE	3	0	0	50	100	100	3
5	21EE6O05	Agriculture Engineering	OE	EEE	3	0	0	50	100	100	3

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING SCHEME OF TEACHING VII SEMESTER						
Sl. No.	**Subject Code**	**Subject**	**L**	**T**	**P**	**Cr.**
1	EE7C01	Testing, Erection, Commissioning and Maintenance of Electrical Equipment	3	2	0	4
2	EE7C02	High Voltage Engineering	3	0	2	4
3	EE7E2XX	Dept. Elective - 2	3	0	0	3
4	EE7E3XX	Dept. Elective - 3	3	0	0	3
5	EE7IXX	Industry Driven Elective (For Regular Students)	2	0	0	2
6	EE7OXX	Open Elective (For Regular Students)	2	0	0	2
7	EE7L01	Power System Simulation Lab	0	0	2	1
8	EE7L02	Protection Lab	0	0	2	1
9	EE7C03	Seminar/Paper Presentation	0	0	2	1
10	EE7C04	Project Phase - 1	0	0	0	1
11	EE7C05	Competency Training	0	0	0	0
Total			**26**			**22**

Dept. Elective– 2						
Sl. No.	**Subject Code**	**Subject**	**L**	**T**	**P**	**Cr.**
1	EE7E201	Power System Operation & Control*	3	0	0	3
2	EE7E202	Advanced Power Electronics**	3	0	0	3
3	EE7E203	Biomedical Instrumentation	3	0	0	3
4	EE7E204	Electric Drives	3	0	0	3

Dept. Elective– 3						
Sl. No.	**Subject Code**	**Subject**	**L**	**T**	**P**	**Cr.**
1	EE7E302	Data Analytics and IoT	3	0	0	3
2	EE7E303	Sensors & Signal Conditioning	3	0	0	3
3	EE7E304	Control Systems - II***	3	0	0	3
4	EE7E305	Electric Vehicles	3	0	0	3

Industry Driven Elective						
Sl. No.	**Subject Code**	**Subject**	**L**	**T**	**P**	**Cr.**
1	EE7I01	Green Fuels & Environmental Technology	2	0	0	2

Open Elective						
Sl. No.	**Subject Code**	**Subject**	**L**	**T**	**P**	**Cr.**
1	EE7O01	Introduction to MEMS	2	0	0	2
2	EE7O02	Power Electronic devices and applications	2	0	0	2
3	EE7O03	Industrial automation	2	0	0	2
4	EE7O04	Smart grid and RE integration	2	0	0	2
5	EE7O05	Agricultural Engineering	2	0	0	2
6	EE7O06	Operations Research	2	0	0	2

*Pre-requisite : Power system Analysis (EE5C03)

**Pre-requisite : Power Electronics (EE6C03)

***Pre-requisite : Control Systems - I (EE5C02)

VIII SEMESTER

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING SCHEME OF TEACHING

VIII SEMESTER

Sl. No.	Subject Code	Subject	L	T	P	Cr.
1	EE8E4XX	Dept. Elective – 4	3	0	0	3
2	EE8E5XX	Dept. Elective – 5	3	0	0	3
3	EE8E6XX	Dept. Elective – 6	3	0	0	3
4	EE8C01	Internship	0	0	0	3
5	EE8C02	Major Project	0	0	8	4
		Total	**17**			**16**

Dept. Elective - 4

Sl. No.	Subject Code	Subject	L	T	P	Cr.
1	EE8E401	Electrical Power Quality	3	0	0	3
2	EE8E402	Design of Control Systems*	3	0	0	3
3	EE8E403	Energy Management systems & SCADA	3	0	0	3
4	EE8E404	Reactive Power Compensation and Flexible AC Transmission Systems	3	0	0	3

Dept. Elective - 5

Sl. No.	Subject Code	Subject	L	T	P	Cr.
1	EE8E501	Data Structures & Algorithms	3	0	0	3
2	EE8E502	VLSI Circuits	3	0	0	3
3	EE8E503	MEMS and its application	3	0	0	3
4	EE8E504	Optimization Techniques	3	0	0	3

Dept. Elective - 6						
Sl. No.	**Subject Code**	**Subject**	**L**	**T**	**P**	**Cr.**
1	EE8E601	HVDC transmission	3	0	0	3
2	EE8E602	AI Applications to Power Systems	3	0	0	3
3	EE8E603	Smart Grid	3	0	0	3
4	EE8E604	Power Distribution Planning and Control	3	0	0	3
5	EE8E605	Introduction to Battery Management Systems	3	0	0	3

*Prerequisite: Control Systems - I (EE5C02)