CURRICULUM & SYLLABUS
2023 Scheme
(Autonomous)
Version 2.0

B.TECH
ELECTRICAL AND ELECTRONICS ENGINEERING

MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY
Mar Ivanios Vidyanagar, Nalanchira, Thiruvananthapuram – 695 015

CURRICULUM

FOR

B. TECH DEGREE PROGRAMME

IN

ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTERS I to VIII

2023 SCHEME (Version 2)

(AUTONOMOUS)

MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Autonomous Institution Affiliated to APJ Abdul Kalam Technological University)
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MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

B. TECH DEGREE PROGRAMME

IN

ELECTRICAL AND ELECTRONICS ENGINEERING

CURRICULUM

Items	Board of Studies (BOS)	Academic Council (AC)
Date of Approval	12/07/2023	09/08/2023
Date of Approval of Revised version	09/07/2024 (Mailed)	19/06/2024

Head of Department
Chairman, Board of Studies

Principal
Chairman, Academic Council

MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Vision and Mission of the Institution

Vision:
To be an Institution moulding globally competent professionals as epitomes of Noble Values.

Mission:
To transform the Youth as technically competent, ethically sound and socially committed professionals, by providing a vibrant learning ambience for the welfare of humanity.

Vision and Mission of the Department

Vision:
To be a Centre of Excellence in Electrical and Electronics Engineering Education, Research and Application of knowledge to benefit the society at large.

Mission:
To mould quality Electrical Engineers, fostering creativity and innovation to address global issues.

Programme Educational Objectives (PEOs)

1. Graduates will succeed as Professionals in Industry or as Entrepreneurs in Electrical and Electronics Engineering and related disciplines.
2. Graduates will be able to adapt to the advances in Technology by continuously acquiring knowledge and skills, with an urge for innovation.
3. Graduates will be socially committed individuals, exhibiting professional ethics in addressing technical and engineering challenges.

Programme Outcomes (POs)

Engineering Graduates will have the ability to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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.
7. **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.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and

norms of the engineering practice.

9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **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.
12. **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.

Programme Specific Outcomes (PSOs)

Engineering Graduates will have the ability:

1. To apply the knowledge in Electrical and Electronics Engineering for the design of Power Generation, Transmission, Distribution and Utilization systems.
2. To demonstrate the knowledge required to design, develop, test, and implement Electrical & Electronics systems.

CURRICULUM UNDER AUTONOMY STATUS

i) Medium of Instruction: English

ii) Knowledge Segments and Credits

Every course of BTech Programme is placed in one of the nine categories as listed in table below. No semester shall have more than six lecture-based courses and two laboratory courses, and/or drawing/seminar/project courses in the curriculum.

Table 1: Credit distribution and the Knowledge Domains

Sl. No.	Category	Category Code	Proposed 2023 Curriculum
1	Humanities and Social Sciences including Management Courses	HSC	9
2	Basic Science Courses	BSC	26
3	Engineering Science Courses	ESC	24
4	Programme Core Courses,	PCC	69
5	Programme Elective Courses	PEC	18
6	Institute Elective Courses	IEC	6
7	Seminar, Mini Project, Project Work, Internship and Comprehensive Course Viva Voce	PWS	15
8	Mandatory Student Activities (P/F)	MSA	3
Total Mandatory Credits			**170**
	Value Added Courses (Optional) – Honours/Minor	VAC	15

ii) Semester-wise Credit Distribution

Semester	***I***	***II***	***III***	***IV***	***V***	***VI***	***VII***	***VIII***	***Total***
Credits for Courses	***19***	***21***	***22***	***20***	***22***	***24***	***22***	***17***	***167***
Year wise Credit	***40***		***42***		***46***		***39***		***167***
Credits for Activities	***3***								***3***
Total Credits									***170***
Value Added Courses (Optional) – Honours / Minor									***15***
Total Credits									***185***

Humanities and Social Sciences including Management Courses: Universal Human Values, Management for Engineers, Business Economics and Accountancy.

Basic Science Courses: Mathematics, Engineering Physics, Engineering Chemistry, Engineering Physics and Chemistry Labs.

Engineering Science Courses: Basics of Electrical and Electronics Engineering, Engineering Mechanics, Engineering Graphics, Design Engineering, Programming in Python, Problem Solving and programming in C, Manufacturing and Construction Practices B, Electrical and Electronics Workshop.

Mandatory Non-credit Courses: Environmental Science, Professional Communication, Professional Ethics, Industrial Safety Engineering.

General Guidelines

Three hours are kept exclusively for the Remedial / Minor/ Honours courses from third to seventh semester. For the mini project of Minor or Honours in S7/S8, 7 hours are allotted. If a student does not opt for Minor/Honours courses, he/she can be given remedial classes.

SEMESTER I										
Slot	**Cate-gory**	**Course Code**	**Courses**	**Credit Structure**				**SS**	**Hours**	**Credit**
				L	**T**	**P**	**J**			
A	BSC	23MAL10A	Linear Algebra and Calculus	3	1	0	0	5	4	4
B	BSC	23CYL10A	Engineering Chemistry	3	1	0	0	5	4	4
C	ESC	23ESB10A	Engineering Graphics	2	0	2	0	4	4	3
D	ESC	23ESB10D	Problem Solving and Programming in C	2	1	2	0	4.5	5	4
G	ESC	23ESL1NA	Environmental Science	2	0	0	0	3	2	1*
S	BSC	23CYP10A	Engineering Chemistry Lab	0	0	2	0	1	2	1
T	ESC	23ESB10P	Manufacturing and Construction Practices B	1	0	2	0	2.5	3	2
TOTAL								**25**	**24**	**19**

**Not to be considered for Grade/GPA/CGPA. Pass or Fail Only*

SEMESTER II										
Slot	**Cate-gory**	**Course Code**	**Courses**	**Credit Structure**				**SS**	**Hours**	**Credit**
				L	**T**	**P**	**J**			
A	BSC	23MAL10B	Vector Calculus, Differential Equations and Transforms	3	1	0	0	5	4	4
B	BSC	23PYL10A	Engineering Physics	3	1	0	0	5	4	4
C	ESC	23ESL10C	Engineering Mechanics	2	1	0	0	3.5	3	3
D	ESC	23ESB10G	Python Programming	2	0	2	0	4	4	3
E	ESC	23ESL10J	Basics of Electrical Engineering A	2	0	0	0	3	4	2
		23ESL10L	Basics of Electronics Engineering	2	0	0	0			2
G	HSC	23HSJ1NB	Professional Communication	2	0	0	2	5	4	1*
S	BSC	23PYP10A	Engineering Physics Lab	0	0	2	0	1	2	1
T	ESC	23ESP10B	Electrical and Electronics Workshop	0	0	2	0	1	2	1
TOTAL								**27.5**	**27**	**21**

**Not to be considered for Grade/GPA/CGPA. Pass or Fail Only*

SEMESTER III										
Slot	**Cate-gory**	**Course Code**	**Courses**	**Credit Structure**				**SS**	**Hours**	**Credit**
				L	**T**	**P**	**J**			
A	BSC	23MAL20A	Partial Differential Equation and Complex Analysis	3	1	0	0	5	4	4
B	PCC	23EEB20A	Logic System Design	3	1	2	0	6	6	5
C	PCC	23EEL20B	Measurements and Instrumentation	3	1	0	0	5	4	4
D	PCC	23EEL20C	Electric Circuit Analysis	3	1	0	0	5	4	4
E	ESC	23ESL00A	Design Engineering	2	0	0	0	3	2	2
G	HSC	23HSL2NA	Professional Ethics	2	0	0	0	3	2	1*
S	PCC	23EEP20A	Electrical Network Lab	0	0	2	0	1	2	1
T	PCC	23EEP20B	Simulation Lab	0	0	2	0	1	2	1
M	VAC		Minor Course	3	0	0	0	4.5	3	3
TOTAL								**29/ 33.5**	**26/29**	**22/25**

**Not to be considered for Grade/GPA/CGPA. Pass or Fail Only*

SEMESTER IV										
Slot	**Cate-gory**	**Course Code**	**Courses**	**Credit Structure**				**SS**	**Hours**	**Credit**
				L	**T**	**P**	**J**			
A	BSC	23MAL20D	Probability, Statistics and Numerical Methods	3	1	0	0	5	4	4
B	PCC	23EEL20D	Electronic Devices and Circuits	3	1	0	0	5	4	4
C	PCC	23EEL20E	DC Machines and Transformers	2	1	0	0	3.5	3	3
D	PCC	23EEB20F	Microcontroller and Applications	3	1	2	0	6	6	5
E	HSC	23HSL2NB	Universal Human Values - II	2	1	0	0	3.5	3	1*
G	ESC	23ESL2NC	Industrial Safety Engineering	2	1	0	0	3.5	3	1*
S	PCC	23EEP20C	Measurements Lab	0	0	2	0	1	2	1
T	PCC	23EEP20D	Electronic Devices and Circuits Lab	0	0	2	0	1	2	1
M/H	VAC		Minor/Honours Course	3	0	0	0	4.5	3	3
				2	1	0	0	3.5		
TOTAL								**28.5/ 33/32**	**27/30**	**20/23**

**Not to be considered for Grade/GPA/CGPA. Pass or Fail Only*

SEMESTER V										
Slot	**Cate-gory**	**Course Code**	**Courses**	**Credit Structure**				**SS**	**Hours**	**Credit**
				L	**T**	**P**	**J**			
A	PCC	23EEL30A	Power Electronics and Drives	3	1	0	0	5	4	4
B	PCC	23EEL30B	Signals and System Analysis	3	1	0	0	5	4	4
C	PCC	23EEL30C	Synchronous and Induction Machines	3	1	0	0	5	4	4
D	PEC	23EEL31X	Program Elective I	3	0	0	0	4.5	3	3
E	HSC	23HSL30A	Business Economics and Accountancy	3	0	0	0	4.5	3	3
S	PCC	23EEP30A	Electrical Machines Lab	0	0	3	0	1.5	3	2
T	PCC	23EEP30B	Power Electronics Lab	0	0	3	0	1.5	3	2
M/H	VAC		Minor/Honours Course	3	0	0	0	4.5	3	3
TOTAL								**27/ 31.5**	**24/27**	**22/25**

SEMESTER VI										
Slot	**Cate-gory**	**Course Code**	**Courses**	**Credit Structure**				**SS**	**Hours**	**Credit**
				L	**T**	**P**	**J**			
A	PCC	23EEL30D	Linear Control Systems	3	1	0	0	5	4	4
B	PCC	23EEL30E	Power Systems I	3	1	0	0	5	4	4
C	PCC	23EEL30F	Electromagnetic Theory and Compatibility	3	1	0	0	5	4	4
D	PEC	23EEL32X	Program Elective II	3	0	0	0	4.5	3	3
E	IEC	23IEL31X	Institute Elective I	3	0	0	0	4.5	3	3
S	PCC	23EEP30C	Control Systems Lab	0	0	3	0	1.5	3	2
T	PWS	23EES38A	Seminar	0	0	4	0	2	4	2
U	PWS	23EEJ38B	Mini Project	0	0	4	0	4	4	2
M/H	VAC		Minor/Honours Course	3	0	0	0	4.5	3	3
TOTAL								**31.5/ 36**	**29/32**	**24/27**

SEMESTER VII										
Slot	**Cate-gory**	**Course Code**	**Courses**	**Credit Structure**				**SS**	**Hours**	**Credit**
				L	**T**	**P**	**J**			
A	PCC	23EEL40A	Power Systems II	3	1	0	0	5	4	4
B	PCC	23EEJ40B	Computer Aided Electrical System Design for Domestic Dwellings	2	1	0	1	4.5	4	4
C	PEC	23EEL43X	Program Elective III	3	0	0	0	4.5	3	3
E	IEC	23IEL42X	Institute Elective II	3	0	0	0	4.5	3	3
S	PCC	23EEP40A	Power Systems Lab	0	0	3	0	1.5	3	2
T	PWS	23EEV48A	Comprehensive Course Viva Voce	0	0	2	0	1	2	1
U	PWS	23EEJ48A	Project	0	0	10	0	10	10	5
		23EEI48A	Internship*							
M/H	VAC		Minor/Honours Course	0	0	6	0	6	5/3	3
				3	0	0	0	4.5		
TOTAL								**31/37/ 35.5**	**29/34/ 32**	**22/25**

*Students can opt for Internship either in S7 or S8. However, in S7, the internship can be permitted only if there are no pending Programme/Course requirements in the semester, that need to be completed in College in the offline mode, such as laboratory sessions.

SEMESTER VIII										
Slot	**Cate-gory**	**Course Code**	**Courses**	**Credit Structure**				**SS**	**Hours**	**Credit**
				L	**T**	**P**	**J**			
A	PEC	23EEL44X	Program Elective IV	3	0	0	0	4.5	3	3
B	PEC	23EEL45X	Program Elective V	3	0	0	0	4.5	3	3
C	PEC	23EEL46X	Program Elective VI	3	0	0	0	4.5	3	3
D	HSC	23HSL00A	Management for Engineers	3	0	0	0	4.5	3	3
U	PWS	23EEJ48B	Project	0	0	10	0	10	10	5
		23EEI48A	Internship*							
M/H	VAC		Minor/Honours Course	0	0	6	0	6	5	3
TOTAL								**28/34**	**22/27**	**17/20**

*Students can opt for Internship either in S7 or S8. However, in S7, the internship can be permitted only if there are no pending Programme/Course requirements in the semester, that need to be completed in College in the offline mode, such as laboratory sessions.

MICRO SPECIALIZATION STREAM		
No.	**STREAM**	**CODE**
1.	Power and Energy Systems	PES
2.	Power Electronics and Drives	PED
3.	Control Systems and Automation	CSA
4.	Electronics and Instrumentation	EIN
5.	Artificial Intelligence and Machine Learning	AML

PROGRAM ELECTIVE I

Slot	Category Code	Course Code	Courses	L-T-P-J	Hours	Credit	Stream Code
D	PEC	23EEL31A	Renewable Energy Systems	3-0-0-0	3	3	PES
		23EEL31B	Material Science	3-0-0-0	3	3	PED
		23EEL31C	Embedded Systems	3-0-0-0	3	3	CSA
		23EEL31D	Sensors and Sensing Techniques	3-0-0-0	3	3	EIN
		23EEL31E	Biomedical Instrumentation	3-0-0-0	3	3	EIN
		23EEL31F	Object Oriented Programming	3-0-0-0	3	3	AML
		23EEL31G	Data Structures	2-1-0-0	3	3	AML

PROGRAM ELECTIVE II

Slot	Category Code	Course Code	Courses	L-T-P-J	Hours	Credit	Stream Code
D	PEC	23EEL32A	Illumination Engineering	2-1-0-0	3	3	PES
		23EEL32B	Electrical Drawing with CAD	2-1-0-0	3	3	PED
		23EEL32C	Electric Drives	3-0-0-0	3	3	PED
		23EEL32D	Industrial Instrumentation and Automation	3-0-0-0	3	3	CSA
		23EEL32E	Digital System Design Using Verilog	2-1-0-0	3	3	CSA
		23EEL32F	Introduction to Nanotechnology	3-0-0-0	3	3	EIN
		23EEL32G	Introduction to Soft Computing	3-0-0-0	3	3	AML
		23EEL32H	Internet of Things	3-0-0-0	3	3	AML

PROGRAM ELECTIVE III

Slot	Category Code	Course Code	Courses	L-T-P-J	Hours	Credit	Stream Code
C	PEC	23EEL43A	Energy Management and Auditing	3-0-0-0	3	3	PES
		23EEL43B	Power Quality	3-0-0-0	3	3	PES
		23EEL43C	Electrical Machine Design	2-1-0-0	3	3	PED
		23EEL43D	Switch Mode Power Converters	3-0-0-0	3	3	PED
		23EEL43E	Introduction to Robotics	2-1-0-0	3	3	CSA
		23EEL43F	Advanced Control Systems	3-0-0-0	3	3	CSA
		23EEL43G	Digital Signal Processing	2-1-0-0	3	3	EIN
		23EEL43H	Introduction to Machine Learning	3-0-0-0	3	3	AML
		23EEL43I	Introduction to Computer Networks	3-0-0-0	3	3	AML

PROGAM ELECTIVE IV

Slot	Category Code	Course Code	Courses	L-T-P-J	Hours	Credit	Stream Code
A	PEC	23EEL44A	Smart Grids	3-0-0-0	3	3	PES
		23EEL44B	HVDC and FACTS	3-0-0-0	3	3	PES
		23EEL44C	Energy Storage Systems	3-0-0-0	3	3	PED
		23EEL44D	Digital Control Systems	2-1-0-0	3	3	CSA
		23EEL44E	Communication Engineering	3-0-0-0	3	3	EIN
		23EEL44F	Data Analytics for Electrical Engineers	3-0-0-0	3	3	AML

PROGRAM ELECTVE V

Slot	Category Code	Course Code	Courses	L-T-P-J	Hours	Credit	Stream Code
B	PEC	23EEL45A	Solar PV Systems	3-0-0-0	3	3	PES
		23EEL45B	Power System Protection	3-0-0-0	3	3	PES
		23EEL45C	Electric and Hybrid Vehicles	3-0-0-0	3	3	PED
		23EEL45D	Modern Control Techniques	3-0-0-0	3	3	CSA
		23EEL45E	Digital Image Processing	3-0-0-0	3	3	EIN
		23EEL45F	VR and AR for Assistive Technology	3-0-0-0	3	3	AML

PROGRAM ELECTIVE VI

Slot	Category Code	Course Code	Courses	L-T-P-J	Hours	Credit	Stream Code
C	PEC	23EEL45A	Electrical System Design for Industry and Infrastructure	2-1-0-0	3	3	PES
		23EEL45B	High Voltage Engineering	3-0-0-0	3	3	PES
		23EEL45C	Computer Aided Power System Analysis	2-1-0-0	3	3	PES
		23EEL45D	Special Electric Machines	3-0-0-0	3	3	PED
		23EEL45E	Automotive Electronic Systems	3-0-0-0	3	3	EIN
		23EEL45F	Introduction to Artificial Neural Networks	3-0-0-0	3	3	AML

INSTITUTE ELECTIVE I

Slot	Category Code	Course Code	Courses	L-T-P-J	Hours	Credit
E	IEC	23IEL31A	Introduction to Flight Dynamics and Control	3-0-0-0	3	3
		23IEL31B	Introduction to Power Processing	3-0-0-0	3	3
		23IEL31C	Electrical Drives and Control for Automation	3-0-0-0	3	3
		23IEL31D	Artificial Intelligence in Power Systems	3-0-0-0	3	3

INSTITUTE ELECTIVE II

Slot	Category Code	Course Code	Courses	L-T-P-J	Hours	Credit
E	IEC	23IEL42A	Architectural Lighting Design and Control	2-1-0-0	3	3
		23IEL42B	Electric Vehicles	3-0-0-0	3	3
		23IEL42C	Process Control and Automation	3-0-0-0	3	3
		23IEL42D	Sustainable Energy Management	3-0-0-0	3	3

LIST OF ELECTIVE COURSES BASED ON MICRO SPECIALIZATION STREAM

POWER AND ENERGY SYSTEMS						
Category	**No.**	**Course**	**Semester**	**L-T-P-J**	**Hours**	**Credit**
PEC	1	Renewable Energy Systems	S5	3-0-0-0	3	3
	2	Illumination Engineering	S6	3-0-0-0	3	3
	3	Power Quality	S7	3-0-0-0	3	3
	4	Energy Management and Auditing	S7	3-0-0-0	3	3
	5	Smart Grids	S8	3-0-0-0	3	3
	6	Power System Protection	S8	3-0-0-0	3	3
	7	Computer Aided Power System Analysis	S8	2-1-0-0	3	3
	8	Electrical System Design for Industry and Infrastructure	S8	2-1-0-0	3	3
	9	HVDC and FACTS	S8	3-0-0-0	3	3
	10	High Voltage Engineering	S8	3-0-0-0	3	3
	11	Solar PV Systems	S8	3-0-0-0	3	3
POWER ELECTRONICS AND DRIVES						
Category	**No.**	**Course**	**Semester**	**L-T-P-J**	**Hours**	**Credit**
PEC	1	Material Science	S5	3-0-0-0	3	3
	2	Electrical Drawing with CAD	S6	2-1-0-0	3	3
	3	Advanced Electric Drives	S6	3-0-0-0	3	3
	4	Electrical Machine Design	S6	3-0-0-0	3	3
	5	Switch Mode Power Converters	S7	3-0-0-0	3	3
	6	Special Electric Machines	S7	3-0-0-0	3	3
	7	Energy Storage Systems	S8	3-0-0-0	3	3
	8	Electric and Hybrid Vehicles	S8	3-0-0-0	3	3
CONTROL SYSTEMS AND AUTOMATION						
Category	**No.**	**Course**	**Semester**	**L-T-P-J**	**Hours**	**Credit**
PEC	1	Embedded Systems	S5	3-0-0-0	3	3
	2	Industrial Instrumentation and Automation	S6	3-0-0-0	3	3
	3	Digital System Design Using Verilog	S6	2-1-0-0	3	3
	4	Introduction to Robotics	S7	2-1-0-0	3	3
	5	Advanced Control Systems	S7	3-0-0-0	3	3
	6	Digital Control Systems	S8	3-0-0-0	3	3
	7	Modern Control Techniques	S8	2-1-0-0	3	3
ELECTRONICS AND INSTRUMENTATION						
Category	**No.**	**Course**	**Semester**	**L-T-P-J**	**Hours**	**Credit**
PEC	1	Sensors and Sensing Techniques	S5	3-0-0-0	3	3
	2	Biomedical Instrumentation	S5	3-0-0-0	3	3
	3	Introduction to Nanotechnology	S6	3-0-0-0	3	3
	4	Digital Signal Processing	S7	2-1-0-0	3	3
	5	Communication Engineering	S8	3-0-0-0	3	3
	6	Automotive Electronic Systems	S8	3-0-0-0	3	3
	7	Digital Image Processing	S8	3-0-0-0	3	3

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING						
Category	**No.**	**Course**	**Semester**	**L-T-P-J**	**Hours**	**Credit**
PEC	1	Object Oriented Programming	S5	3-0-0-0	3	3
	2	Data Structures	S5	2-1-0-0	3	3
	3	Introduction to Soft Computing	S6	3-0-0-0	3	3
	4	Internet of Things	S6	3-0-0-0	3	3
	5	Introduction to Machine Learning	S7	3-0-0-0	3	3
	6	Introduction to Computer Networks	S7	3-0-0-0	3	3
	7	VR and AR for Assistive Technology	S8	3-0-0-0	3	3
	8	Data Analytics for Electrical Engineers	S8	3-0-0-0	3	3
	9	Introduction to Artificial Neural Networks	S8	3-0-0-0	3	3

B.Tech (MINOR)

Semester	BASKET I				BASKET II				BASKET III				BASKET IV			
	Embedded Systems for Industrial Applications				Architectural Lighting and Electrical System Design				Clean and Sustainable Energy				Electric Vehicle Systems			
	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit
S3	23EEL2MA	Microcontrollers and Embedded Systems	3-0-0-0	3	23EEL2MC	Basics of Illumination Science and Lighting Design	3-0-0-0	3	23EEL2ME	Sustainable Energy Systems	3-0-0-0	3	23EEL2MG	Electric Machinery	3-0-0-0	3
S4	23EEL2MB	Hardware Interfacing using Arduino-C Platform	3-0-0-0	3	23EEL2MD	Electric Power Supply and Distribution Systems	3-0-0-0	3	23EEL2MF	Renewable Energy in Power Grids	3-0-0-0	3	23EEL2MH	Power Electronics and Energy Storage Devices	3-0-0-0	3
S5	23EEL3MA	Raspberry Pi - Python Interface for Electrical Engineering	3-0-0-0	3	23EEL3MC	Energy efficiency in Buildings	3-0-0-0	3	23EEL3ME	Solar and Wind Energy Conversion Systems	2-1-0-0	3	23EEL3MG	Hybrid and Electric Vehicles	3-0-0-0	3
S6	23EEL3MB	Cloud Computing for Internet of Things	3-0-0-0	3	23EEL3MD	Electrical System Design and Building services	2-1-0-0	3	23EEL3MF	Smart Grid and Energy Storage Systems	3-0-0-0	3	23EEL3MH	Introduction to Automotive Electrical and Electronic systems	3-0-0-0	3
S7/S8	23EEJ4MA	Mini Project	0-0-6-0	3	23EEJ4MC	Mini Project	0-0-6-0	3	23EEJ4ME	Mini Project	0-0-6-0	3	23EEJ4MG	Mini Project	0-0-6-0	3

B.Tech (HONOURS)

Semester	GROUP I: Power Systems				GROUP II: Power Electronics and Drives				GROUP III: Microgrid				GROUP IV: Electric Vehicle Systems[1]			
	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit
S4	23EEL2HB	Network Analysis and Synthesis	2-1-0-0	3	23EEL2HD	Network Analysis and Synthesis	2-1-0-0	3	23EEL2HF	Network Analysis and Synthesis	2-1-0-0	3	23EEL2HH	Modelling and Analysis of Electrical Machines	2-1-0-0	3
S5	23EEL3HA	Renewable Energy Resources and Distributed Generation	3-0-0-0	3	23EEL3HC	Elements of Solar Energy Conversion	3-0-0-0	3	23EEL3HE	Solar Photovoltaics Fundamentals	3-0-0-0	3	23EEL3HG	Electric Vehicle Technology	3-0-0-0	3
S6	23EEL3HB	Analysis of Electrical Machines	2-1-0-0	3	23EEL3HD	Analysis of Power Electronic Circuits	2-1-0-0	3	23EEL3HF	Operation and Control of Power Systems	3-0-0-0	3	23EEL3HH	Automotive Electrical and Electronic Systems	3-0-0-0	3
S7	23EEL4HA	Operation and Control of Generators	3-0-0-0	3	23EEL4HC	Dynamics of Power Converters	2-1-0-0	3	23EEL4HE	Control and Dynamics of Microgrids	3-0-0-0	3	23EEL4HG	Smart Grid and Interfacing	3-0-0-0	3
S8	23EEJ4HB	Mini Project	0-0-6-0	3	23EEJ4HD	Mini Project	0-0-6-0	3	23EEJ4HF	Mini Project	0-0-6-0	3	23EEJ4HH	Mini Project	0-0-6-0	3

[1]Honours Group IV can be opted by the students of Electrical and Electronics Engineering, and Electrical and Computer Engineering.