

SHREE VENKATESHWARA HI-TECH ENGINEERING COLLEGE
(Autonomous)
Gobichettipalayam, Erode-638455



Regulation 2023 (Autonomous)

Curriculum and Syllabus

Choice Based Credit System (CBCS)

BE-ELECTRICAL AND ELECTRONICS ENGINEERING



SHREE VENKATESHWARA HI-TECH ENGINEERING COLLEGE

(Autonomous)

Gobichettipalayam, Erode -638455

Regulation 2023 (UG)

Curriculum and Syllabus

BE- Electrical And Electronics Engineering

I. Program Educational Objective (PEO)

- PEO1 : Core Sector Employment:** Find employment in Core Electrical and Electronics Engineering and service sectors.
- PEO2 : Managerial skills:** Get elevated to technical lead position and lead the organization competitively.
- PEO3 : Higher Education and Consultancy:** Enter into higher studies leading to post-graduate and research degrees. Become consultant and provide solutions to the practical problems of core organization.
- PEO4 : Entrepreneurial skills:** Become an entrepreneur and be part of electrical and electronics product and service industries.

II. Program Outcomes (POs)

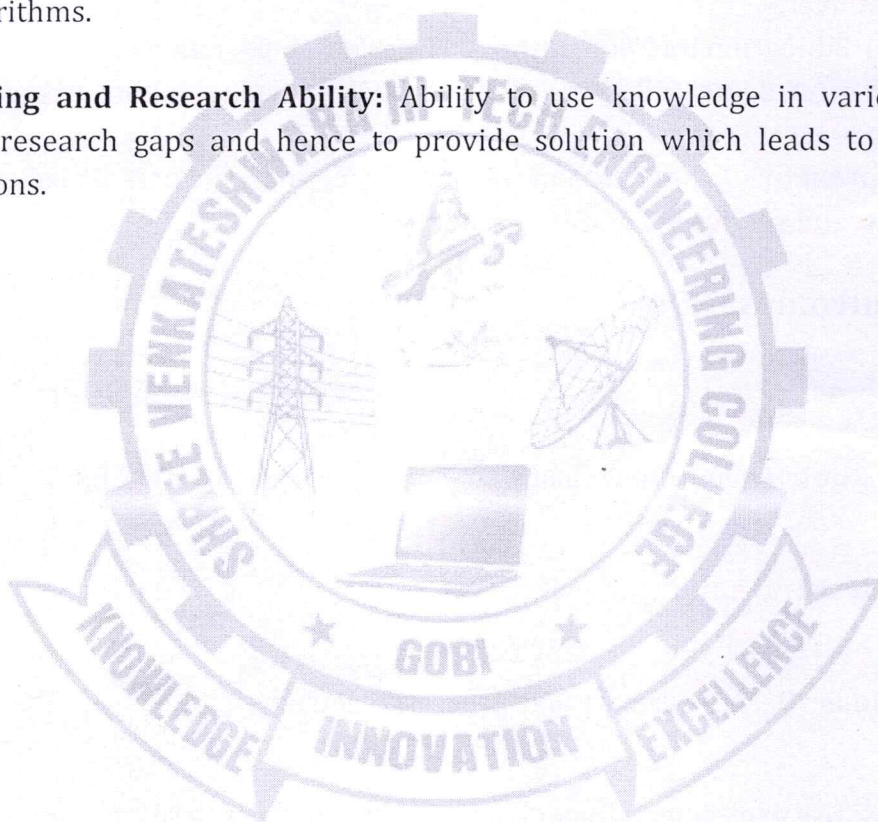
I. Program Outcomes (POs)

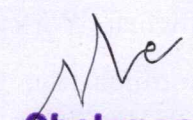
- 1. Engineering Knowledge:** Apply math, science, and engineering fundamentals to complex problems.
- 2. Problem Analysis:** Identify and analyze complex problems using research and sustainability principles.
- 3. Design Solutions:** Design systems and processes considering health, safety, cost, culture, and environment.
- 4. Investigations:** Use experiments, modelling, and data analysis to reach valid conclusions.
- 5. Engineering Tools:** Apply modern tools for modelling and problem-solving, recognizing their limits.
- 6. Society & Environment:** Assess societal, legal, and environmental impacts of engineering solutions.
- 7. Ethics:** Commit to ethics, human values, diversity, and legal compliance.
- 8. Teamwork:** Work effectively as an individual and in multidisciplinary teams.
- 9. Communication:** Communicate clearly in reports, presentations, and documentation across diverse groups.
- 10. Management & Finance:** Apply management and economic principles in projects and teamwork.

11. **Lifelong Learning:** Engage in continuous learning, adapt to new technologies, and think critically.

III. Program Specific Outcomes (PSOs)

- PS01 : Foundation of Electrical Engineering:** Ability to understand the principles and working of electrical components, circuits, systems and control that are forming a part of power generation, transmission, distribution, utilization, conservation and energy saving. Students can assess the power management, auditing, crisis and energy saving aspects.
- PS02 : Foundation of Mathematical Concepts:** Ability to apply mathematical methodologies to solve problems related with electrical engineering using appropriate engineering tools and algorithms.
- PS03: Computing and Research Ability:** Ability to use knowledge in various domains to identify research gaps and hence to provide solution which leads to new ideas and innovations.




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Year	Sem	Course name	PSO			4	5	6	7	8	9	10	11	1	2	3
			1	2	3											
I	I	Induction Programme														
		Professional English - I	-	-	-	2	-	1	-	-	2	3	-	-	-	-
		Matrices and Calculus	3	3	1	1	-	-	-	-	2	-	2	-	-	-
		Engineering Physics	3	3	2	1	2	-	-	-	-	-	-	-	-	-
		Engineering Chemistry	3	2	2	1	1	2	3	-	-	-	-	-	-	-
		Problem Solving and Python Programming	2	3	3	3	2	-	-	-	-	-	2	3	3	3
		தமிழர் மரபு /Heritage of Tamils	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Problem Solving and Python Programming Laboratory	2	3	3	3	2	-	-	-	-	-	2	3	3	3
		Physics and Chemistry Laboratory	3	3	1	1	-	-	-	-	-	-	-	-	-	-
			3	2	1	-	1	3	2	1	-	-	-	-	-	-
		English Laboratory	-	-	-	-	-	-	-	1	3	3	-	-	-	-
	II	Professional English - II	-	1	1	-	-	-	1	1	2	3	-	-	-	-
		Numerical Methods and Statistics	3	3	1	1	1	-	-	-	2	-	2	-	-	-
		Physics for Electronics Engineering	3	2	1	-	-	-	-	-	-	-	-	-	-	-
		Engineering Graphics	3	1	2	-	2	-	-	-	-	3	-	2	2	-
		Basic Civil and Mechanical Engineering	2	-	-	0.2	-	-	2	2	1	2	-	-	-	-
		Electric Circuit Analysis	3	3	2	2	-	-	-	-	-	1	-	3	3	2
		தமிழரும் தொழில்நுட்பமும் /Tamils and Technology	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Electric Circuits Laboratory	3	3	3	2	-	-	-	-	-	1	-	3	3	2
		Engineering Practices Laboratory	3	-	-	3	-	-	-	-	-	-	-	2	1	1
		Communication Laboratory	-	-	2	-	-	-	-	1	3	3	-	-	-	-
III	III	Electrical Machines - I	3	3	2	2	-	-	-	-	-	1	-	3	3	2
		Electromagnetic Fields	3	2	1	2	-	-	1.4	1	-	-	-	3	2	1
		Digital Logic Circuits	3	2	2	1	-	-	-	-	-	1	-	3	1	-
		Electron Devices and Circuits	1	3	-	-	-	1	-	-	2	-	-	3	2	-
	III	C Programming and Data Structures	2	3	2	-	-	-	-	-	-	-	-	-	2	-

II		Probability and Complex Functions	3	3	2.6	-	-	-	-	-	2	-	-	-	-	-
		Electrical Machines Laboratory - I	3	3	2	2	1	-	-	1	-	1	-	3	2	-
		Electron Devices and Circuits Laboratory	-	3	2.7	3	3	-	-	1.5	-	-	3	-	3	3
		C Programming and Data Structures Laboratory	2	2	1	2	2	1	1	-	1	1	1	2	2	2
		Entrepreneurship and Startup	1	3	-	2	2	-	-	-	3	-	-	3	1	-
	IV	Electrical Machines - II	3	3	1.6	2.3	2.6	-	-	1	-	-	-	3	3	2
		Linear Integrated Circuits	3	2	3	-	-	-	-	-	-	-	-	3	2	2
		Microprocessor and Microcontroller	3	2	1	1	1	-	-	-	-	-	-	2	3	-
		Transmission and Distribution	3	1	-	-	-	-	-	-	-	1	-	1	1	-
		Measurements and Instrumentation	3	2	1	1	1	-	-	-	-	-	-	3	3	-
		Environmental Sciences and Sustainability	2.8	1.4	0.6	0.2	-	2.2	2.4	-	-	-	-	-	-	-
		Electrical Machines Laboratory - II	1	3	-	2	2	-	-	-	3	-	-	3	1	-
		Linear and Digital Circuits Laboratory	1	3	-	2	2	-	-	-	3	-	-	3	1	-
		Microprocessor and Microcontroller Laboratory	3	3	1	3	1	2	-	1	2	3	-	1	3	-
		Soft and Analytical Skills-I	-	-	-	-	-	-	-	1	2	1	-	-	-	-
	V	Power System Analysis	3	2.6	2	1.8	1.4	-	-	-	1	-	-	1	1	-
		Power Electronics	3	3	3	3	-	-	-	-	2.6	-	-	2.4	2.4	2.4
		Control Systems	3	3	3	2.2	3	-	2	-	-	-	-	3	1.8	1.4
		Professional Elective I														
		Professional Elective II														
		Professional Elective III														
		Power Electronics Laboratory	2.6	-	2	1.8	-	-	-	-	3	-	-	3	2	-
		Control and Instrumentation Laboratory	3	3	3	3	3	-	-	1.5	-	-	-	3	3	-
		Mandatory course - II														

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		Soft and Analytical Skills-II															
III	VI	Protection and Switchgear	3	1	1	2	1.2	2	1	1	1	1	2	3	1.4	1	
		Electric Drives	3	2	2	3	2.8	-	-	1	-	-	-	2.8	2.6	-	
		Professional Elective IV															
		Professional Elective V															
		Professional Elective VI															
		Open Elective - I															
		Power System Laboratory	3	3	2	2	3	-		2	1	2		3	3	3	
		Mandatory course - III															
IV	VII	High Voltage Engineering	2	2	2.3	1	-	2	-	-	-	-	-	3	2	-	
		Professional Elective VII*															
		Universal Human Values															
		Elective - Management#															
		Open Elective - II**															
		Open Elective - III**															
		Open Elective - IV**															
		Mini Project															
		Summer Internship															
	VIII	Project Work															

1 - low, 2 - medium, 3 - high, '-' - no correlation


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SUMMARY OF CREDITS

S. No	Course Category	Credits per Semester								Total Credits	Credits in %	Credits as per AU Curriculum R-2021	Credits as per AICTE Model Curriculum R-2023
		I	II	III	IV	V	VI	VII	VIII				
1	HSS	4	3					6		12	7.06	12	15
2	BS	12	7	4	2					25	14.71	25	23
3	ES	5	9							14	8.24	14	17
4	PC		6	20.5	19.5	12	8	3		70	41.18	69	61
5	PE					9	9	3		21	12.35	21	12
6	OE						3	9		12	7.06	12	12
7	EEC	1	2	1				2	10	16	9.41	14	20
8	MC		√		√	√	√			0	0.00		
Total Credits / Semester		22	27	25.5	21.5	21	20	23	10	170	100	167	160

CATEGORIZATION OF COURSES

- Humanities and Social Sciences including Management Courses (HSS)
- Basic Science Courses (BS)
- Engineering Science Courses (ES)
- Professional Core Courses (PC)
- Professional Elective Courses (PE)
- Open Elective Courses (OE)
- Mandatory Courses (MC)
- Employability Enhancement Courses (EEC)
- Other Courses (OC)

ENROLLMENT FOR B.E. / B. TECH. (HONOURS) / MINOR DEGREE (OPTIONAL)

A student can also optionally register for additional courses (18 credits) and become eligible for the award of B.E./B.Tech. (Honours) Minor degree.

For B.E. / B. Tech. (Honours), a student shall register for the additional courses (18 credits) from semester V onwards. These courses shall be from the same vertical or a combination of different verticals of the same programme of study only.

For minor degree, a student shall register for the additional courses (18 credits) from semester V onwards. All these courses have to be in a particular vertical from any one of the other programmes.

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Curriculum and Syllabus

BE- Electrical And Electronics Engineering

SEMESTER I

S.No	Course Code	Course Title	Category	Periods / Week			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
Induction Program											
1.	23IPA11	Induction Programme	-	-	-	-	-	0	-	-	-
Theory											
2.	23ENT11	Professional English - I	HSS	3	0	0	3	3	40	60	100
3.	23MAT11	Matrices and Calculus	BS	3	1	0	4	4	40	60	100
4.	23PHT11	Engineering Physics	BS	3	0	0	3	3	40	60	100
5.	23CYT11	Engineering Chemistry	BS	3	0	0	3	3	40	60	100
6.	23CST11	Problem Solving and Python Programming	ES	3	0	0	3	3	40	60	100
7.	23TAT11	தமிழர் மரபு /Heritage of Tamils	HSS	1	0	0	1	1	40	60	100
Practicals											
8.	23CSL11	Problem Solving and Python Programming Laboratory	ES	0	0	4	4	2	60	40	100
9.	23PCL11	Physics and Chemistry Laboratory	BS	0	0	4	4	2	60	40	100
10.	23ENL11	English Laboratory	EEC	0	0	2	2	1	60	40	100
Total				16	1	10	27	22			

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BE- Electrical And Electronics Engineering

SEMESTER II

S.No	Course Code	Course Title	Category	Periods / Week			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
Theory											
1.	23ENT21	Professional English - II	HSS	2	0	0	2	2	40	60	100
2.	23MAT21	Numerical Methods and Statistics	BS	3	1	0	4	4	40	60	100
3.	23PHT23	Physics For Electronics Engineering	BS	3	0	0	3	3	40	60	100
4.	23EET21	Electric Circuit Analysis	PC	3	1	0	4	4	40	60	100
5.	23MET21	Engineering Graphics	ES	2	0	4	6	4	40	60	100
6.	23MET22	Basic Civil and Mechanical Engineering	ES	3	0	0	3	3	40	60	100
7.	23TAT21	தமிழரும் தொழில்நுட்பமும் /Tamils and Technology	HSS	1	0	0	1	1	40	60	100
Practicals											
8.	23EEL21	Electric Circuit Laboratory	PC	0	0	4	4	2	60	40	100
9.	23MEL21	Engineering Practices Laboratory	ES	0	0	4	4	2	60	40	100
10.	23ENL21	Communication Laboratory	EEC	0	0	4	4	2	60	40	100
Mandatory Course											
11.	23MDC21	Mandatory Course – I &	MC	0	0	1	1	0	100	-	100
Total				17	2	16	35	27			

& Mandatory Course-I

Yoga for Human Excellence	Non-credit Course
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SEMESTER III

S.No	Course Code	Course Title	Category	Periods / Week			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
Theory											
1.	23EET31	Electrical Machines - I	PC	3	0	0	3	3	40	60	100
2.	23EET32	Electromagnetic Fields	PC	3	1	0	4	4	40	60	100
3.	23EET33	Digital Logic Circuits	PC	3	0	0	3	3	40	60	100
4.	23EET34	Electron Devices and Circuits	PC	3	0	0	3	3	40	60	100
5.	23CST34	C Programming and Data Structures	PC	3	0	0	3	3	40	60	100
6.	23MAT33	Probability and Complex Functions	BS	3	1	0	4	4	40	60	100
7.	23EST31	Entrepreneurship and Startup	EEC	1	0	0	1	1	100	-	100
Practicals											
8.	23EEL31	Electrical Machines Laboratory - I	PC	0	0	3	3	1.5	60	40	100
9.	23EEL32	Electron Devices and Circuits Laboratory	PC	0	0	3	3	1.5	60	40	100
10.	23CSL34	C Programming and Data Structures Laboratory	PC	0	0	3	3	1.5	60	40	100
Total				18	2	11	31	25.5			

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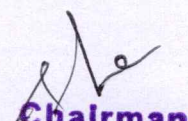
Curriculum and Syllabus

BE- Electrical And Electronics Engineering

SEMESTER IV

S.No	Course Code	Course Title	Category	Periods / Week			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
Theory											
1.	23EET41	Electrical Machines - II	PC	3	0	0	3	3	40	60	100
2.	23EET42	Linear Integrated Circuits	PC	3	0	0	3	3	40	60	100
3.	23EET43	Microprocessor and Microcontroller	PC	3	0	0	3	3	40	60	100
4.	23EET44	Transmission and Distribution	PC	3	0	0	3	3	40	60	100
5.	23EET45	Measurements and Instrumentation	PC	3	0	0	3	3	40	60	100
6.	23CYT41	Environmental Sciences and Sustainability	BS	2	0	0	2	2	40	60	100
Practicals											
7.	23EEL41	Electrical Machines Laboratory - II	PC	0	0	3	3	1.5	60	40	100
8.	23EEL42	Linear and Digital Circuits Laboratory	PC	0	0	3	3	1.5	60	40	100
9.	23EEL43	Microprocessor and Microcontroller Laboratory	PC	0	0	3	3	1.5	60	40	100
Mandatory Course											
10.	23MDC41	Soft and Analytical Skills-I&	MC	1	0	0	1	0	-	-	-
Total				17	0	9	26	21.5			

& Soft and Analytical Skills-I is a Non-credit Course


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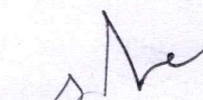
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S.No	Course Code	Course Title	Category	Periods / Week			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
Theory											
1.	23EET51	Power System Analysis	PC	3	0	0	3	3	40	60	100
2.	23EET52	Power Electronics	PC	3	0	0	3	3	40	60	100
3.	23EET53	Control Systems	PC	3	0	0	3	3	40	60	100
4.		Professional Elective I*	PE	-	-	-	-	3	-	-	100
5.		Professional Elective II*	PE	-	-	-	-	3	-	-	100
6.		Professional Elective III*	PE	-	-	-	-	3	-	-	100
Practicals											
7.	23EEL51	Power Electronics Laboratory	PC	0	0	3	3	1.5	60	40	100
8.	23EEL52	Control and Instrumentation Laboratory	PC	0	0	3	3	1.5	60	40	100
Mandatory Course											
9.		Mandatory Course-II &	MC	3	0	0	3	0	100	-	100
10.	23MDC51	Soft and Analytical Skills-II &&	MC	1	0	0	1	0	-	-	-
Total				-	-	-	-	21			

* Professional Elective-I to III shall be chosen from the list of Professional electives (Verticals) offered by same Programme

& Mandatory Course-II is a Non-credit Course

&& Soft and Analytical Skills-II is a Non-credit Course


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SEMESTER VI

S.No	Course Code	Course Title	Category	Periods / Week			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
Theory											
1.	23EET61	Protection and Switchgear	PC	3	0	0	3	3	40	60	100
2.	23EEI62	Electric Drives	PC	2	0	2	4	3	50	50	100
3.		Professional Elective – IV*	PE	-	-	-	-	3	-	-	100
4.		Professional Elective – V*	PE	-	-	-	-	3	-	-	100
5.		Professional Elective – VI*	PE	-	-	-	-	3	-	-	100
6.		Open Elective – I**	OE	-	-	-	-	3	-	-	100
Practicals											
7.	23EEL61	Power System Laboratory	PC	0	0	4	4	2	60	40	100
Mandatory Course											
8.		Mandatory Course-III &	MC	3	0	0	3	0	100	-	100
Total				-	-	-	-	20			

* Professional Elective-IV to VI shall be chosen from the list Professional electives (Vertical) offered by same Programme

** Open Elective – I shall be chosen from the list of open electives offered by other Programmes

& Mandatory Course-III is a Non-credit Course

@ The students individually undergo training in reputed firms/ research institutes / laboratories for the specified duration (02Weeks) during VI semester summer vacation. After the completion of training, a detailed report should be submitted within ten days from the commencement of VII semester.

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SEMESTER VII

S.No	Course Code	Course Title	Category	Periods / Week			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
Theory											
1.	23EET71	High Voltage Engineering	PC	3	0	0	3	3	40	60	100
2.		Professional Elective VII*	PE	-	-	-	-	3	-	-	100
3.	23UHV71	Universal Human Values	HSS	3	0	0	3	3	40	60	100
4.		Elective – Management#	HSS	3	0	0	3	3	40	60	100
5.		Open Elective – II**	OE	-	-	-	-	3	-	-	100
6.		Open Elective – III**	OE	-	-	-	-	3	-	-	100
7.		Open Elective – IV**	OE	-	-	-	-	3	-	-	100
Practicals											
8.	23EEL71	Mini Project	EEC	0	0	2	2	1	100	-	100
9.	23EEL72	Summer Internship @	PC	0	0	0	0	1	100	-	100
Total				-	-	-	-	23			

* Professional Elective – VII shall be chosen from the list Professional electives (Verticals) offered by same Programme

** Open Elective – II to IV shall be chosen from the list of open electives offered by other Programmes

Elective – Management shall be chosen from the list of Elective – Management course

@ The students undergone summer internship during VI semester summer vacation and same will be evaluated in VII semester.

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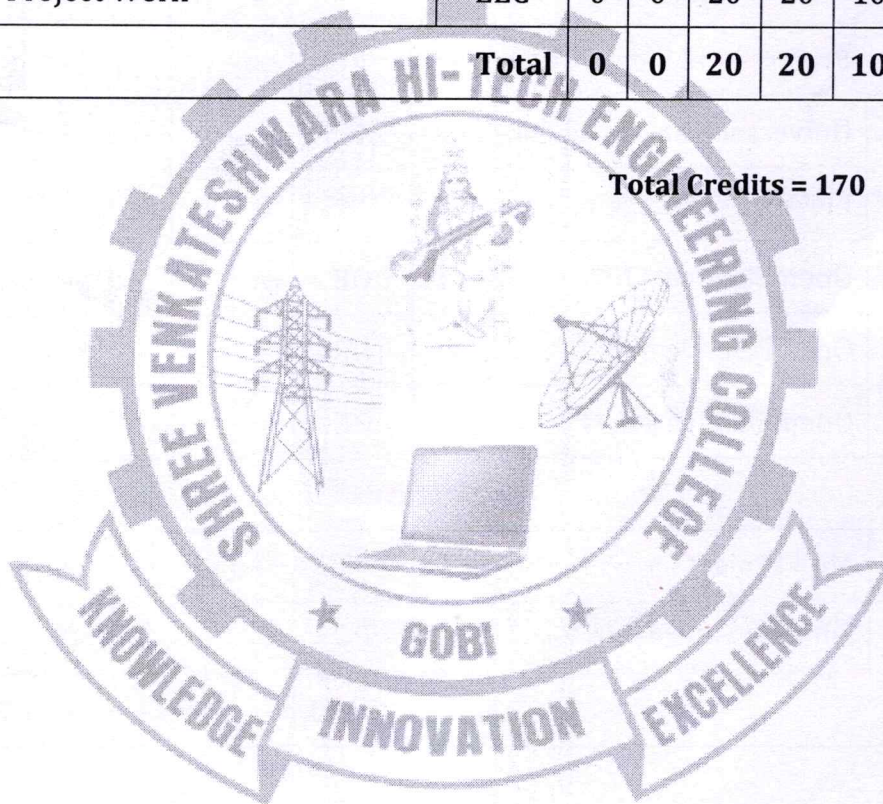
Curriculum and Syllabus

BE- Electrical And Electronics Engineering

SEMESTER VIII

S.No	Course Code	Course Title	Category	Periods / Week			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
Practicals											
1.	23EEL81	Project Work	EEC	0	0	20	20	10	60	40	100
Total				0	0	20	20	10			

Total Credits = 170



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MANDATORY COURSES II

S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
1.	23MDC52	Introduction to Women and Gender Studies	MC	3	0	0	3	0	100	-	100
2.	23MDC53	Elements of Literature	MC	3	0	0	3	0	100	-	100
3.	23MDC54	Film Appreciation	MC	3	0	0	3	0	100	-	100
4.	23MDC55	Disaster Risk Reduction and Management	MC	3	0	0	3	0	100	-	100

MANDATORY COURSES III

S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
1.	23MDC61	Well Being with Traditional Practices - Yoga, Ayurveda and Siddha	MC	3	0	0	3	0	100	-	100
2.	23MDC62	History of Science and Technology in India	MC	3	0	0	3	0	100	-	100
3.	23MDC63	Political and Economic Thought for a Humane Society	MC	3	0	0	3	0	100	-	100
4.	23MDC64	State, Nation Building and Politics in India	MC	3	0	0	3	0	100	-	100
5.	23MDC65	Industrial Safety	MC	3	0	0	3	0	100	-	100

ELECTIVE - MANAGEMENT COURSES

S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
1.	23MSE71	Principles of Management	HSS	3	0	0	3	3	40	60	100
2.	23MSE72	Total Quality Management	HSS	3	0	0	3	3	40	60	100
3.	23MSE73	Engineering Economics and Financial Accounting	HSS	3	0	0	3	3	40	60	100
4.	23MSE74	Human Resource Management	HSS	3	0	0	3	3	40	60	100
5.	23MSE75	Knowledge Management	HSS	3	0	0	3	3	40	60	100
6.	23MSE76	Industrial Management	HSS	3	0	0	3	3	40	60	100

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PROFESSIONAL ELECTIVE COURSES: VERTICALS

Professional Elective	Vertical I Power Engineering	Vertical II Converters and Drives	Vertical III Embedded Systems	Vertical IV Electric Vehicle Technology	Vertical V Advanced Control	Vertical VI Diversified Courses
1.	Utilization and Conservation of Electrical Energy	Special Electrical Machines	Embedded System Design	Electric Vehicle Architecture	Process Modeling and Simulation	Energy Storage Systems
2.	Under Ground Cable Engineering	Analysis of Electrical Machines	Embedded C-Programming	Design of Motor and Power Converters for Electric Vehicles	Computer Control of Processes	Hybrid Energy Technology
3.	Substation Engineering and Automation	Multilevel Power Converters	Embedded Processors	Electric Vehicle Design, Mechanics and Control	System Identification	Design and Modelling of Renewable Energy Systems
4.	Power System Operation and Control	HVDC and FACTS	Embedded Control for Electric Drives	Design of Electric Vehicle Charging System	Model Based Control	Grid integrating Techniques and Challenges
5.	Energy Management and Auditing	SMPS and UPS	IoT Concepts and Applications	Testing of Electric Vehicles	Non Linear Control	Sustainable and Environmental Friendly HV Insulation System
6.	Power Quality	Power Electronics for Renewable Energy Systems	Embedded System for Automotive Applications.	Grid Integration of Electric Vehicles	Optimal Control	Power System Transients
7.	Smart Grids	Control of Power Electronics Circuits	VLSI Design	Intelligent control of Electric Vehicles	Adaptive Control	PLC Programming
8.	Restructured Power Market	-	Artificial Intelligence and machine Learning Fundamentals	-	Machine Monitoring System	Big Data Analytics
9.	-	-	Digital Signal Processing System Design	-	-	-

Registration of Professional Elective Courses from Verticals:

Professional Elective Courses will be registered in Semesters V and VI. These courses are listed in groups called verticals that represent a particular area of specialization / diversified group. Students are permitted to choose all the Professional Electives from a particular vertical or from different verticals. Further, only one Professional Elective course shall be chosen in a semester horizontally (row-wise). However, two courses are permitted from the same row, provided one course is enrolled in Semester V and another in semester VI.

The registration of courses for B.E./B.Tech (Honours) or Minor degree shall be done from Semester V to VIII. The procedure for registration of courses explained above shall be followed for the courses of B.E./B.Tech (Honours) or Minor degree also. For more details on B.E./B.Tech (Honours) or Minor degree refer to the Regulations 2023 (Clause 12).

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PROFESSIONAL ELECTIVE COURSES : VERTICALS**VERTICAL I : POWER ENGINEERING**

S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
1.	23EEE11	Utilization and Conservation of Electrical Energy	PE	3	0	0	3	3	40	60	100
2.	23EEE12	Under Ground Cable Engineering	PE	3	0	0	3	3	40	60	100
3.	23EEE13	Substation Engineering and Automation	PE	3	0	0	3	3	40	60	100
4.	23EEE14	Power System Operation and Control	PE	3	0	0	3	3	40	60	100
5.	23EEE15	Energy Management and Auditing	PE	3	0	0	3	3	40	60	100
6.	23EEE16	Power Quality	PE	3	0	0	3	3	40	60	100
7.	23EEE17	Smart Grid	PE	3	0	0	3	3	40	60	100
8.	23EEE18	Restructured Power Market	PE	3	0	0	3	3	40	60	100

VERTICAL II : CONVERTERS AND DRIVES

S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
1.	23EEE21	Special Electrical Machines	PE	2	0	2	4	3	50	50	100
2.	23EEE22	Analysis of Electrical Machines	PE	2	0	2	4	3	50	50	100
3.	23EEE23	Multilevel Power Converters	PE	2	0	2	4	3	50	50	100
4.	23EEE24	HVDC and FACTS	PE	2	0	2	4	3	50	50	100
5.	23EEE25	SMPS and UPS	PE	2	0	2	4	3	50	50	100
6.	23EEE26	Power Electronics for Renewable Energy Systems	PE	2	0	2	4	3	50	50	100
7.	23EEE27	Control of Power Electronics Circuits	PE	2	0	2	4	3	50	50	100

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VERTICAL III : EMBEDDED SYSTEMS

S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
1.	23EEE31	Embedded System Design	PE	2	0	2	4	3	50	50	100
2.	23EEE32	Embedded C- programming	PE	2	0	2	4	3	50	50	100
3.	23EEE33	Embedded Processors	PE	2	0	2	4	3	50	50	100
4.	23EEE34	Embedded Control for Electric Drives	PE	2	0	2	4	3	50	50	100
5.	23EEE35	IoT Concepts and Applications	PE	2	0	2	4	3	50	50	100
6.	23EEE36	Embedded System for Automotive Applications	PE	2	0	2	4	3	50	50	100
7.	23EEE37	VLSI Design	PE	2	0	2	4	3	50	50	100
8.	23EEE38	Artificial Intelligence and machine Learning Fundamentals	PE	2	0	2	4	3	50	50	100
9.	23EEE39	Digital Signal Processing System Design	PE	2	0	2	4	3	50	50	100

VERTICAL IV : ELECTRIC VEHICLE TECHNOLOGY

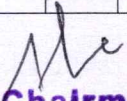
S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
1.	23EEE41	Electric Vehicle Architecture	PE	3	0	0	3	3	40	60	100
2.	23EEE42	Design of Motor and Power Converters for Electric Vehicles	PE	2	0	2	4	3	50	50	100
3.	23EEE43	Electric Vehicle Design, Mechanics and Control	PE	2	0	2	4	3	50	50	100
4.	23EEE44	Design of Electric Vehicle Charging System	PE	2	0	2	4	3	50	50	100
5.	23EEE45	Testing of Electric Vehicles	PE	2	0	2	4	3	50	50	100
6.	23EEE46	Grid Integration of Electric Vehicles	PE	3	0	0	3	3	40	60	100
7.	23EEE47	Intelligent Control of Electric Vehicles	PE	2	0	2	4	3	50	50	100

VERTICAL V: ADVANCED CONTROL

S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
1.	23EEE51	Process Modeling and Simulation	PE	3	0	0	3	3	40	60	100
2.	23EEE52	Computer Control of Processes	PE	3	0	0	3	3	40	60	100
3.	23EEE53	System Identification	PE	3	0	0	3	3	40	60	100
4.	23EEE54	Model Based Control	PE	3	0	0	3	3	40	60	100
5.	23EEE55	Non Linear Control	PE	3	0	0	3	3	40	60	100
6.	23EEE56	Optimal Control	PE	3	0	0	3	3	40	60	100
7.	23EEE57	Adaptive Control	PE	3	0	0	3	3	40	60	100
8.	23EEE58	Machine Monitoring System	PE	3	0	0	3	3	40	60	100

VERTICAL VI - DIVERSIFIED COURSES

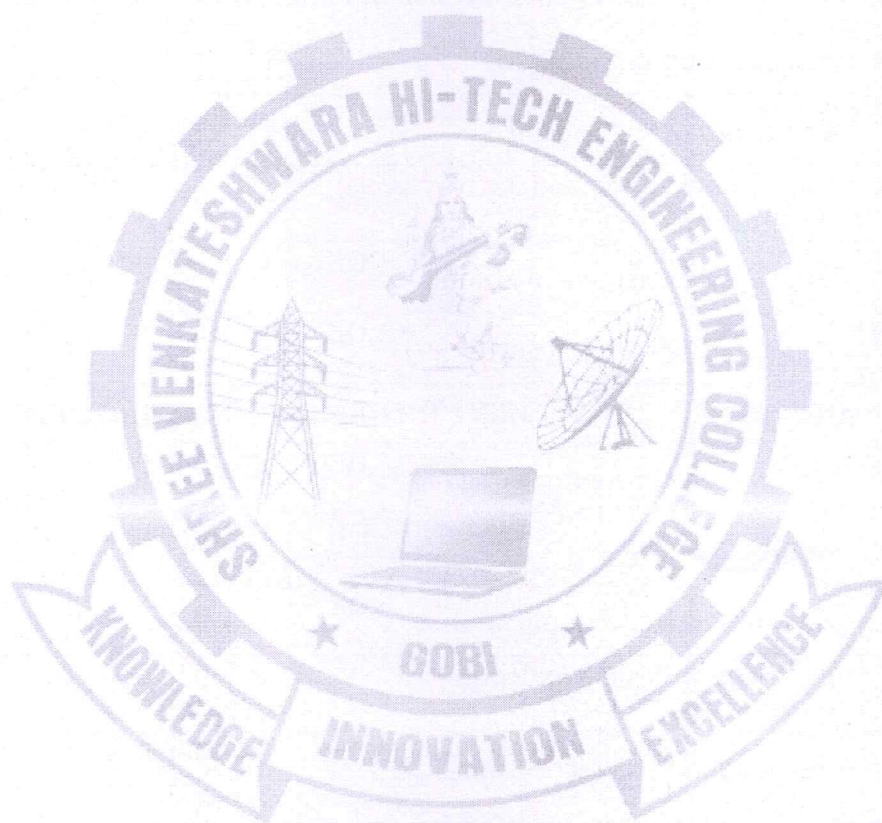
S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
1.	23EEE61	Energy Storage Systems	PE	3	0	0	3	3	40	60	100
2.	23EEE62	Hybrid Energy Technology	PE	3	0	0	3	3	40	60	100
3.	23EEE63	Design and Modeling of Renewable Energy Systems	PE	3	0	0	3	3	40	60	100
4.	23EEE64	Grid integrating Techniques and Challenges	PE	2	0	2	4	3	50	50	100
5.	23EEE65	Sustainable and Environmental Friendly HV Insulation System	PE	3	0	0	3	3	40	60	100
6.	23EEE66	Power System Transients	PE	3	0	0	3	3	40	60	100
7.	23EEE67	PLC Programming	PE	3	0	0	3	3	40	60	100
8.	23EEE68	Big Data Analytics	PE	2	0	2	4	3	50	50	100


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OPEN ELECTIVES

S. NO.	COURSE CODE	COURSE TITLE	Category	PERIODS PER WEEK			Total Contact Period	Credits	Max.Marks		
				L	T	P			CA	ES	TM
OFFERED BY DEPARTMENT OF CIVIL ENGINEERING											
1	23CE011	Civil and Infrastructure Engineering	OE	3	0	0	3	3	40	60	100
2	23CE012	Environmental Pollution and waste management	OE	3	0	0	3	3	40	60	100
3	23CE013	Environmental Impact Assessment	OE	3	0	0	3	3	40	60	100
4	23CE014	Building Services	OE	3	0	0	3	3	40	60	100
5	23CE015	Water, Sanitation and Health	OE	3	0	0	3	3	40	60	100
OFFERED BY DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING											
1	23CS011	Foundation of AR/VR	OE	3	0	0	3	3	40	60	100
2	23CS012	Web Designing	OE	3	0	0	3	3	40	60	100
3	23CS013	Block Chain fundamentals	OE	3	0	0	3	3	40	60	100
4	23CS014	Knowledge Management	OE	3	0	0	3	3	40	60	100
5	23CS015	Cloud Computing Essentials	OE	3	0	0	3	3	40	60	100
OFFERED BY DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING											
1	23EC011	Basics of electronics in automation	OE	3	0	0	3	3	40	60	100
2	23EC012	Wireless Optical Communication	OE	3	0	0	3	3	40	60	100
3	23EC013	Soft Computing Techniques	OE	3	0	0	3	3	40	60	100
4	23EC014	Consumer electronics	OE	3	0	0	3	3	40	60	100
5	23EC015	Principles of communication engineering	OE	3	0	0	3	3	40	60	100
OFFERED BY DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING											
1.	23EE011	Renewable Energy Sources	OE	3	0	0	3	3	40	60	100
2.	23EE012	Electrical Vehicle	OE	3	0	0	3	3	40	60	100
3.	23EE013	Energy Auditing and Conservation	OE	3	0	0	3	3	40	60	100
4.	23EE014	Domestic and Industrial Electrical Installations	OE	3	0	0	3	3	40	60	100
5.	23EE015	Embedded System Design and Control	OE	3	0	0	3	3	40	60	100

3	23BM013	Biometric systems and their applications	OE	3	0	0	3	3	40	60	100
4	23BM014	Healthcare Management systems	OE	3	0	0	3	3	40	60	100
5	23BM015	IOT in Healthcare	OE	3	0	0	3	3	40	60	100



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OFFERED BY DEPARTMENT OF MECHANICAL ENGINEERING

1	23ME011	Industrial Instrumentation	OE	3	0	0	3	3	40	60	100
2	23ME012	Energy Technology	OE	3	0	0	3	3	40	60	100
3	23ME013	Reverse Engineering	OE	3	0	0	3	3	40	60	100
4	23ME014	Fire Safety Engineering	OE	3	0	0	3	3	40	60	100
5	23ME015	Nano Technology	OE	3	0	0	3	3	40	60	100
6	23ME016	Entrepreneurship Development	OE	3	0	0	3	3	40	60	100

OFFERED BY DEPARTMENT ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

1	23AD011	Introduction to Big Data	OE	3	0	0	3	3	40	60	100
2	23AD012	Principles of Data Science	OE	3	0	0	3	3	40	60	100
3	23AD013	Data Visualization and its Applications	OE	3	0	0	3	3	40	60	100
4	23AD014	Data Warehousing and Mining	OE	3	0	0	3	3	40	60	100
5	23AD015	Principles of Cyber Security	OE	3	0	0	3	3	40	60	100

OFFERED BY DEPARTMENT INFORMATION TECHNOLOGY

1	23IT011	Basics of Java Programming	OE	3	0	0	3	3	40	60	100
2	23IT012	Ethical Hacking	OE	3	0	0	3	3	40	60	100
3	23IT013	E-Commerce and Applications	OE	3	0	0	3	3	40	60	100
4	23IT014	Basics of Android Application Development	OE	3	0	0	3	3	40	60	100
5	23IT015	Introduction to Web Design	OE	3	0	0	3	3	40	60	100

OFFERED BY DEPARTMENT OF PHARMACEUTICAL TECHNOLOGY

1	23PY011	Nutraceuticals	OE	3	0	0	3	3	40	60	100
2	23PY012	IPR for Pharma Industry	OE	3	0	0	3	3	40	60	100
3	23PY013	Pharmaceutical Nanotechnology	OE	3	0	0	3	3	40	60	100
4	23PY014	Basics of Human Anatomy and physiology	OE	3	0	0	3	3	40	60	100

OFFERED BY DEPARTMENT BIOMEDICAL ENGINEERING

1	23BM011	Biosensors and Instrumentation	OE	3	0	0	3	3	40	60	100
2	23BM012	Medical Robotics	OE	3	0	0	3	3	40	60	100