B.Tech. (EEE)
R23 Course Structure

Semester - I (First Year)

S.No	Category/ Course Code	Course Title	Hours Per week			Credits
			L	**T**	**P**	**C**
1	BS&H	Engineering Physics	3	0	0	3
2	BS&H	Linear Algebra & Calculus	3	0	0	3
3	Engineering Science	Basic Electrical & Electronics Engineering	3	0	0	3
4	Engineering Science	Engineering Graphics	1	0	4	3
5	Engineering Science	Introduction to Programming	3	0	0	3
6	Engineering Science	IT Workshop	0	0	2	1
7	BS&H	Engineering Physics Lab	0	0	2	1
8	Engineering Science	Electrical & Electronics Engineering Workshop	0	0	3	1.5
9	Engineering Science	Computer Programming Lab	0	0	3	1.5
10		Health and wellness, Yoga and Sports	-	-	1	0.5
					Total Credits	**20.5**

Semester - II (First Year)

S.No	Category/ Course Code	Course Title	Hours Per week			Credits
			L	**T**	**P**	**C**
1	BS&H	Communicative English	2	0	0	2
2	BS & H	Chemistry	3	0	0	3
3	Engineering Science	Differential Equations & Vector Calculus	3	0	0	3
4	Engineering Science	Basic Civil & Mechanical Engineering	3	0	0	3
5	Professional Core	Electrical Circuit Analysis – I	3	0	0	3
6	BS&H	Communicative English Lab	0	0	2	1
7	BS&H	Engineering Chemistry Lab	0	0	2	1
8	Engineering Science	Engineering Workshop	0	0	3	1.5
9	Professional Core	Electrical Circuits Lab	0	0	3	1.5
10	BS&H	NSS/NCC/Scouts & Guides/Community Service	-	-	1	0.5
					Total Credits	**19.5**

Semester - III (Second Year)

S.No	Category	Subject code	Title	L	T	P	C
1	BS	23BS3T02	Complex Variables & Numerical Methods	3	0	0	3
2	HSMC	23HS3T01	Universal human values-II	2	1	0	3
3	Engineering Science	23EE3T01	Electromagnetic Field Theory	3	0	0	3
4	Professional Core	23EE3T02	Electrical Circuit Analysis-II	3	0	0	3
5	Professional Core	23EE3T03	DC Machines & Transformers	3	0	0	3
6	Professional Core	23EE3P01	Electrical Circuit Analysis-II and Simulation Lab	0	0	3	1.5
7	Professional Core	23EE3P02	DC Machines & Transformers Lab	0	0	3	1.5
8	Skill Enhancement Course	23CS3P03	Data Structures Lab	0	1	2	2
9	Audit Course	23HS3A01	Environmental Science	2	0	0	-
Total				**15**	**2**	**10**	**20**

Semester - IV (Second Year)

S.No	Category	Subject Code	Title	L	T	P	C
1	Management Course- I	23HS4T01	Managerial Economics & Financial Analysis	2	0	0	2
2	Engineering Science/Basic Science	23EE4T03	Analog Circuits	3	0	0	3
3	Professional Core	23EE4T04	Power Systems-I	3	0	0	3
4	Professional Core	23EE4T01	Induction and Synchronous Machines	3	0	0	3
5	Professional Core	23EE4T02	Control Systems	3	0	0	3
6	Professional Core	23EE4P01	Induction and Synchronous MachinesLab	0	0	3	1.5
7	Professional Core	23EE4P02	Control Systems Lab	0	0	3	1.5
8	Skill Enhancement course	23CS4P04	Python Programming Lab	0	1	2	2
9	Engineering Science	23ME4P03	Design Thinking & Innovation	1	0	2	2
Total				15	1	10	21
Mandatory Community Service Project Internship of 08 weeks duration during summer Vacation, to be evaluated in III Year I Semester							

Semester - V (Third Year)

S.No.	Category	Title	L	T	P	C
1	PC	Power Electronics	3	0	0	3
2	PC	Digital Circuits	3	0	0	3
3	PC	Power Systems-II	3	0	0	3
4	PE	Professional Elective -I	3	0	0	3
5	OE	Open Elective -I	3	0	0	3
6	PC	Power Electronics Lab	0	0	3	1.5
7	PC	Analog and Digital Circuits Lab	0	0	3	1.5
8	SKC	Soft skills	0	1	2	2
9	ES	Tinkering Lab	0	0	2	1
10	Evaluation of Community Service Internship		-	-	-	2
		Total	15	1	10	23
MC	Minor Course (Student may select from the same specialized minors pool)		3	0	3	4.5
MC	Minor Course through SWAYAM / NPTEL (Minimum 12 Week, 3 credit course)		3	0	0	3
HC	Honors Course (Student may select from the same Honors pool)		3	0	0	3
HC	Honors Course (Student may select from the same Honors Pool)		3	0	0	3

Professional Elective-I	**Open Elective-I**
1. Signals and Systems 2. Computer Architecture and Organization 3. Renewable and Distributed Energy Technologies	1. OOPS through JAVA 2. Green Buildings OR 3. Entrepreneurship Development & Venture Creation

Semester - VI (Third Year)

S.No.	Category	Title	L	T	P	C
1	Professional Core	Electrical Measurements and Instrumentation	3	0	0	3
2	Professional Core	Microprocessors and Microcontrollers	3	0	0	3
3	Professional Core	Power System Analysis	3	0	0	3
4	Professional Elective-II	1. Switchgear and Protection 2. Advanced Control Systems 3. Communication systems	3	0	0	3
5	Professional Elective-III	1. Electric Drives 2. Digital Signal Processing 3. High Voltage Engineering	3	0	0	3
6	Open Elective - II		3	0	0	3
7	Professional Core	Electrical Measurements and Instrumentation Lab	0	0	3	1.5
8	Professional Core	Microprocessors and Microcontrollers Lab	0	0	3	1.5
9	Skill Enhancement course	IoT Applications of Electrical Engineering Lab	0	1	2	2
10	Audit Course	Research Methodology	2	0	0	-
		Total	**20**	**1**	**08**	**23**

Professional Elective-II

1. Switchgear and Protection
2. Advanced Control Systems
3. Communication systems

Open Elective-II

1. Principles of Database management Systems
2. Introduction to Industrial Robotics
3. Disaster Management

Professional Elective-III

1. Electric Drives
2. Digital Signal Processing
3. High Voltage Engineering

Semester - VII (Fourth Year)

S.No	Category/ Course Code	Course Title	Hours Per week			Credits
			L	T	P	C
1	PEC - III	HVDC Transmission Digital Control Systems Electric Vehicles	3	0	0	3
2	PEC - IV	Power Systems Operation & Control Utilization of Electrical Energy Smart Grid	3	0	0	3
3	PEC - V	Switch Gear & Protection Power Quality and FACTS Special Electrical Machines	3	0	0	3
4	OEC - III	Operating Systems IoT & Applications Industrial Robotics	3	0	0	3
5	OEC - IV	VLSI System Design Design and Analysis of Algorithms	3	0	0	3
6	HSSEC	Managerial Economics & Management Science (MEMS) Fundamentals of Entrepreneurship Business Environment	3	0	0	3
7	SC	Skill advanced course/ soft skill course* Machine Learning with Python for Electrical Engineers	0	0	4	2
Industrial/Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester)			0	0	0	3
					Total Credits	23
		Minors/ Honors Course	4	0	0	4

Semester - VIII (Fourth Year)

S.No	Category/ Course Code	Course Title	Hours Per week			Credits
			L	T	P	C
1	Major Project/Proj	Project work	0	0	0	12
					Total Credits	**12**

L- Lecture T- Tutorials P- Practical

Student can complete Project Work @ Industries/Higher Learning nstitutions/APSSDC

OPEN ELECTIVES from EEE Department for Other Branches

S.No.	Category	Title	L	T	P	C
1	Open Elective-I (III-I)	1. Renewable Energy Sources 2. Concepts of Energy Auditing & Management	3	0	0	3
2	Open Elective – II (III-II)	1. Fundamentals of Electric Vehicles 2. Electrical Wiring Estimation and Costing	3	0	0	3
3	Open Elective – III (IV-I)	1. Battery Management Systems and Charging Stations 2. Concepts of Smart Grid Technologies	3	0	0	3
4	Open Elective-IV (IV-I)	1. Concepts of Power Quality 2. Intelligent Control Systems	3	0	0	3

*Minor Engineering Courses offered by EEE Department for Other Branches (Except EEE Branch)

S.No.	Course	Title	L	T	P	C
1	I	Concepts of Control Systems	3	0	0	3
2	II	Fundamentals of Electrical Measurements and Instrumentation	3	0	0	3
3	III	Concepts of Power System Engineering	3	0	0	3
4	IV	Fundamentals of Power Electronics	3	0	0	3
5	V	Basics of Electric Drives and applications	3	0	0	3
6	VI	Fundamentals of utilization of Electrical Energy	3	0	0	3
		Total	**18**	**0**	**0**	**18**

*Honors Engineering Courses offered EEE Branch students (Need to Acquire 18 credits)

Power Systems

S.No.	Course	Title	L	T	P	C
1	I	Electric Power Quality	3	0	0	3
2	II	Smart Grid Technologies	3	0	0	3
3	III	Power System Deregulation	3	0	0	3

4	IV	Real Time Control of Power Systems	3	0	0	3
5	V	Advanced Power Systems Protection	3	0	0	3
6	VI	Flexible AC Transmission Systems	3	0	0	3
7	VII	AI applications in Power Systems	3	0	0	3
8	VIII	Power Systems Lab	0	0	3	1.5
9	IX	Advanced Power Systems Simulation Lab	0	0	3	1.5

Power Electronics

S.No.	Course	Title	L	T	P	C
1	I	Special Electrical Machines	3	0	0	3
2	II	Machine Modeling and Analysis	3	0	0	3
3	III	Power Electronic Converters	3	0	0	3
4	IV	Power Quality and Custom Power Devices	3	0	0	3
5	V	Power Electronics for Renewable Energy systems	3	0	0	3
6	VI	Industrial Applications of Power Electronic Converters	3	0	0	3
7	VII	Advanced Electrical Drives	3	0	0	3
8	VIII	FACTS Controllers	3	0	0	3
9	IX	Power Converters Laboratory	0	0	3	1.5
10	X	Electric Drives Laboratory	0	0	3	1.5
11	XI	Renewable Technologies Laboratory	0	0	3	1.5
12	XII	Electric Vehicles Laboratory	0	0	3	1.5