R.V.R & J.C.COLLEGE OF ENGINEERING (Autonomous)

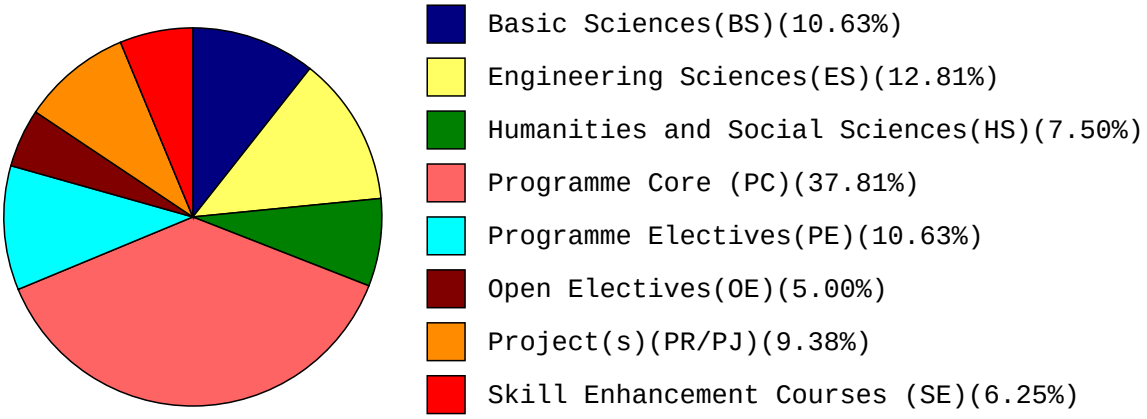
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

B.TECH. ELECTRICAL & ELECTRONICS ENGINEERING

(w.e.f. the batch of students admitted from the academic year 2024-2025)

Programme curriculum (R24) grouping based on course components

Course Component	Curriculum Content (% of total number of credits in programme)	Total number of contact hours	Total number of credits
Basic Sciences (BS)	10.63	19	17
Engineering Sciences (ES)	12.81	28	20.5
Humanities and / Social Sciences (HS)	7.5	16	12
Professional Core (PC)	37.81	72	60.5
Professional Elective(s) (PE)	10.63	15	17
Open Elective(s) (OE)	5	6	8
Project(s) (PR/PJ)	9.38	24	15
Skill Enhancement Course(s) (SEC)	6.25	17	10
Mandatory Course(s) (MC)	--	6	--
Total number of Credits			160



R.V.R & J.C.COLLEGE OF ENGINEERING (Autonomous)

B.TECH. ELECTRICAL & ELECTRONICS ENGINEERING

Course Structure, Scheme of Instruction (R24) and Examination

(w.e.f. the batch of students admitted from the academic year 2024-2025)

Three Weeks Orientation Programme is Mandatory before starting Semester I [First Year]

Semester I [First Year] **COURSE STRUCTURE**

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	EE/EC111	Linear Algebra and Calculus	2	1	-	30	70	3.0	BS
2	EE/CM/EC112	Chemistry for Engineers	3	-	-	30	70	3.0	BS
3	EE/CE/CH/ EC/ME113	Basic Civil and Mechanical Engineering	3	-	-	30	70	3.0	ES
4	EE/CE/CH/ ME114	Programming with C	4	-	-	30	70	4.0	ES
5	EE/CE/CH/ EC/ME115	Communicative English	2	-	-	30	70	2.0	HS
6	EE151	Chemistry Lab	-	-	2	30	70	1.0	BS
7	EE152	Communicative English Lab	-	-	2	30	70	1.0	HS
8	EE153	Programming with C Lab	-	-	3	30	70	1.5	ES
9	EE/CE/CH/ CM/EC/ME154	Health and Wellness, Yoga and Sports	-	-	1	30	70	0.5	HS
		TOTAL	**14**	**1**	**8**	270	630	**19**	TPW-23

Semester II [First Year] **COURSE STRUCTURE**

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	EE/EC121	Differential Equations, Transforms and Vector Calculus	2	1	-	30	70	3.0	BS
2	EE/EC/ME122	Engineering Physics	3	-	-	30	70	3.0	BS
3	EE/EC123	Programming With Python	2	-	-	30	70	2.0	ES
4	EE124	Electrical Circuits	4	-	-	30	70	4.0	PC
5	EE161	Engineering Physics Lab	-	-	2	30	70	1.0	BS
6	EE162	Programming With Python Lab	-	-	3	30	70	1.5	ES
7	EE163	Electrical Circuits Lab	-	-	3	30	70	1.5	PC
8	EE/CE/CH/ EC/ME164	Engineering Workshop	-	-	3	30	70	1.5	ES
9	EE/CH/EC165	Engineering Graphics	1	-	4	30	70	3.0	ES
10	EE/CE/CH/ CM/EC/ME166	NSS / NCC/ Community Service	-	-	1	30	70	0.5	HS
		TOTAL	**12**	**1**	**16**	300	700	**21**	TPW-29

Semester III [Second Year] **COURSE STRUCTURE**

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	EE/CE/EC211	Numerical Methods, Probability and Statistics	2	1	-	30	70	3.0	BS
2	EE/EC212	Data Structures using Python	2	1	-	30	70	3.0	ES
3	EE213	Electrical Circuits Analysis	2	1	-	30	70	3.0	PC
4	EE214	Electronic Devices and Circuits	3	-	-	30	70	3.0	PC
5	EE215	DC Machines	3	-	-	30	70	3.0	PC
6	EE251	Skill Enhancement Course-1	-	-	4	30	70	2.0	SEC
7	EE/CE/CH/ EC/ME252	Design Thinking and Innovation	1	-	2	30	70	2.0	HS
8	EE253	Data Structures using Python Lab	-	-	2	30	70	1.0	ES
9	EE254	DC Machines Lab	-	-	2	30	70	1.0	PC
10	MC2	Environmental Science	2	-	-	100	-	0.0	MC
		TOTAL	**15**	**3**	**10**	370	630	**21**	TPW-28

Semester IV [Second Year] **COURSE STRUCTURE**

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	EE221	Generation and Transmission of Electrical Power	3	-	-	30	70	3.0	PC
2	EE/CE/CH/ EC/ME222	Universal Human Values-II Understanding Harmony	2	-	-	30	70	2.0	HS
3	EE223	Electronic Circuits Analysis	2	1	-	30	70	3.0	PC
4	EE224	Electromagnetic Field Theory	3	-	-	30	70	3.0	PC
5	EE225	Digital Electronics	3	-	-	30	70	3.0	PC
6	EE226	AC Machines	3	-	-	30	70	3.0	PC
7	EE261	Skill Enhancement Course-2	-	-	4	30	70	2.0	SEC
8	EE262	Electronics Lab	-	-	2	30	70	1.0	PC
9	EE263	AC Machines Lab	-	-	2	30	70	1.0	PC
10	MC1	Constitution of India	2	-	-	100	-	0.0	MC
		TOTAL	**18**	**1**	**8**	370	630	**21**	TPW-27
Internship 2 weeks (Mandatory) during summer vacation (to be evaluated during next semester)									
Honors/Minor course (Maximum Two courses can be registered)			**3**	**-**	**-**	**30**	**70**	**3**	HR/MR

Semester V [Third Year] **COURSE STRUCTURE**

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	EE311	Control Systems	3	-	-	30	70	3.0	PC
2	EE312	Synchronous and Special Machines	2	-	-	30	70	2.0	PC
3	EE313	Professional Elective-I	3	-	-	30	70	3.0	PE
4	EE314	Professional Elective-II	3	-	-	30	70	3.0	PE
5	EE315	Open Elective-I	3	-	-	30	70	3.0	OE
6	EE351	Skill Enhancement Course-3	-	1	2	30	70	2.0	SEC
7	EE352	Summer Internship-1	-	-	-	30	70	1.0	PR
8	EE353	Tinkering Lab	-	-	2	30	70	1.0	HS
9	EE354	Control Systems Lab	-	-	2	30	70	1.0	PC
10	EE355	Synchronous and Special Machines Lab	-	-	2	30	70	1.0	PC
		TOTAL	**14**	**1**	**8**	300	700	**20**	TPW-23
Honors/Minor course (Maximum Two courses can be registered)			**3**	**-**	**-**	**30**	**70**	**3**	HR/MR

Semester VI [Third Year] **COURSE STRUCTURE**

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	EE321	Linear IC's and Circuits	3	-	-	30	70	3.0	PC
2	EE322	Microprocessors and Microcontrollers	3	-	-	30	70	3.0	PC
3	EE323	Power Electronics	3	-	-	30	70	3.0	PC
4	EE324	Professional Elective-III	3	-	-	30	70	3.0	PE
5	EE325	Professional Elective-IV	3	-	-	30	70	3.0	PE
6	EE326	Open Elective-II	3	-	-	30	70	3.0	OE
7	EE361	Skill Enhancement Course-4	-	1	2	30	70	2.0	SEC
8	EE362	Microprocessors and Microcontrollers Lab	-	-	2	30	70	1.0	PC
9	EE363	Power Electronics Lab	-	-	2	30	70	1.0	PC
10	EE364	Electrical Measurements and Instrumentation	1	-	2	30	70	2.0	PC
11	MC3	Technical Paper Writing and IPR	-	-	2	100	-	0.0	MC
		TOTAL	**19**	**1**	**10**	400	700	**24**	TPW-30
Internship 4 weeks (Mandatory) during summer vacation (to be evaluated during next semester)									
Honors/Minor course (Maximum Two courses can be registered)			**3**	**-**	**-**	**30**	**70**	**3**	HR/MR

Semester VII [Fourth Year] **COURSE STRUCTURE**

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	EE411	Industrial Management	3	-	-	30	70	3.0	HS
2	EE412	Renewable Energy Resources	2	1	-	30	70	3.0	PC
3	EE413	Professional Elective-V	3	-	-	30	70	3.0	PE
4	EE414	Professional Elective-VI (MOOCs)	-	-	-	-	100	2.0	PE
5	EE415	Open Elective-III (MOOCs)	-	-	-	-	100	2.0	OE
6	EE416	Power Systems	2	1	-	30	70	3.0	PC
7	EE451	Skill Enhancement Course-5	-	1	2	30	70	2.0	SEC
8	EE452	Summer Internship-2	-	-	-	30	70	2.0	PR
9	EE453	Power Systems Lab	-	-	2	30	70	1.0	PC
10	EE454	Computer Simulation of Electrical Systems Lab	-	-	2	30	70	1.0	PC
		TOTAL	**10**	**3**	**6**	240	760	**22**	TPW-19
Honors/Minor course (Maximum Two courses can be registered)			**3**	**-**	**-**	**30**	**70**	**3**	HR/MR

Semester VIII [Fourth Year] **COURSE STRUCTURE**

SNo.	Course Details		Scheme of Instruction			Scheme of Examination			Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks		Credits	
			L	T	P	SES	EXT		
1	EE461	Internship and Project	-	-	24	30	70	12.0	PR
		TOTAL	**0**	**0**	**24**	30	70	**12**	TPW-24

Professional Elective Courses

Code No.	Subject Name	Code No.	Subject Name
EEPE01	Power System Protection	EEPE02	Industrial Drives
EEPE03	Electrical Distribution Systems	EEPE04	Power System Operation and Control
EEPE05	Utilization of Electrical Power	EEPE06	Advanced Electric Drives
EEPE07	Signals and Systems	EEPE08	Wind and Solar Energy Systems
EEPE09	Electrical Machine Design	EEPE10	HVDC Transmission Systems
EEPE11	Power Quality	EEPE12	Flexible AC Transmission Systems
EEPE13	High Voltage Engineering	EEPE14	Electrical Energy Conservation and Auditing
EEPE15	Power System Dynamics and Control	EEPE16	Line-Commutated and Active PWM Rectifiers
EEPE17	Industrial Electrical Systems	EEPE18	Smart Electric Grids
EEPE19	Digital Control Systems	EEPE20	Control Systems Design
EEPE21	Digital Signal Processing	EEPE22	Computer Architecture
EEPE23	Electromagnetic Waves	EEPE24	Computational Electromagnetics
EEPE25	Power System Deregulation	EEPE26	AI Tools Techniques and Applications

Skill Courses

Code No.	Subject Name	Code No.	Subject Name
EESL1	Employability Skills-I	EESL2	Employability Skills-II

EESL3	Industry Standard Coding Practice-I	EESL4	Industry Standard Coding Practice-II
EESL5	Skill Orientation Course		

Science & Humanities Elective Courses

Code No.	Subject Name	Code No.	Subject Name
HSEL1	Industrial Management & Entrepreneurship	HSEL2	Economics for Engineers
HSEL3	Introduction to Industrial Management	HSEL4	Project Management & Entrepreneurship

Honors Courses

Note : 1. The subjects opted for Honors should be Advanced type which are not covered in regular curriculum

2. Students has to acquire 12 credits with minimum one subject from each pool.

3. Compulsory MOOC/NPTEL Courses for 06 credits (02 courses@ 3 credits each)

Pool 1

Code No.	Subject Name	Code No.	Subject Name

Pool 2

Code No.	Subject Name	Code No.	Subject Name

Pool 3

Code No.	Subject Name	Code No.	Subject Name

Pool 4

Code No.	Subject Name	Code No.	Subject Name

Open Elective Courses (Offered by other Departments)

Code No.	Subject Name	Code No.	Subject Name
CBOE1	Operating Systems Concepts	CBOE2	Business Analytics
CDOE1	Python for Data Science	CDOE2	Data Science for Engineers
CEOE1	Fundamentals of Building Planning	CEOE2	Remote Sensing and Gis
CEOE3	Disaster Management	CHOE1	Energy Engineering
CHOE2	Biofuels	CMOE1	Fundamentals of Artificial Intelligence
CMOE2	Programming with C++	COOE1	Fundamentals of IoT
COOE2	IoT Architecture and Protocols	CSOE1	Programming with JAVA
CSOE2	Relational DataBase Management System	ECOE1	Applied Electronics
ECOE2	Microprocessors & Interfacing	ITOE1	Data Structures and Algorithms
ITOE2	Web Technologies	MEOE1	Operations Research
MEOE2	Elements of Robotics		

General Minor Courses (Offered by other Department)

Note : 1. A student can opt any 4 subjects from each pool @ 3 credits per subject.

2. Compulsory MOOC/NPTEL Courses for 06 credits (02 courses@ 3 credits each)

Offered by Civil Engineering

Code No.	Subject Name	Code No.	Subject Name
CEMR1	Geomatics (Survey, GIS & GPS)	CEMR2	Construction Engineering & Management
CEMR3	Fundamentals of Structural Engineering	CEMR4	Water Resource Engineering
CEMR5	Environmental Engineering	CEMR6	Geotechnical Engineering
CEMR7	Transportation Engineering		

Offered by Chemical Engineering

Code No.	Subject Name	Code No.	Subject Name
CHMR1	Unit Operations	CHMR2	Principles of Chemical Process Calculations
CHMR3	Transfer operations	CHMR4	Thermodynamics and Reaction Engineering
CHMR5	Industrial Pollution Control Engineering	CHMR6	Principles of Safety Management

Offered by Mechanical Engineering

Code No.	Subject Name	Code No.	Subject Name
MEMR1	Engineering Mechanics	MEMR2	Strength of Materials and Fluid Mechanics
MEMR3	Manufacturing Processes	MEMR4	Concepts of Thermal Engineering
MEMR5	Concepts of Mechanical Design	MEMR6	Computer Aided Design & Manufacturing
MEMR7	Additive Manufacturing		

Offered by Computer Science & Engineering

Code No.	Subject Name	Code No.	Subject Name
CSMR1	Fundamentals of Data Structures	CSMR2	Computer Organization and Architecture
CSMR3	Operating System Concepts	CSMR4	Relational DataBase Management System
CSMR5	Programming with JAVA	CSMR6	Introduction to Algorithms
CSMR7	Principles of Software Engineering	CSMR8	Computer Networking Concepts

Offered by Computer Science & Engineering (DS)

Code No.	Subject Name	Code No.	Subject Name
CDMR1	Introduction to Data Science & Machine Learning	CDMR2	Analysing, Visualizing and Applying Data Science with Python
CDMR3	Web Data Mining	CDMR4	Business Analytics

Offered by Computer Science & Engineering (AIML)

Code No.	Subject Name	Code No.	Subject Name
CMMR1	Introduction to Artificial Intelligence	CMMR2	Machine Learning
CMMR3	Data Analytics	CMMR4	Deep Learning
CMMR5	Natural Language Processing	CMMR6	Soft Computing

Offered by Computer Science & Engineering (IoT)

Code No.	Subject Name	Code No.	Subject Name
COMR1	Introduction to Internet of Things	COMR2	IoT Architecture and Protocols
COMR3	IoT Cloud and Data Analytics	COMR4	Smart Sensor Technologies
COMR5	Fundamental of IoT	COMR6	Introduction of Raspberry Pi and Arduino

Industry Track - Minor Courses

Note : 1. A student can opt any 4 subjects from each Track @ 3 credits per subject.

2. Compulsory MOOC/NPTEL Courses for 06 credits (02 courses@ 3 credits each)

Minor in Industrial Automation & Robotics (Offered by Mechanical Engineering)

Code No.	Subject Name	Code No.	Subject Name
ARMR1	Robotic Engineering	ARMR2	Mechatronics and Microcontrollers
ARMR3	Mechanics of Robots	ARMR4	Industrial Automation
ARMR5	Computer Integrated Manufacturing	ARMR7	3D Printing

Minor in Full Stack Development (Offered by Computer Science & Business Systems)

Code No.	Subject Name	Code No.	Subject Name
FSMR1	Client Side Scripting	FSMR2	React Js
FSMR3	C# (.Net Framework)	FSMR4	MEAN stack (MongoDB, Express JS, Angular JS, Node JS)
FSMR5	Web Application Development using Asp		

Minor in VLSI (Offered by Electronics & Communication Engineering)

Code No.	Subject Name	Code No.	Subject Name
VLMR1	HDL Programming	VLMR2	System Verilog and UVM
VLMR3	Physical Design Fundamentals	VLMR4	Low Power VLSI Design
VLMR5	Synthesis and Formal Verification	VLMR6	Advanced Physical Design

Minor in Electric Vehicles (Offered by Electrical & Electronics Engineering)

Code No.	Subject Name	Code No.	Subject Name
EVMR1	Energy Systems and Electrical Machines	EVMR2	Hybrid Electric Vehicles
EVMR3	Plug-in Electric vehicles	EVMR4	Electric Vehicle Power Train
EVMR5	Autotronics	EVMR6	BMS & Charging stations

Minor in Quantum Technolgies (Offered by Computer Science & Business Systems)

Code No.	Subject Name	Code No.	Subject Name
QTMR1	Fundamentals of Quantum Computing	QTMR2	Foundations of Quantum Technologies
QTMR3	Basic Programming Lab	QTMR4	Basic Laboratory Course for Quantum Technologies
QTMR5	Introduction to Quantum Computation	QTMR6A	Introduction to Quantum Communication
QTMR6B	Engineering Foundation of Quantum Technologies	QTMR7	Introduction to Quantum Sensing
QTMR8	Introduction to Quantum Materials		

Department of ELECTRICAL & ELECTRONICS ENGINEERING

Open Electives (Offered to other Departments)

Code No.	Subject Name	Code No.	Subject Name
EEOE1	Renewable Energy Sources	EEOE2	Utilization of Electrical Energy