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

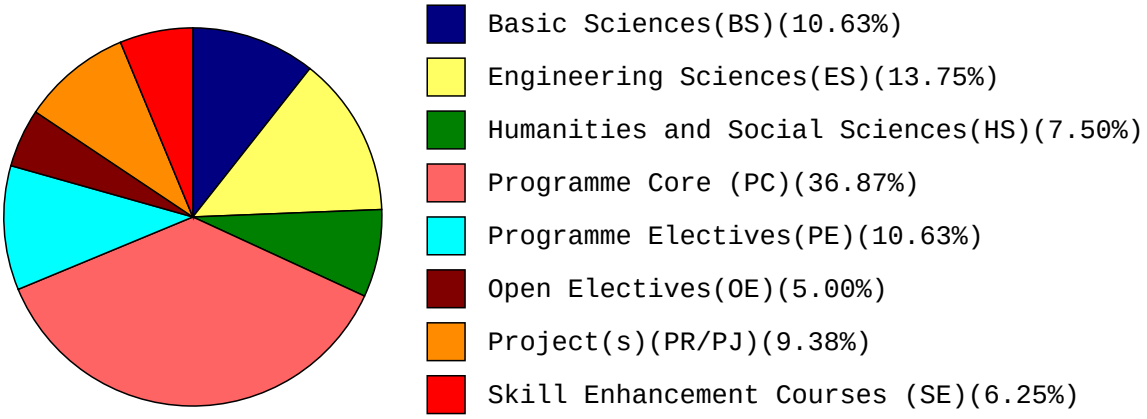
DEPARTMENT OF CIVIL ENGINEERING

B.TECH. CIVIL 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)	13.75	31	22
Humanities and / Social Sciences (HS)	7.5	16	12
Professional Core (PC)	36.88	68	59
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. CIVIL 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	CE/CH/ME111	Matrices and Calculus	2	1	-	30	70	3.0	BS
2	CE/ME112	Applied Chemistry	3	-	-	30	70	3.0	BS
3	CE/CH/EC/ EE/ME113	Basic Civil and Mechanical Engineering	3	-	-	30	70	3.0	ES
4	CE/CH/EE/ ME114	Programming with C	4	-	-	30	70	4.0	ES
5	CE/CH/EC/ EE/ME115	Communicative English	2	-	-	30	70	2.0	HS
6	CE151	Applied Chemistry Lab	-	-	2	30	70	1.0	BS
7	CE152	Communicative English Lab	-	-	2	30	70	1.0	HS
8	CE153	Programming with C Lab	-	-	3	30	70	1.5	ES
9	CE/CH/CM/ EC/EE/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	CE/CH/ME121	Differential Equations and Vector Calculus	2	1	-	30	70	3.0	BS
2	CE122	Physics for Engineers	3	-	-	30	70	3.0	BS
3	CE/CH/ME123	Basic Electrical and Electronics Engineering	3	-	-	30	70	3.0	ES
4	CE124	Mechanics for Engineers	3	-	-	30	70	3.0	PC
5	CE161	Engineering Physics Lab	-	-	2	30	70	1.0	BS
6	CE162	Basic Electrical and Electronics Engineering Lab	-	-	3	30	70	1.5	ES
7	CE163	Computer Aided Building Drawing	-	-	3	30	70	1.5	ES
8	CE/CH/EC/ EE/ME164	Engineering Workshop	-	-	3	30	70	1.5	ES
9	CE165	Engineering Drawing Practice	1	-	4	30	70	3.0	ES
10	CE/CH/CM/ EC/EE/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		Credits	Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks			
			L	T	P	SES	EXT		
1	CE/EC/EE211	Numerical Methods, Probability and Statistics	2	1	-	30	70	3.0	BS
2	CE212	Engineering Geology and GIS	2	-	-	30	70	2.0	ES
3	CE213	Water Supply Engineering	3	-	-	30	70	3.0	PC
4	CE214	Fluid Mechanics	2	1	-	30	70	3.0	PC
5	CE215	Solid Mechanics-I	2	1	-	30	70	3.0	PC
6	CE216	Building Materials and Building Construction	2	-	-	30	70	2.0	PC
7	CE251	Skill Enhancement Course-1	-	-	4	30	70	2.0	SEC
8	CE/CH/EC/ EE/ME252	Design Thinking and Innovation	1	-	2	30	70	2.0	HS
9	CE253	Engineering Geology and GIS Lab	-	-	2	30	70	1.0	ES
10	CE254	Material Testing Lab	-	-	2	30	70	1.0	PC
11	MC2	Environmental Science	2	-	-	100	-	0.0	MC
		TOTAL	**16**	**3**	**10**	400	700	**22**	TPW-29

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

SNo.	Course Details		Scheme of Instruction			Scheme of Examination		Credits	Category Code
	Code No.	Subject Name	Periods per week			Maximum Marks			
			L	T	P	SES	EXT		
1	CE221	Wastewater Engineering	3	-	-	30	70	3.0	PC
2	CE/CH/EC/ EE/ME222	Universal Human Values-II Understanding Harmony	2	-	-	30	70	2.0	HS
3	CE223	Hydraulics and Hydraulic Machines	2	1	-	30	70	3.0	PC
4	CE224	Surveying	3	-	-	30	70	3.0	PC
5	CE225	Solid Mechanics-II	2	1	-	30	70	3.0	PC
6	CE226	Concrete Technology	3	-	-	30	70	3.0	PC
7	CE261	Skill Enhancement Course-2	-	-	4	30	70	2.0	SEC
8	CE262	Fluid Mechanics Lab	-	-	2	30	70	1.0	PC
9	CE263	Surveying Field Work	-	-	2	30	70	1.0	PC
10	MC1	Constitution of India	2	-	-	100	-	0.0	MC
		TOTAL	**17**	**2**	**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	CE311	Design of Reinforced Concrete Structural Elements	3	-	-	30	70	3.0	PC
2	CE312	Structural Analysis	2	1	-	30	70	3.0	PC
3	CE313	Professional Elective-I	3	-	-	30	70	3.0	PE
4	CE314	Professional Elective-II	3	-	-	30	70	3.0	PE
5	CE315	Open Elective-I	3	-	-	30	70	3.0	OE
6	CE351	Skill Enhancement Course-3	-	1	2	30	70	2.0	SEC
7	CE352	Summer Internship-1	-	-	-	30	70	1.0	PR
8	CE353	Tinkering Lab	-	-	2	30	70	1.0	HS
9	CE354	Environmental Engineering Lab	-	-	2	30	70	1.0	PC
10	CE355	Computer Aided Analysis and Design Lab	-	-	2	30	70	1.0	PC
		TOTAL	**14**	**2**	**8**	300	700	**21**	TPW-24
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	CE321	Design of Steel Structural Elements	3	-	-	30	70	3.0	PC
2	CE322	Geotechnical Engineering	3	-	-	30	70	3.0	PC
3	CE323	Hydrology and Irrigation Engineering	3	-	-	30	70	3.0	PC
4	CE324	Professional Elective-III	3	-	-	30	70	3.0	PE
5	CE325	Professional Elective-IV	3	-	-	30	70	3.0	PE
6	CE326	Open Elective-II	3	-	-	30	70	3.0	OE
7	CE361	Skill Enhancement Course-4	-	1	2	30	70	2.0	SEC
8	CE362	Geotechnical Engineering Lab	-	-	2	30	70	1.0	PC
9	CE363	Concrete Technology Lab	-	-	2	30	70	1.0	PC
10	CE364	Computer Applications Lab	-	-	2	30	70	1.0	PC
11	MC3	Technical Paper Writing and IPR	-	-	2	100	-	0.0	MC
		TOTAL	**18**	**1**	**10**	400	700	**23**	TPW-29
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	CE411	Construction Management	3	-	-	30	70	3.0	HS
2	CE412	Highway Engineering	3	-	-	30	70	3.0	PC
3	CE413	Professional Elective-V	3	-	-	30	70	3.0	PE
4	CE414	Professional Elective-VI (MOOCs)	-	-	-	-	100	2.0	PE
5	CE415	Open Elective-III (MOOCs)	-	-	-	-	100	2.0	OE
6	CE416	Estimation and Costing	3	-	-	30	70	3.0	PC
7	CE451	Skill Enhancement Course-5	-	1	2	30	70	2.0	SEC
8	CE452	Summer Internship-2	-	-	-	30	70	2.0	PR
9	CE453	Transportation Engineering Lab	-	-	2	30	70	1.0	PC
		TOTAL	**12**	**1**	**4**	210	690	**21**	TPW-17
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	CE461	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
CEPE11	Pre Stressed Concrete	CEPE12	Building Information Modeling
CEPE13	Green Buildings	CEPE14	Surface Hydrology
CEPE15	Advanced Surveying and Drone Applications	CEPE16	Valuation of Property
CEPE17	Forensic Engineering of Structures	CEPE18	Advanced Environmental Engineering
CEPE23	Road Safety Engineering	CEPE24	AI & MI in Civil Engineering
CEPE25	Forensic Civil Engineering	CEPE31	Design of Reinforced Concrete Structures
CEPE32	Railway, Airport and Harbour Engineering	CEPE33	Pre Fabricated Structures
CEPE34	Geospatial Technology	CEPE35	Water Shed Management
CEPE41	Advanced Structural Analysis	CEPE42	Air Pollution and Control
CEPE43	Valuation of Property	CEPE44	Repair and Rehabilitation of Structures
CEPE45	IoT & Smart Sensors in Civil Engineering	CEPE46	Structures in Disaster Prone Areas
CEPE51	Design of Steel Structures	CEPE52	Irrigation Structures
CEPE53	Foundation Engineering	CEPE54	Earthquake Resistant Design of Structures
CEPE55	Bridge Engineering	CEPE56	Ground Improvement Techniques
CEPE57	Structural Dynamics		

Skill Courses

Code No.	Subject Name	Code No.	Subject Name
CESL1	Employability Skills-I	CESL2	Employability Skills-II
CESL3	Industry Standard Coding Practice-I	CESL4	Industry Standard Coding Practice-II
CESL5	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

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
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
EEOE1	Renewable Energy Sources	EEOE2	Utilization of Electrical Energy
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 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 Electronics & Communication Engineering

Code No.	Subject Name	Code No.	Subject Name
ECMR1	Electronics Devices & Circuits	ECMR2	Digital Logic Design
ECMR3	Network Analysis	ECMR4	Electronic Circuit Analysis
ECMR5	Signals and Systems	ECMR6	Microprocessors & Interfacing

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 CIVIL ENGINEERING

Open Electives (Offered to other Departments)

Code No.	Subject Name	Code No.	Subject Name
CEOE1	Fundamentals of Building Planning	CEOE2	Remote Sensing and Gis
CEOE3	Disaster Management		

General Minor Course (Offered to other Departments)

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		