R.V.R & J.C.COLLEGE OF ENGINEERING (Autonomous)
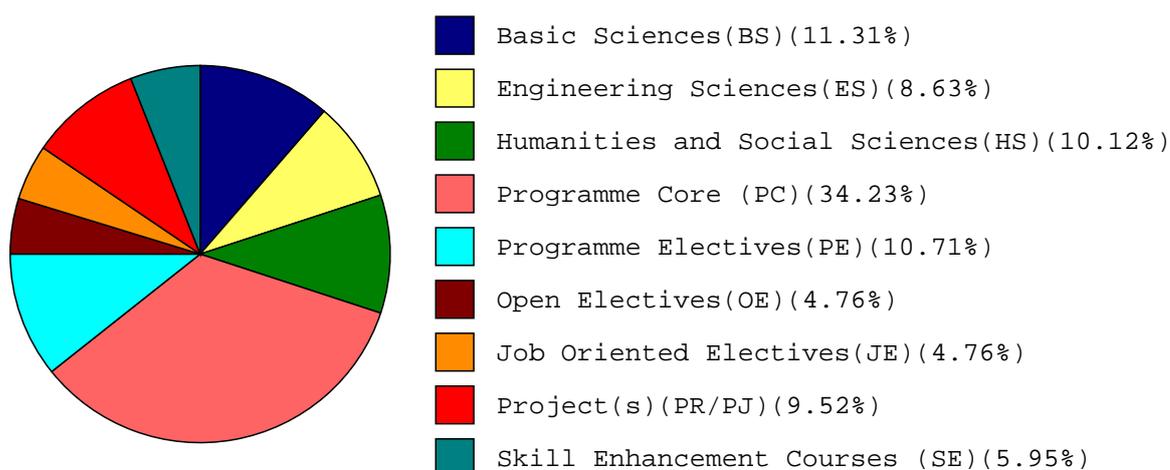
DEPARTMENT OF COMPUTER SCIENCE & BUSINESS SYSTEMS

B.TECH. COMPUTER SCIENCE & BUSINESS SYSTEMS

(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)	11.88	21	19
Engineering Sciences (ES)	9.06	18	14.5
Humanities and / Social Sciences (HS)	10.63	23	17
Professional Core (PC)	35.94	68	57.5
Professional Elective(s) (PE)	11.25	17	18
Open Elective(s) (OE)	5	6	8
Job Oriented Elective(s) (JE)	0		0
Project(s) (PR/PJ)	10	26	16
Skill Enhancement Course(s) (SEC)	6.25	17	10
Mandatory Course(s) (MC)	--	10	--
Total number of Credits			160

- Basic Sciences(BS)(11.31%)
- Engineering Sciences(ES)(8.63%)
- Humanities and Social Sciences(HS)(10.12%)
- Programme Core (PC)(34.23%)
- Programme Electives(PE)(10.71%)
- Open Electives(OE)(4.76%)
- Job Oriented Electives(JE)(4.76%)
- Project(s)(PR/PJ)(9.52%)
- Skill Enhancement Courses (SE)(5.95%)

R.V.R & J.C.COLLEGE OF ENGINEERING (Autonomous)
B.TECH. COMPUTER SCIENCE & BUSINESS SYSTEMS
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.	Code No.	Subject Name	L	T	P	SES	EXT	Credits	Category Code
		Course Details	Scheme of Instruction — Periods per week			Scheme of Examination — Maximum Marks			
1	CB111	Discrete Mathematics	3	-	-	30	70	3.0	BS
2	CB112	Fundamentals of Physics	3	-	-	30	70	3.0	BS
3	CB113	Principles of Electrical Engineering	3	-	-	30	70	3.0	ES
4	CB114	Fundamentals of Computer Science	3	-	-	30	70	3.0	ES
5	CB115	Introductory Topics in Statistics, Probability and Calculus	2	-	-	30	70	2.0	BS
6	CB151	Fundamentals of Physics Lab	-	-	2	30	70	1.0	BS
7	CB152	Principles of Electrical Engineering Lab	-	-	2	30	70	1.0	ES
8	CB153	Fundamentals of Computer Science Lab	-	-	3	30	70	1.5	ES
9	CB154	Business Communication and Value Science-I Lab	-	-	2	30	70	1.0	HS
10	CB/CO/CM/ CD/CS/IT155	NSS / NCC / Community Service	-	-	1	30	70	0.5	HS
		TOTAL	**14**	**0**	**10**	300	700	**19**	TPW-24

Semester II [First Year]   COURSE STRUCTURE

SNo.	Code No.	Subject Name	L	T	P	SES	EXT	Credits	Category Code
		Course Details	Scheme of Instruction — Periods per week			Scheme of Examination — Maximum Marks			
1	CB121	Linear Algebra	2	1	-	30	70	3.0	BS
2	CB122	Statistical Methods	3	-	-	30	70	3.0	BS
3	CB123	Fundamentals of Economics	2	-	-	30	70	2.0	HS
4	CB124	Principles of Electronics Engineering	3	-	-	30	70	3.0	ES
5	CB/CM/CO/ CS/IT125	Python Programming	2	-	-	30	70	2.0	ES
6	CB/CM126	Data Structures and Algorithms	3	-	-	30	70	3.0	PC
7	CB161	Statistical Methods Lab	-	-	2	30	70	1.0	BS
8	CB162	Business Communication and Value Science-II Lab	-	-	2	30	70	1.0	HS
9	CB163	Python Programming Lab	-	-	2	30	70	1.0	ES
10	CB164	Data Structures and Algorithms Lab	-	-	3	30	70	1.5	PC
11	CB/CD/CO/ CS/IT165	Health and wellness, Yoga and Sports	-	-	1	30	70	0.5	HS
		TOTAL	**15**	**1**	**10**	330	770	**21**	TPW-26

Semester III [Second Year]   COURSE STRUCTURE

SNo.	Code No.	Subject Name	L	T	P	SES	EXT	Credits	Category Code
		Course Details	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks			
1	CB211	Computational Statistics	3	-	-	30	70	3.0	BS
2	CB/CD/CM/ CO/CS/IT212	Universal Human Values-II Understanding Harmony	2	-	-	30	70	2.0	HS
3	CB213	Computer Organization and Architecture	3	-	-	30	70	3.0	PC
4	CB214	Formal Languages and Automata Theory	2	1	-	30	70	3.0	PC
5	CB/CM/CO/ CS/IT215	Design and Analysis of Algorithms	3	-	-	30	70	3.0	PC
6	CB/CD/CM/ CO/CS/IT216	Object Oriented Programming	3	-	-	30	70	3.0	PC
7	CB251	Skill Enhancement Course-1	-	-	4	30	70	2.0	SEC
8	CB252	Computational Statistics Lab	-	-	2	30	70	1.0	PC
9	CB253	Object Oriented Programming Lab	-	-	2	30	70	1.0	PC
10	CB254	Business Communication and Value Science-III Lab	-	-	2	30	70	1.0	HS
11	MC1	Constitution of India	2	-	-	100	-	0.0	MC
		TOTAL	**18**	**1**	**10**	400	700	**22**	TPW-29

Semester IV [Second Year]   COURSE STRUCTURE

SNo.	Code No.	Subject Name	L	T	P	SES	EXT	Credits	Category Code
		Course Details	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks			
1	CB221	Financial and Cost Accounting	2	-	-	30	70	2.0	HS
2	CB/CD/CM/ CS/IT222	Artificial Intelligence	3	-	-	30	70	3.0	PC
3	CB/CD/CM/ CO/CS/IT223	Database Management Systems	3	-	-	30	70	3.0	PC
4	CB/CD/CM/ CO/CS/IT224	Operating Systems	3	-	-	30	70	3.0	PC
5	CB/CD/CS/ IT225	Software Engineering	3	-	-	30	70	3.0	PC
6	CB226	Introduction to Innovation, IP Management and Entrepreneurship	2	-	-	30	70	2.0	HS
7	CB261	Skill Enhancement Course-2	-	-	4	30	70	2.0	SEC
8	CB/CD/CM/ CO/CS/IT262	Design Thinking and Innovation	1	-	2	30	70	2.0	HS
9	CB263	Artificial Intelligence Lab	-	-	2	30	70	1.0	PC
10	CB264	Database Management Systems Lab	-	-	2	30	70	1.0	PC
11	MC2	Environmental Science	2	-	-	100	-	0.0	MC
		TOTAL	**19**	**0**	**10**	400	700	**22**	TPW-29
Internship 2 weeks (Mandatory) during summer vacation (to be evaluated during next semester)									
Minor course (Maximum Two courses can be registered)			**3**	**-**	**-**	**30**	**70**	**3**	MR

Semester V [Third Year] COURSE STRUCTURE

SNo.	Code No.	Subject Name	L	T	P	SES	EXT	Credits	Category Code
		Course Details	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks			Category
1	CB311	Data Mining and Analytics	3	-	-	30	70	3.0	PC
2	CB/CD/CS/IT312	Computer Networks	3	-	-	30	70	3.0	PC
3	CB/CD/CM/CO/CS/IT313	Professional Elective-I	3	-	-	30	70	3.0	PE
4	CB/CD/CM/CO/CS/IT314	Professional Elective-II	3	-	-	30	70	3.0	PE
5	CB/CD/CM/CO/CS/IT315	Open Elective - I	3	-	-	30	70	3.0	OE
6	CB316	Full Stack Web Development	3	-	-	30	70	3.0	PC
7	CB351	Skill Enhancement Course-3	-	1	2	30	70	2.0	SEC
8	CB352	Summer Internship-1	-	-	-	30	70	1.0	PR
9	CB353	Data Mining and Analytics Lab	-	-	2	30	70	1.0	PC
10	CB354	Full Stack Web Development Lab	-	-	2	30	70	1.0	PC
11	MC3	Technical Paper Writing and IPR	-	-	2	100	-	0.0	MC
		TOTAL	**18**	**1**	**8**	400	700	**23**	TPW-27
	Minor course (Maximum Two courses can be registered)		**3**	**-**	**-**	**30**	**70**	**3**	MR

Semester VI [Third Year] COURSE STRUCTURE

SNo.	Code No.	Subject Name	L	T	P	SES	EXT	Credits	Category Code
		Course Details	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks			Category
1	CB/CM/CS/IT321	Human Resource Management	2	-	-	30	70	2.0	HS
2	CB/CD/CM322	Machine Learning	3	-	-	30	70	3.0	PC
3	CB323	Natural Language Processing	3	-	-	30	70	3.0	PC
4	CB/CD/CM/CO/CS/IT324	Professional Elective - III	3	-	-	30	70	3.0	PE
5	CB/CD/CM/CO/CS/IT325	Professional Elective - IV	3	-	-	30	70	3.0	PE
6	CB/CD/CM/CO/CS/IT326	Open Elective - II	3	-	-	30	70	3.0	OE
7	CB/CD/CM/CO/CS/IT361	Skill Enhancement Course-4	-	1	2	30	70	2.0	SEC
8	CB362	Tinkering Lab	-	-	2	30	70	1.0	HS
9	CB363	Machine Learning Lab	-	-	2	30	70	1.0	PC
10	CB364	Natural Language Processing Lab	-	-	2	30	70	1.0	PC
11	MC4	Marketing Research & Marketing Management	2	-	-	100	-	0.0	MC
		TOTAL	**19**	**1**	**8**	400	700	**22**	TPW-28
	Internship 4 weeks (Mandatory) during summer vacation (to be evaluated during next semester)								
	Minor course (Maximum Two courses can be registered)		**3**	**-**	**-**	**30**	**70**	**3**	MR

Semester VII [Fourth Year]   COURSE STRUCTURE

SNo.	Code No.	Subject Name	L	T	P	SES	EXT	Credits	Category Code
		Course Details	| Scheme of Instruction | Periods per week			| Scheme of Examination | Maximum Marks			Category Code
1	CB411	Advanced Social Text and Media Analytics	3	-	-	30	70	3.0	PC
2	CB412	Information Technology and Project Management	2	-	-	30	70	2.0	PC
3	CB/CD/CM/CO/CS/IT413	Professional Elective - V	3	-	-	30	70	3.0	PE
4	CB/CD/CM/CO/CS/IT414	Professional Elective - VI (Moocs)	-	-	-	-	100	2.0	PE
5	CB/CD/CM/CO/CS/IT415	Open Elective - III (Moocs)	-	-	-	-	100	2.0	OE
6	CB/CD/CM/CO/CS/IT451	Skill Enhancement Course-5	-	1	2	30	70	2.0	SEC
7	CB452	Summer Internship-2	-	-	-	30	70	2.0	PR
8	CB453	Advanced Social Text and Media Analytics Lab	-	-	2	30	70	1.0	PC
9	CB/CD/CM/CO/CS/IT454	Professional Elective - V Lab	-	-	2	30	70	1.0	PE
10	CB/CD/CM/CO/CS/IT455	Term Paper	-	-	2	30	70	1.0	PR
11	MC5	Business Strategy	2	-	-	100	-	0.0	MC
		TOTAL	**10**	**1**	**8**	340	760	**19**	TPW-19
	Minor course (Maximum Two courses can be registered)		3	-	-	30	70	3	MR

Semester VIII [Fourth Year]   COURSE STRUCTURE

SNo.	Code No.	Subject Name	L	T	P	SES	EXT	Credits	Category Code
		Course Details	| Scheme of Instruction | Periods per week			| Scheme of Examination | Maximum Marks			Category Code
1	CB461	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
CBPE01	Compiler Design	CBPE02	Cloud Micro Services and Applications
CBPE03	Enterprise Application Development	CBPE04	Enterprise Systems
CBPE05	Business Intelligence Systems	CBPE06	Devops Techniques
CBPE07	Fundamentals of Data Science	CBPE08	Introduction to Large Language Models
CBPE09	Cryptography and Network Security	CBPE10	Fintech Systems Engineering
CBPE11	Prompt Engineering and Generative AI Applications	CBPE12	Usability Design and System Analysis
CBPE13	High Performance Computing	CBPE14	Principles of Cloud Computing
CBPE15	Rust Programming	CBPE16	Soft Computing
CBPE17	Agentic AI for Enterprise Applications	CBPE18	Big Data Analytics
CBPE19	Deep Learning	CBPE20	Software Design Networks

Skill Courses

Code No.	Subject Name	Code No.	Subject Name
CBSL1	Employability Skills-I	CBSL2	Employability Skills-II
CBSL3	Industry Standard Coding Practice-I	CBSL4	Industry Standard Coding Practice-II
CBSL5	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
CEOE1	Fundamentals of Building Planning	CEOE2	Remote Sensing and Gis
CEOE3	Disaster Management	CHOE1	Energy Engineering
CHOE2	Biofuels	ECOE1	Applied Electronics
ECOE2	Microprocessors & Interfacing	EEOE1	Renewable Energy Sources
EEOE2	Utilization of Electrical Energy	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 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		

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 COMPUTER SCIENCE & BUSINESS SYSTEMS

Open Electives (Offered to other Departments)

Code No.	Subject Name	Code No.	Subject Name
CBOE1	Operating Systems Concepts	CBOE2	Business Analytics