

# **CURRICULUM & SYLLABUS**



**SRM**  
UNIVERSITY  
DELHI-NCR, SONEPAT

**CHOICE BASED CREDIT SYSTEM (CBCS)**

**FOR**

**BACHELOR OF TECHNOLOGY (B.Tech.)**

**(4 Year Undergraduate Degree Programme)**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

**In BlockChain & IoT in association with IBM**

**(In alignment with National Education Policy, 2020)**

**[w. e. f. 2023-2024]**

**FACULTY OF ENGINEERING AND TECHNOLOGY  
SRM UNIVERSITY DELHI-NCR, SONEPAT**

**39, Rajiv Gandhi Education City, Sonapat  
Haryana-131029**

# COURSE CURRICULUM

## BACHELOR OF TECHNOLOGY (COMPUTER SCIENCE & ENGINEERING)

### SPECIALIZATION: BLOCKCHAIN & IOT

#### DEGREE COURSE

#### PROGRAMME COURSES STRUCTURE SEMESTER WISE

#### SEMESTER – I

S.No	Code	Category	Course Name	Hours per week				Credits
				L	T	P	Total Hours	
Theory								
1	23AS101	(BAS)	Engineering Mathematics-I	3	1	0	4	4
2	23AS102/ 23AS103	(BAS)	Engineering Physics/Engineering Chemistry	3	1	0	4	4
3	23EE101/ 23EC101	(ES)	Basic Electrical Engineering /Basic Electronics Engineering	3	0	0	3	3
4	23ME101/ 23CS101	(ES)	Engineering Mechanics / Fundamentals of Computer & C Programming	3	0	0	3	3
5	23AEC101	(AEC)	Professional English (*50% of students will be offered)	2*	0	0	2*	2*
6	23AEC102/ 23AEC103/ 23AEC104	(AEC)	Hindi-I/German-I/French-I	2	0	0	2	2
7	23VAC101/2 3VAC102	(VAC)	Environment Protection, Sustainable Development & Living/ Indian Constitution and Polity	2	0	0	2	2
Total Credits (Theory)				16/18	2	0	18/20	18/20
Practical								
8	23AS152/23AS153	(BAS)	Engineering Physics Lab/Engineering Chemistry Lab	0	0	2	2	1
9	23EE151/23EC151	(ES)	Basic Electrical Engineering Lab /Basic Electronics Engineering Lab	0	0	2	2	1
10	23ME151/23CS151	(ES)	Basic Mechanical Engineering Lab/ C Programming Lab	0	0	2	2	1
11	23ME152/23ME153	(ES)	Mechanical Workshop Lab /Engineering Graphics & Design Lab	0	0	2	2	1
12	23AEC151*	(AEC)	Communication English Lab (50% of students will be offered)	0	0	2*	2*	1*
13	23CAM101	P	Industry Session-I	0	0	2	2	1
Total Credits (Practical)				0	0	10/12	10/12	5/6
	Total Credits (Theory + Practical)			16/18	2	10/10	28/32	23/26

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**PROGRAMME COURSES STRUCTURE SEMESTER WISE**

**SEMESTER – II**

SL.No	Code	Category	Course Name	Hours per week				Credits
				L	T	P	Total Hours	
Theory								
1	23AS0201	(BAS)	Engineering Mathematics-II	3	1	0	4	4
2	23AS0202/ 23AS0203	(BAS)	Engineering Physics/ Engineering Chemistry	3	1	0	4	4
3	23EE0201/ 23EC0201	(ES)	Basic Electrical Engineering /Basic Electronics Engineering	3	0	0	3	3
4	23ME0201/ 23CS0201	(ES)	Engineering mechanics / Fundamentals of Computer & C Programming	3	0	0	3	3
5	23AEC0201	(AEC)	Professional English (*50% of students will be offered)	2*	0	0	2*	2*
6	23AEC202/ 23AEC203/ 23AEC204	(AEC)	Hindi-II/German-II/French-II	2	0	0	2	2
7	23VAC201/ 23VAC 202	(VAC)	Environmental Bioengineering / Indian Constitution and Polity	2	0	0	2	2
Total Credits (Theory)				16/18	2	0	18/20	18/20
Practical								
8	23AS0252/23AS0253	(BAS)	Engineering Physics Lab/Engineering Chemistry Lab	0	0	2	2	1
9	23EE0251/2 3EC0251	(ES)	Basic Electrical Engineering Lab /Basic Electronics Engineering Lab	0	0	2	2	1
10	23ME251/23CS251	(ES)	Basic Mechanical Engineering Lab/ C Programming Language Lab	0	0	2	2	1
11	23ME0251/2 1ME0252	(ES)	Mechanical Workshop Lab/Engineering Graphics & Design Lab	0	0	2	2	1
12	23AEC151*	(AEC)	Communication English Lab (50% of students will be offered)	0	0	2*	2*	1*
13	23CAM201	P	Industry Session-II	0	0	2	2	1
Total Credits (Practical)				0	0	0/12	10/12	5/6
Total Credits (Theory + Practical)				16/ 18	2	0/12	28/32	23/26

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**PROGRAMME COURSES STRUCTURE SEMESTER WISE**

**SEMESTER – III**

COURSE CODE	COURSE	CATEGORY	HOURS PER WEEK				CREDITS
			L	T	P	TOTAL HOURS	
Theory							
23AS301	Engineering Mathematics-III	BAS	3	0	0	3	3
23CS2001	Data Structures Using C	PC	3	0	0	3	3
23CAM2009	Python Programming	PC	3	0	0	3	3
23CS2005	Database Management Systems	PC	3	0	0	3	3
23CSPEXXX	Professional Elective-I	PE	3	1	0	4	4
Total (Theory)			15	1	0	16	16
Practical							
23CS2111	Database Management Systems Lab	P	0	0	2	2	1
23CS2113	Data Structures Using C lab	P	0	0	2	2	1
23CAM2115	Python Programming Lab	P	0	0	2	2	1
23VAC103	Sports,Yoga and fitness	VAC	1	0	2	3	2
23CBM2117	Industry Session : BlockChain Essentials	P	0	0	2	2*	1
Total (Practical)			1	0	10	11	6
Skill Enhancement Course							
	Digital Marketing	SEC	0	0	2	2	1
23SS351	Effective Communication Skills	SEC	0	0	2	2	1
Total (Skill Enhancement)			0	0	4	4	2
Total (Theory + Practical+ Skill Enhancement)			15	1	14	30	23

**NOTE:** At the end of the semester, students will undergo a training and create a project which will be evaluated in the next semester (Live Project-I)

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**PROGRAMME COURSES STRUCTURE SEMESTER WISE**

**SEMESTER – IV**

COURSE CODE	COURSE	CATEGORY	HOURS PER WEEK				CREDITS
			L	T	P	TOTAL HOURS	
Theory							
23MDCxxx	Multidisciplinary Elective -I	MDC	3	0	0	3	3
23CAM2004	Cloud Application Development	PC	2	0	0	2	2
23CAF2006	Agile Development Methodology	PC	2	0	0	2	2
23CS2006	Operating Systems	PC	3	0	0	3	3
23CSPEXXX	Professional Elective-II	PE	3	1	0	4	4
23CSPEXXX	Professional Elective-III	PE	3	0	0	3	3
Total (Theory)			16	1	0	17	17
Practical							
23CAM2120	Cloud Application Development Lab	P	0	0	2	2	1
23CS2114	Operating Systems Lab	P	0	0	2	2	1
23CAF2118	Agile Development Lab	P	0	0	2	2	1
23CSPEXXX	Professional Elective-III Lab	PE	0	0	2	2	1
23CS0204	Live Project-I and Industrial Visit	LP	0	0	2	2*	1
Total (Practical)			0	0	10	9	5
Skill Enhancement Course							
	Introduction to SPSS	SEC	0	0	2	2	1
23SS452	Teamwork & Interpersonal Skills	SEC	0	0	2	2	1
Total (Skill Enhancement)			0	0	4	4	2
Total (Theory + Practical+ Skill Enhancement)			16	1	14	30	24

**NOTE: At the end of the semester, students will undergo a training and create a project which will be evaluated in the next semester (Live Project-II)**

**\*\* To be evaluated in current semester.**

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**DEGREE COURSE**

**PROGRAMME COURSES STRUCTURE SEMESTER WISE**

**SEMESTER – V**

COURSE CODE	COURSE	CATEGORY	HOURS PER WEEK				CREDITS
			L	T	P	TOTAL HOURS	
Theory							
23MDCXXX	Multidisciplinary Elective -II	MDC	3	0	0	3	3
23CSPE3001	Professional Elective-IV	PE	3	1	0	4	4
23CSPE3003	Professional Elective-V	PE	3	1	0	4	4
23CMF4003	Application & Cloud Security	PC	3	0	0	3	3
23CBM3001	Dockers and Kubernates	PC	2	0	0	2	2
Total (Theory)			14	2	0	16	16
Practical							
23CSPE3113	Professional Elective-V Lab	PE	0	0	2	2	1
23CSPE3117	Professional Elective-IV Lab	PE	0	0	2	2	1
23CMF4007	Application & Cloud Security Lab	P	0	0	2	2	1
23CBM3115	Dockers and Kubernates Lab	P	0	0	2	2	1
23CS0303	Live Project-II and Industrial Visit	LP**	0	0	2	2	1
Total (Practical)			0	0	10	10	5
Skill Enhancement Course							
	Introduction to Hardware Description Language	SEC	0	0	2	2	1
23SS553	Presentation Skills	SEC	0	0	2	2	1
Total (Skill Enhancement)			0	0	4	4	2
Total (Theory + Practical+ Skill Enhancement)			14	2	14	30	23

**NOTE:** At the end of the semester, students will undergo a training and create a project which will be evaluated in the next semester (Live Project-III)

**\*\* To be evaluated in current semester.**

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**DEGREE COURSE**

**PROGRAMME COURSES STRUCTURE SEMESTER WISE**

**SEMESTER – VI**

COURSE CODE	COURSE	CATEGORY	HOURS PER WEEK				CREDITS
			L	T	P	TOTAL HOURS	
Theory							
23MDCXXX	Multidisciplinary Elective -III	MDC	3	0	0	3	3
23CBM3002	IoT Based Application	PC	2	0	0	2	2
23CAF3010	NoSQL and MongoDB	PC	3	0	0	3	3
23CBM3014	Identity and Access Management	PC	2	0	0	2	2
23CSPEXXX	Professional Elective-VI	PE	3	0	0	3	3
23CSPEXXX	Professional Elective-VII	PE	3	1	0	4	4
Total (Theory)			16	1	0	17	17
Practical							
23CBM3116	IoT Based Application Lab	P	0	0	2	2	1
23CBM3120	Identity and Access Management Lab	P	0	0	2	2	1
23CSPEXXX	Professional Elective-VI lab	PE	0	0	2	2	1
23CAF3012	NoSQL and MongoDB Lab	P	0	0	2	2	1
23CS0304	Live Project-III and Industrial Visit	LP**	0	0	2	2(1*)	1
Total (Practical)			0	0	10	9	5
Skill Enhancement Course							
	Wearable Technologies	SEC	0	0	2	2	1
23SS654	Professional Skills	SEC	0	0	2	2	1
Total (Skill Enhancement)			0	0	4	4	2
Total (Theory + Practical+ Skill Enhancement)			16	1	14	30	24

**NOTE: At the end of the semester, students will undergo a training and create a project which will be evaluated in the next semester (Live Project-IV)**

**\*\* To be evaluated in current semester.**

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**DEGREE COURSE**

**PROGRAMME COURSES STRUCTURE SEMESTER WISE**

**SEMESTER – VII**

COURSE CODE	COURSE	CATEGORY	HOURS PER WEEK				CREDITS
			L	T	P	TOTAL HOURS	
Theory							
23CBF4003	Analytics Using IoT Data (Predictive Analytics)	PC	3	1	0	4	4
23CBM4005	Blockchain Development	PC	3	1	0	4	4
23CS4001	Deep Learning	PC	3	1	0	4	4
23CSPEXXX	Professional Elective-VIII	PE	3	1	0	4	4
Total (Theory)			12	4	0	16	16
Practical							
23CBF4007	Analytics Using IoT Data (Predictive Analytics) Lab	P	0	0	2	2	1
23CBM4009	Blockchain Development Lab	P	0	0	2	2	1
23CBM4011	Industry Session -Security Governance And Law	P	0	0	2	2*	1
23CS4115	Live-Project IV and Industrial Visit	LP**	0	0	2	2	1
23CS4117	Minor Project	LP	0	0	8	8*	4
Total (Practical)			0	0	16	12	8
Skill Enhancement Course							
23AR755	Aptitude and Reasoning	SEC	0	0	2	2	1
Total (Skill Enhancement)			0	0	2	2	1
Total (Theory + Practical+ Skill Enhancement)			12	4	18	30	25

**NOTE: \*\* To be evaluated in current semester.**



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**DEGREE COURSE**  
**PROGRAMME COURSES SRUCTURE SEMESTER WISE**

**SEMESTER – VIII**

COURSE CODE	COURSE	CATEGORY	HOURS PER WEEK				CREDITS
			L	T	P	TOTAL HOURS	
Practical							
23CS4114	Major Project*	LP/ SI	0	0	24**	24 **	12
Total (Theory + Practical+ Skill Enhancement)			0	0	24	24	24

\* To be monitored at the Institute Level

\*\*Teaching Load

### LIST OF ABILITY ENHANCEMENT COURSES

Course Code	Course	Category	L	T	P	Credits
23AEC101/23AEC151	Professional English/Communicative English Lab	AEC	2	0	2	3
23AEC102/ 23AEC103/ 23AEC104	Hindi-I/FRENCH-I/GERMAN-I	AEC	2	0	0	2
23AEC202/ 23AEC203/ 23AEC204	Hindi-II/ FRENCH-II/GERMAN-II	AEC	2	0	0	2

### LIST OF SKILL ENHANCEMENT COURSES

Course Code	Course	Category	L	T	P	Credits
<b>TECHNICAL TRAINING</b>						
	Digital Marketing	SEC	0	0	2	1
	Introduction to SPSS	SEC	0	0	2	1
	Introduction to Hardware Description Language	SEC	0	0	2	1
	Wearable Technologies	SEC	0	0	2	1
<b>SOFT SKILL</b>						
23SS351	Effective Communication Skills	SEC	0	0	2	1
23SS452	Teamwork & Interpersonal Skills	SEC	0	0	2	1
23SS553	Presentation Skills	SEC	0	0	2	1
23SS654	Professional Skills	SEC	0	0	2	1
23AR755	Aptitude and Reasoning	SEC	0	0	2	1

### LIST OF VALUE ADDED COURSES

Course Code	Course	Category	L	T	P	C
23VACXX	Environment Bioengineering	VAC	2	0	0	2
23VACXX	Indian Constitution and Polity	VAC	2	0	0	2
23VACXX	Sports, Yoga and Fitness	VAC	2	0	0	2

### LIST OF MULTIDISCIPLINARY COURSES (HUMANITIES & SOCIAL SCIENCES COURSES) (HSS)

Code	Category	Course	L	T	P	C
23MDCXXX/ 23MDCXXX/ 23MDCXXX/ 23MDCXXX/ 23MDCXXX	<b>MDC-I</b>	Statistical Methods				
		Environment Geoscience & Disaster Management				
		IPR in Business	3	0	0	3
		Library Information Science & Media Literacy				
		Management Process & Organizational Behaviour				
23MDCXXX/ 23MDCXXX/ 23MDCXXX/ 23MDCXXX/ 23MDCXXX	<b>MDC-II</b>	Photonics				
		Chemistry & Society				
		Psychology and Emotional Intelligence	3	0	0	3
		Indian Economy				
		Creating an Entrepreneurial Mind				
23MDCXXX/ 23MDCXXX/ 23MDCXXX/ 23MDCXXX	<b>MDC-III</b>	Life Sciences & Public Health				
		Electoral Literacy in India	3	0	0	3
		Personal Financial Planning				
		Interior Design				

## LIST OF DEPARTMENTAL ELECTIVE COURSES

### 1. Specialization - I

Elective	Course Code	Course	Category	L	T	P	C
I	23CSPE2007	Computer Architecture & Organization	PE	3	1	0	4
II	23CSPE2004	Theory of Computation	PE	3	1	0	4
III	23CSPE2008/23CSPE2118	Analysis and Design of Algorithms /Lab	PE	3	0	1	4
IV	23CSPE3001/23CSPE3117	Compiler Design/Lab	PE	3	1	1	5
V	23CSPE3003/23CSPE3113	Computer Networks/Lab	PE	3	1	1	5
VI	23CSPE3004/23CSPE3118	Software Engineering/Lab	PE	3	0	1	4
VII	23CSPE3030	Neural Networks & Fuzzy Logic	PE	3	1	0	4
	23CSPE3032	Cyber Security	PE	3	1	0	4
	23CSPE3038	Business Intelligence	PE	3	1	0	4
	23CSPE4037	NASSCOM Associate Analytics – II	PE	3	1	0	4
VIII	23CSPE4025	Data Warehousing & Data Mining	PE	3	1	0	4
	23CSPE4039	NASSCOM Associate Analytics – III	PE	3	1	0	4
	23CSPE3032	Cyber Security	PE	3	1	0	4
	23CSPE4019	Network Security & Cryptography	PE	3	1	0	4

### 2. Specialization - II

Elective	Course Code	Course	Category	L	T	P	C
I	23CSPE2007	Computer Architecture & Organization	PE	3	1	0	4
II	23CSPE2004	Theory of Computation	PE	3	1	0	4
III	23CSPE2008/23CSPE2118	Analysis and Design of Algorithms /ADA Lab	PE	3	0	1	4
IV	23CSPE3001/23CSPE3117	Compiler Design/Compiler Design Lab	PE	3	1	1	5
V	23CSPE3003/23CSPE3113	Computer Networks/Computer NetworksLab	PE	3	1	1	5
VI	23CSPE3004/23CSPE3118	Software Engineering/Lab	PE	3	0	1	4
VII	23CSPE3024	Software Project Management	PE	3	1	0	4

	23CSPE3028	Object Oriented Analysis & Design	PE	3	1	0	4
	23CSPE3034	Design Thinking	PE	3	1	0	4
VIII	23CSPE4033	Software Testing	PE	3	1	0	4
	23CSPE4031	Open Source Software	PE	3	1	0	4

### 3. Specialization - III

Elective	Course Code	Course	Category	L	T	P	C
I	23CSPE2007	Computer Architecture & Organization	PE	3	1	0	4
II	23CSPE2004	Theory of Computation	PE	3	1	0	4
III	23CSPE2008/ 23CSPE2118	Analysis and Design of Algorithms /Lab	PE	3	0	1	4
IV	23CSPE3001/ 23CSPE3117	Compiler Design/Lab	PE	3	1	1	5
V	23CSPE3003/23 CSPE3113	Computer Networks/Lab	PE	3	1	1	5
VI	23CSPE3004/ 23CSPE3118	Software Engineering/Lab	PE	3	0	1	4
VII	23CSPE3020	Distributed Operating System	PE	3	1	0	4
	23CSPE3026	Grid Computing	PE	3	1	0	4
	23CSPE3040	Internet of Things	PE	3	1	0	4
VIII	23CSPE4023	Wireless Adhoc and Sensor Network	PE	3	1	0	4
	23CSPE4035	Advanced Java Programming	PE	3	1	0	4
	23CSPE4027	Mobile Computing	PE	3	1	0	4