	0.			S.			*	
1	SRIIND	CIVILENCINEERING COLLEGE OF ENGINEERING utonomous Institution under UGC, New Choice Based Credit System (CBC) REGULATIONS					-	
	(4)	COLLE						
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	(	Choice by ENCH			-			_
		Basso Histitution		-	_		_	
		Cred Under US & TEC	HN	010	0	V		
T	IV YEAR IS	REGIN System OGC, New	De	hi	G	Y		
	IV YEAR I SEME	COLLEGE OF ENGINEERING utonomous Institution under UGC, New Choice Based Credit System (CBC) REGULATIONS - R18 STER	S)	,				
-	No. Course Code	ENGINE						
	1 RIAN	RING						
+	1 R18CIV4101	Estimation Course						1
+	2 R18CIV4102		RSE	STR	UC	TU	RE	
+	Ener 102		L	T	Ρ		redit	8
	3 R18CIV4131	Profession	3	1	-	-		-
	3 R18CIV4131 R18CIV4132	Remote Sensing and Electric	3		0		3	
1	R18CIV4132	I MERCHAN TOTAL TOTAL OF TOTAL	3	1	0		3	
1		L'invance Struct				-	_	
F		Professional Elective –IV Management C	3	1	0		3	
	R18MBA4101	Manager and Hydraudi Elective -IV					Ŭ	
-		Professional Elective –IV Irrigation and Hydraulic Structures Management Fundamentals For Engineers	-	100	-			
5	R18CIV4143	Ground and Ground and For	Hi	1G	2			
-		Open Elever Hydrolony	403	1	1	0	3	
6	R18CIV41P1	Industrial CX	1			1		
7	P190h	Engineers Ground water Hydrology Open Elective –II Industrial Oriented Mini Project/ Summer Seminar	3			0		
8	R18CIV41L1	Seminar	0	0		0	2	*
_0	R18CIV41P2	Project Stage - 1	-	+	+			
*	Takana	Total Credits	0	_	-	2	-	1
16	to be carried out durin	g the summer variation key	1	5 5		6	-	3
	annual submit report	Total Credits g the summer vacation between 8 <sup>th</sup> and 7 <sup>th</sup> semesters. of Industrial Oriented Mini Project/Summer Internation for evaluation.		-	- 1	0	1	21
	VYEAR II SEMES	The second se						
S.	I LANTIN SEIVES		upo	-				
10.	Course Code	Course Title	UNG	023	IR	UC	TUR	E
	1			L	T	F	P	Credits
	R18CIV4251	Professional Elective -V			-			
1	1 RIGUIV4251	Foundation Engineering			T	T	1	
1	1				1	1	0	3
1	R18CIV4252	Environmental Impact Assessment		3	10	1		
1	1	Air pollution		3		1	0	
1	R18CIV4252	Air pollution Professional Elective –VI		3		1	U	
1	R18CIV4252	Air pollution Professional Elective –VI		3		1		
1	R18CIV4252 R18CIV4253	Air pollution Professional Elective –VI Airports, railways and water ways	)	3		1	0	3
1	R18CIV4252 R18CIV4253 R18CIV4261	Air pollution Professional Elective –VI Airports, railways and water ways –	2			1		3
1	R18CIV4252 R18CIV4253 R18CIV4261 R18CIV4262	Air pollution Professional Elective –VI Airports, railways and water ways	2			1		3
1	R18CIV4252 R18CIV4253 R18CIV4261 R18CIV4262	Air pollution Professional Elective –VI Airports, railways and water ways – Intelligent Transportation Systems Urban Transportation Planning	2	3	1		0	3

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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ELECTRICAL & ELECTRONICS ENGINEERING

### SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution under UGC, New Delhi) Choice Based Credit System (CBCS)

REGULATIONS - R18

### B. Tech. ELECTRICAL & ELECTRONICS ENGINEERING

r	V YEAR I SEME	STER	COU	RSE		UCTUR
S. No.	Course Code	Course Title	L	т	P	Credits
1		Open Elective-II	3	0	0	3
		Professional Elective-III				
_	R18EEE4131	Digital Control systems			-	3
2	R18EEE4132	Optimization Techniques	3	0	0	5
	R18EEE4133	Electrical and Hybrid Vehicles				
		Professional Elective-IV				
	R18EEE4141	HVDC Transmission				3
3	R18EEE4142	Power System Reliability	3	0	0	3
	R18EEE4143	Industrial Electrical Systems		-	+-	1 2
4	R18MBA4101	Fundamentals of Management for Engineers	3	0	0	3
5	R18EEE41L1	Electrical & Electronics Design Lab	1	0	4	3
6	R18EEE41L2	Seminar	0	0	2	1
7	R18EEE41P1	Industrial Oriented Mini Project/ Summer Internship	0	0	4	
0	R18EEE41P2	Project Stage - 1	0	0		5 3
8	KI0EEE4112	Total Credits	13		) 1	6 2

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters. Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

		TETED	COU	RSE	ST		TURE
	YEAR II SEM		L	T	1	P	Credits
S. No.	Course Code	Open Elective-III	3	0		0	3
1		Professional Elective-V					
	R18EEE4251	Power Quality & FACTS					
2	R18EEE4252	Control System Design	3		0	0	3
4	R18CSE4265	AI Techniques in Electrical Engineering					
		Professional Elective-VI		-		_	1
3	R18EEE4261	Smart Grid Technologies		.	0	0	3
	R18EEE4262	Electrical Distribution Systems		3	0	0	5
	R18EEE4263	Advanced Control of Electric Drives			0	14	1 7
4	R18EEE42P1	Project Stage - II		0		1	
4		Total Credits		9	0	14	1 10

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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ELECTRONICS & COMMUNICATION ENGINEERING

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution under UGC, New Delhi)

# Choice Based Credit System (CBCS)

### **REGULATIONS – R18**

# B. Tech. ELECTRONICS & COMMUNICATION ENGINEERING

		P COURS	E STI	RU	CTUI	LE
	EAR I SEMESTE	K		T	P	Credits
S. No.	Course Code	Course Title	3	0	0	3
1	R18ECE4101	Microwave and Optical Communication	2	0	0	2
2		Professional Practice, Law & Ethics	4		1	
3		Professional Elective – III				
	R18ECE4131	Digital Image Processing	3	0	0	3
	R18ECE4132	Cryptography and Network Security				
	R18ECE4133	Artificial Intellengence (Al)				
4		Professional Elective – IV	3	0	0	3
	R18ECE4141	Cellular & Mobile Communications	1			
	R18ECE4142	Digital Signal Processing & Architecture				
	R18ECE4143	System on Chip Architecture	3	0	time to an a series	3
5		Open Elective - II	0	0	2	1
6	R18ECE41L1	Microwave & Optical Communications Lab	0	0	) 6	
7	R18ECE41P1	Project Stage - I Industrial Oriented Mini Project/ Summer Internship	0	(	) 0	2*
8	R18ECE41P2	Industrial Oriented Mini Project Summer me	0	1	0 2	other state and the state of th
9	R18ECE41L2	Technical Seminar	1	4	0 1	0 2
		Total Credits	7th se	eme	sters	

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation. COURSE STRUCTURE

### IV YEAR II SEMESTER

A STATE A STATE AND A STATE AN

$\frac{\mathbf{V} \mathbf{Y}}{\mathbf{S}}$	EAR II SEMESI	Course Title	L	Т	P	Credits
No.	Course Code	Professional Elective – V	-1			
1	R18ECE4251	Satellite Communications	3	0	0	3
	R18ECE4252	Low Power VLSI Wireless Sensor Networks		1		
2	R18ECE4253	Drofessional Elective - VI		T	The second	
2	R18ECE4261	Wireless Communication & Networks Electronic Product Design & Packaging	3	0	0	3
	R18ECE4262 R18ECE4263	Radar Systems	3	10	0	3
3	KISECE4205	Open Elective - III	(		) 14	and the second second
4	R18ECE42P1	Project Stage - II Total Credits	9	) (	) 14	4 16

\*MC - Satisfied/Unsatisfied

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SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

Page



(An Autonomous Institution under UGC, New Delhi)

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# BACHELOR OF TECHNOLOGY CIVIL ENGINEERING

CHOICE BASED CREDIT SYSTEM (CBCS) ACADEMIC REGULATIONS, COURSE STRUCTURE AND SYLLABI FOR I TO IV YEARS – I & II SEMESTERS UNDER AUTONOMOUS STATUS FOR THE BATCHES ADMITTED FROM THE ACADEMIC YEAR 2022 – 23

B.Tech. Regular Four Year Degree Programme (For the batches admitted from the academic year 2022–23)

8.

B.Tech. (Lateral Entry Scheme) (For the batches admitted from the academic year 2023 - 24)

Note: The regulations here under are subject to amendments as may be made by the Academic Council of the College from time to time. Any or all such amendments will be effective from such date and to such batches of candidates (including those already undergoing the program) as may be decided by the Academic Council.

#### BR22 - B.TECH. - CIVIL ENGINEERING

## SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution under UGC, New Delhi)

### Choice Based Credit System (CBCS)

#### **REGULATIONS - BR22**

### B. Tech. CIVIL ENGINEERING

#### IV YEAR I SEMESTER

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## COURSE STRUCTURE

S. No.	Course Code	Course Title	L	T	P	Credits
1.	R22CIV4111	Quantity Survey & Valuation	2	0	0	
2.	R22CIV4112	Project Management	2	0	0	2
	Professional El	ective – II				+2
3.	R22CIV4141	Prestressed Concrete Structures	3	0	0	+
	R22CIV4142	Elements of Earth Quake Engineering				3
	R22CIV4143	Finite Element Analysis				
	Professional Ele	ective – III				
4.	R22CIV4144	Remote Sensing &GIS	3	0	0	
	R22CIV4147	Ground Improvement Techniques			10	3
	R22CIV4146	Advance Structural Analysis		+	+	
	Professional Ele	ective - IV	+		+	
5.	R22CIV4148	Irrigation and Hydraulic Structures	3	0	+	
	R22CIV4149	Theory of Elasticity	+-	10	0	) 3
	R22CIV4145	Ground water Hydrology	+	+		
6.	<b>Open Elective -</b>		3	10		
7.	R22CIV4127	Civil Engineering Software Laboratory		0		0
8.	R22CIV4168	Project Stage - I	0	0		2
	1020111100		0	0		6
		Total Credi	ts 16	(		8

#### **IV YEAR II SEMESTER**

### COURSE STRUCTURE

S. No.	Course Code	Course Title	L	T	P	Credits
	Professional Ele	ective – V	-			
1.	R22CIV4243	Advanced Foundation Engineering	3	0	0	3
	R22HAS4241	Environmental Impact Assessment				
	R22CIV4241	Air pollution				
	Professional Ele	ective - VI				
2.	R22CIV4246	Airports, railways and water ways	3	0	0	3
	R22CIV4244	Intelligent Transportation Systems				
	R22CIV4245	Urban Transportation Planning				
3.	<b>Open Elective -</b>	III	3	0	0	3
4.	R22CIV4264	Project Stage – II including seminar	0	0	22	9+2
		Total Credits	9	0	22	2 20

\*MC - Satisfactory/Unsatisfactory

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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BR22 - B.TECH. - ELECTRICAL & ELECTRONICS ENGINEERING

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution under UGC, New Delhi)

# **Choice Based Credit System (CBCS)**

**REGULATIONS – BR22** 

**B.** Tech. - Electrical & Electronics Engineering

# IV YEAR I SEMESTER

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S. No	. Course Code	COUR	SE ST	RU	CTU	RE
1	R22EEE4111	Course Title	L	T	PI	Credits
		Energy Systems	3	1	0	4
2	<b>Open Elective</b>	e-11				
3	Professional I	Elective-III	3	0	0	3
	R22ECE2114	Signals and Systems	3	0	0	3
	R22CSE3247	Mobile Application Development				
	R22EEE4141	Electric and Hybrid Vehicles				
4	Professional E	lective-IV			1	
	R22CSE4114	Embedded Applications	3	0	0	3
	R22EEE4142	HVDC Transmission				
	R22EEE4143	Power System Reliability				
5	R22HMS4115	Fundamentals of Management for Engineers				
6	R22EEE4126	Simulation of Renewable Energy Systems	2	0	0	2
	N22EEE4126	Laboratory	0	0	4	2
7	R22EEE4167	Project Stage - I				
			0	C	) (	5 3
		Total Credits	14	1	1	0 20

## **IV YEAR II SEMESTER**

### **COURSE STRUCTURE**

	S. No.	Course Code	Course Title				RE
	1	Open Electiv	ve-III	L	T	PC	Credits
	2	Professional		3	0	0	3
		R22EEE4241	AI Techniques in Electrical Engineering	3	0	0	3
		R22EEE4244	Power Quality & FACTS				
L		R22EEE4245	Control Systems Design				
	3	Professional	Elective-VI				
	L	R22EEE4248	Advanced Control of Electric Drives	3	0	0	3
		R22EEE4247	Electrical Distribution Systems	-			
	1	R22EEE4243	Smart Grid Technologies	-			
	4   F	R22EEE4264	Project Stage – II including Seminar	10			
				0	0	22	9+2
*M	C – Satisf	factory/Unsatisfa	Total Credit	s 9	0	22	2 20

MC – Satisfactory/Unsatisfactory

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(An Autonomous Institution under UGC, New Delhi)

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# BACHELOR OF TECHNOLOGY ELECTRONICS & COMMUNICATION ENGINEERING

# CHOICE BASED CREDIT SYSTEM (CBCS) ACADEMIC REGULATIONS, COURSE STRUCTURE AND SYLLABI FOR I TO IV YEARS – I & II SEMESTERS UNDER AUTONOMOUS STATUS FOR THE BATCHES ADMITTED FROM THE ACADEMIC YEAR 2022 – 23

B.Tech. Regular Four Year Degree Programme (For the batches admitted from the academic year 2022–23) gy He

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B.Tech. (Lateral Entry Scheme) (For the batches admitted from the academic year 2023 - 24)

Note: The regulations here under are subject to amendments as may be made by the Academic Council of the College from time to time. Any or all such amendments will be effective from such date and to such batches of candidates (including those already undergoing the program) as may be decided by the Academic Council.

BR22 - B. rech. - Electronics & Communication Engineering

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

### (An Autonomous Institution under UGC, New Delhi) Choice Based Credit System (CBCS)

**REGULATIONS - BR22** 

# B. Tech. ELECTRONICS & COMMUNICATION ENGINEERING

# IV YEAR I SEMESTER

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### COURSE STRUCTURE

S. No.	Course Code	Course Title	- 1		-		
1	R22ECE4111	Microwave and Ontin 1 G	L	T	P	Cr	edits
2	Professional	Course Title           Microwave and Optical Communications           Elective – III	3	1	0		4
	R22ECE4146	Digital Image Processing					
	R22ECE4145	CIVILIS Analas ICID :					
	R22ECE4142	Aluncial Neural Nature 1	3	0	0		3
3	Professional	Elective – IV			1		2
	R22CSE4111	Cryptography and Network Security					
	R22ECE4143	Datchille Communication	1				
j	R22HAS4143	Biomedical Instrumentation	3	0		0	3
4	<b>Open Electiv</b>	e – 11		-	_		
5 I	R22HAS4126	Professional Practice, Law & Ethics	3	(		0	3
6 H	222ECE4126	Thosessional Practice, Law & Ethics	0	1 (	) (	4	2
0 1	X22ECE4126	Microwave and Optical Communications	0		01	4	2
		Laboratory					-
7 F	R22ECE4167		10		0	6	3
		Total Credits		2	1	14	20

### **IV YEAR II SEMESTER**

#### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	T	P	Cre	dits
	Professional El	ective – V					
1	R22CSM4143	Artificial Intelligence				+	
	R22ECE4244	Wireless Communication & Networks	3	0	0		3
	R22CSM3112	Machine learning	1				5
	Professional Ele	ective – VI			1		
2	R22ECE4245	Radar Systems		1	1	1	
	R22ECE4242	System on Chip Architecture	3	0	(	)	3
	R22ECE4243	Wireless sensor Networks					
3	<b>Open Elective</b> –	· III	3	1	D	0	3
4	R22ECE4264	Project Stage – II including Seminar	0		0 2	22	9+2
		Total Credits	(	)	0	22	20

\*MC - Satisfactory/Unsatisfactory

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SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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(An Autonomous Institution under UGC, New Delhi)

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# MECHANICAL ENGINEERING

CHOICE BASED CREDIT SYSTEM (CBCS) ACADEMIC REGULATIONS, COURSE STRUCTURE AND SYLLABI FOR I TO IV YEARS – I & II SEMESTERS UNDER AUTONOMOUS STATUS FOR THE BATCHES ADMITTED FROM THE ACADEMIC YEAR 2022 – 23

B.Tech. Regular Four Year Degree Programme (For the batches admitted from the academic year 2022–23)

B.Tech. (Lateral Entry Scheme) (For the batches admitted from the academic year 2023 - 24)

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Note: The regulations here under are subject to amendments as may be made by the Academic Council of the College from time to time. Any or all such amendments will be effective from such date and to such batches of candidates (including those already undergoing the program) as may be decided by the Academic Council.



BR22 - B.Tech. - Mechanical Engineering

### SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution under UGC, New Delhi) Choice Based Credit System (CBCS)

#### **REGULATIONS - BR22**

### B. Tech. Mechanical Engineering

IV YEAR I SEMESTER

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#### COURSE STRUCTURE.

S. No	. Course Code	Course Title	L	T	P	Cre	dits	
1.	D221 (ED4111	Industrial Management	2	0	0		2	
2.	R22MED4112	Refrigeration & Air Conditioning	3	0	0		3	
3.	Professional	Elective – II	3	0	0		3	1
	R22CSM4142	Artificial Intelligence in Mechanical Engineering						
	R22MED4141	Industrial Robotics						
1	R22MED4142	Mechatronics	-					
-	R22MED4143 Professional 1	Automobile Engineering	3	10	-	0	3	
4.	Protessional	Composite Materials		1 .			3	
	R22MED4149	Computational Fluid Dynamics	-					
	P22MED4145	Production Planning & Control	1					
	R22MED4147	Solar Energy Technology						
5.	Professional I	Elective - IV	3		0	0	3	
	R22MED4149	Renewable Energy Sources		1				
	R22MED4148	Fundamentals of Electric and Hybrid Vehicles						
		Re-Engineering						
		Operations Research						
6.	Open Elective			3	0	0		3
7.		Project Stage - I		0	0	6	1	3
		Total Credits		17	0	6		20
IV YE	AR II SEMES	TER COURS	E ST	RU	CTI	JRE		
S. No.	Course Code	Course Title	1	-	T	Ρ	Cred	lits
-	Professional H	Elective – V		3	0	0		3
Ť	R22MED4248	Energy Conservation and Management						
t	R22MED4241	Additive Manufacturing						
t.	R22MED4242	Automation in Manufacturing				1		
H	D22MED4243	Turbo Machinery						
	Professional E			3	0	0		3
1				-		10		2
-		Fluid Power System	_					
1	R22MED4245	Fuzzy Logic and ANN						
F	22MED4246	Industry 4.0						
F	22MED4247	Total Quality Management						
1-	Open Elective			3	(	)	0	3
D	22MED4264	Project Stage – II including seminar		0			22	9-
K	22IVILD4204	Tiolest profes It material seminar		-				-

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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**Total Credits** 

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# BR22 – B.TECH. – COMPUTER SCIENCE & ENGINEERING

### III YEAR II SEMESTER

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#### COURSE STRUCTURE

S. No.	cour	Course Title	L	T	P	Cri	edits
1	R22CSM3112	Machine Learning	3	0	0	- CAI	3
2	R22CSE3212	Formal Languages and Automata Theory	3	0	0	1	3
3	R22CSM4143	Artificial Intelligence	3	0	0		3
4	Professional F		3	0	0		3
	R22CSE3246	Web Technologies					
	R22CSO4143	Internet of Things					
	R22CSE3248	Scripting Languages					
	R22CSE3247	Mobile Application Development					
	R22CSE3244	Software Testing Methodologies					
5	<b>Open Elective</b>	-I	3	C		0	3
6	R22CSM3126	Machine Learning Lab	0	(		2	1
7	Professional Elective-III Lab			1	0	2	1
	R22CSE3252	Scripting Languages Lab					
	R22CSE3253	Software Testing Methodologies Lab					
	R22CSE3257	Web Technologies Lab					
	R22CSE3258	Mobile Application Development Lab					
	R22CSO2128	Internet Of Things Lab					
8	DOCCEDOCO	Industrial Oriented Mini Project/ Internship	1 (	0	0	4	2
	R22CSE3268	Skill Development Course (Big data-Spark)					
9	R22MAC1110	Environmental Science		3	0	0	0
		Total Credit	S ]	18	0	8	20

RI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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# BR22 – B.TECH. – COMPUTER SCIENCE & ENGINEERING

### III YEAR II SEMESTER

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L

#### COURSE STRUCTURE

S. No.	cour	Course Title	L	T	P	Cri	edits
1	R22CSM3112	Machine Learning	3	0	0	- CAT	3
2	R22CSE3212	Formal Languages and Automata Theory	3	0	0	1	3
3	R22CSM4143	Artificial Intelligence	3	0	0		3
4	Professional F		3	0	0		3
	R22CSE3246	Web Technologies					
	R22CSO4143	Internet of Things					
	R22CSE3248	Scripting Languages					
	R22CSE3247	Mobile Application Development					
	R22CSE3244	Software Testing Methodologies					
5	<b>Open Elective</b>	-I	3	C		0	3
6	R22CSM3126	Machine Learning Lab	0	(		2	1
7	Professional Elective-III Lab			1	0	2	1
	R22CSE3252	Scripting Languages Lab					
	R22CSE3253	Software Testing Methodologies Lab					
	R22CSE3257	Web Technologies Lab					
	R22CSE3258	Mobile Application Development Lab					
	R22CSO2128	Internet Of Things Lab					
8	DOCCEDOCO	Industrial Oriented Mini Project/ Internship	1 (	0	0	4	2
	R22CSE3268	Skill Development Course (Big data-Spark)					
9	R22MAC1110	Environmental Science		3	0	0	0
		Total Credit	S ]	18	0	8	20

RI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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#### MR22 - M.TECH - (CSE & CS)

#### SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY (An Autonomous Institution under UGC, New Delhi) Chains Based Credit System (CBCS)

Choice Based Credit System (CBCS)

#### **REGULATIONS – MR22**

### <u>M.Tech. (CSE & CS)</u> COURSE STRUCTURE AND SYLLABUS

IIY					RSE STRUCTU					
Sl.No.	Course Code	Course Title	L	T	P	Credits				
1	ProfessionalI	Elective - V								
		Digital Forensics	3	0	0	3				
		High Performance Computing	_							
		Quantum Computing		10	10	13				
2	<b>Open Electiv</b>	e		10	110	6				
3		Dissertation Work Review - II	(	0	14					
		Total	(	) 0	11	2 12				

### COURSE STRUCTURE

	Course Code			L	T	P	Credits
1		Dissertation Work Review - III		0	0	12	6
2		Dissertation Viva-Voce	•	0	0	28	14
		Total		0	0	40	20

Note: For Dissertation Work Review - I, Please refer 7.10 in R19 Academic Regulations.

### Audit Course I&II:

- 1. English for Research Paper Writing
- 2. Disaster Management
- 3. Sanskrit for Technical Knowledge
- 4. Value Education
- 5. Constitution of India
- 6. Pedagogy Studies
- 7. Stress Management by yoga
- 8. Personality Development Through Life Enlightenment Skills

### **Open Electives for other Departments:**

- 1. IPR
- 2. Fault Tolerance Systems
- 3. Intrusion Detection Systems
- 4. Digital Forensics
- 5. Optimization Techniques
- 6. Cyber Physical Systems
- 7. Graph Analytics
- 8. Blockchain Technology

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### CIVIL ENGINEERING

# LIST OF OPEN ELECTIVES

### **Open Elective – I**

S. No.	Course Code	Course Title	L	T	P	Credit
1	R20CIV3271	Disaster Management & Mitigation				
2	R20CSE3272	Database Concepts				
3	R20ECE3273	Consumer Electronics				
4	R20EEE3274	Electrical Estimation & Costing	3	0	0	
5	R20INF3275	Information Technology Essentials	5	U	U	3
5	R20MED3276	Introduction to Robotics				
1	R20HMS3277	Fundamentals of Entrepreneurship				
	R20HMS3278	Day to Day Biology				

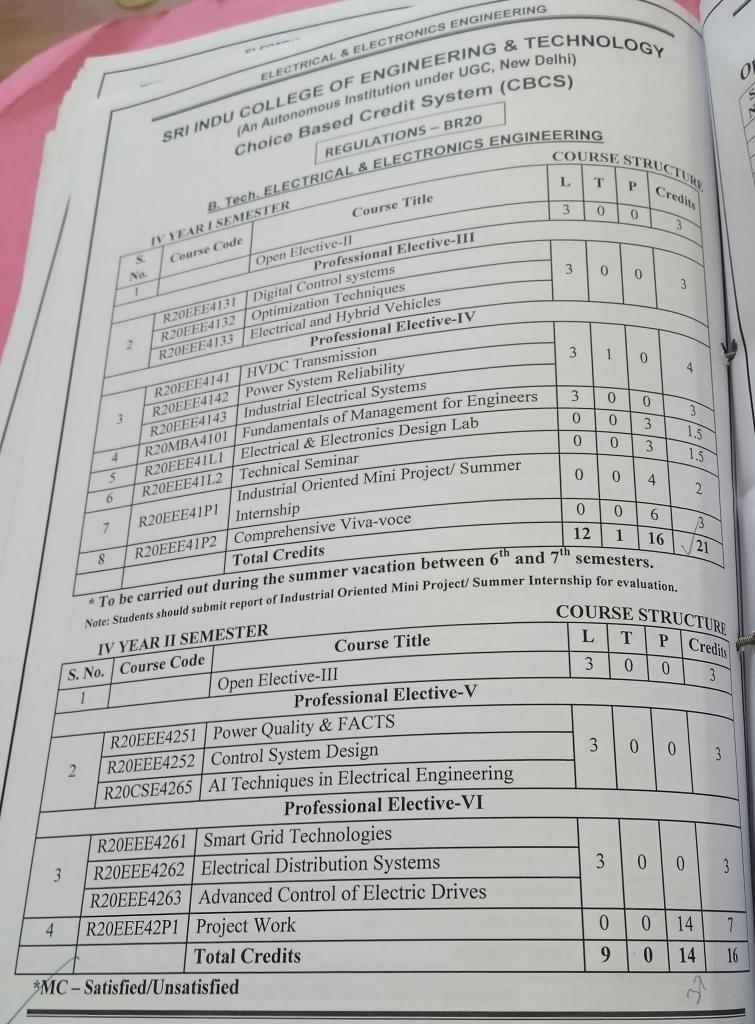
# **Open Elective –II**

	S No	Common Code	Course Title	L	T	P	Credits
	1	R20CIV4181	Green Building Engineering				orcuits
1	2	R20CSE4182	Cyber Security Fundamentals	1			
	3	R20ECE4183	Principles of Modern Communication Systems				
L	4	R20EEE4184	Illumination Engineering	-			
L	5	R20INF4185	E-Commerce	- 3	0	0	3
	6	R20MED4186	Industrial Design & Ergonomics	-			3
	7	R20HMS4187	Creative Writing	-			
	8	R20HMS4188	Design Thinking	-			
9	).		MOOCs - III	-			

# **Open Elective –III**

	No.	Common Code	Course Title	L	Т	Р	Credits
	1	R20CIV4291	Remote Sensing Concepts			-	Creans
	2	R20CSE4292	Fundamentals of Soft Computing				
L	3	R20ECE4293	Audio & Video Engineering			,	
L	4	R20EEE4294	Non Conventional Energy Resources				
	5	R20INF4295	Information Security Fundamentals				
	6	R20MED4296	Total Engineering Quality Management	3	0	0	3
	7	R20HMS4297	Human Values & Professional Ethics for				
			Engineers				
8	3	R20HMS4298	Science Fiction				
9			MOOCs - IV				

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOCY (AUTONOMOUS)



SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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Choice Based Credit System (CBCS)

### **REGULATIONS - BR20**

## B. Tech. MECHANICAL ENGINEERING

and and a subscription of the subscription of	RISEMESTER	COURSE ST				Credit
S. No.	Course Code	Course Title		T	P	
1	R20MED4101	Refrigeration & Air Conditioning	3	0	0	3
		Professional Elective – II				
	R20MED4121	Additive Manufacturing				3
2	R20MED4122	Automation in Manufacturing	3	0	0	3
	R20MED4123	Micro Electro Mechanical Systems (MEMS)				
	A	Professional Elective – III				1
	R20MED4131	Power Plant Engineering		*		
3	R20MED4132	Automobile Engineering	3	0	0	3
	R20MED4133	Renewable Energy Sources				
		Professional Elective – IV				
	R20MED4141	Computational Fluid Dynamics				
4	R20MED4142	Turbo Machinery	3	0	0	3
	R20MED4143	Fluid Power Systems				
5		Open Elective - II	3	0	0	
6	R20MED41L1	Technical Seminar	0	0	2	
7	R20MED41P2	Comprehensive Viva-voce	0	0	6	
8	R20MED41P1	Industrial Oriented Mini Project/ Summer Internship	0	0	0	2
		Total Credits	15	0	18	8 2

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for valuation.

### IV YEAR II SEMESTER

3V

#### COURSE STRUCTURE

YEAR II SEMESTER COURSE STRUCTURE									
Course Code	Course Title	L	T	P	Credits				
	Professional Elective – V								
R20MED4251	Industrial Robotics								
R20MED4252	Mechanical Vibrations	3	0	0	3				
R20MED4253	Composite Materials								
Professional Elective – VI									
R20MED4261	Industrial Management								
R20MED4262	Production Operation and Management	3	0	0	3				
R20MED4263	Tribology In its place, Nano								
	Open Elective - III rechnology and	3	0	0	3				
R20ECE42P1	Project Work Applications	0	0	14	7				
	Total Credits way be added	9	0	14	4 16				
	Course Code R20MED4251 R20MED4252 R20MED4253 R20MED4261	Course CodeCourse TitleProfessional Elective – VR20MED4251Industrial RoboticsR20MED4252Mechanical VibrationsR20MED4253Composite MaterialsR20MED4253Composite MaterialsProfessional Elective – VIR20MED4261Industrial ManagementR20MED4262Production Operation and ManagementR20MED4263Tribology In Its Place, MarOOpen Elective - IIIProduction of the place of the placeR20ECE42P1Project Work	Course CodeCourse TitleLProfessional Elective – VR20MED4251Industrial RoboticsR20MED4252Mechanical VibrationsR20MED4253Composite MaterialsComposite Materials3Professional Elective – VI1R20MED4261Industrial ManagementR20MED4262Production Operation and ManagementR20MED4263Tribology – In 145 Place, MartoOpen Elective - IIIAppLicationsR20ECE42P1Project WorkProject WorkAppLicationsOpen Licetive0	Course CodeCourse TitleLTProfessional Elective – VR20MED4251Industrial Robotics30R20MED4252Mechanical Vibrations30R20MED4253Composite Materials30Professional Elective – VIR20MED4261Industrial Management30R20MED4262Production Operation and Management30R20MED4263Tribology – In Tes Place, Marto30R20MED4264Project WorkApplications30	Course CodeCourse TitleLT'PProfessional Elective – VR20MED4251Industrial Robotics300R20MED4252Mechanical Vibrations300R20MED4253Composite Materials300Professional Elective – VIR20MED4261Industrial Management300R20MED4262Production Operation and Management300R20MED4263Tribology – In 145 Pace, Nano300R20MED4263Project WorkApplications300				

### \*MC – Satisfied/Unsatisfied

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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		COMPUTER SCIENCE & ENGINEERING					
SF	(An /	LLEGE OF ENGINEERING & TEC Autonomous Institution under UGC, New Delh Dice Based Credit System (CBCS	IJ	OL	-0	GΥ	
		<b>REGULATIONS – BR20</b>					
	рт	ach COMPLITER SCIENCE & ENGINEERIN	G				
****			RSE	ST!	RU	CTU	RE
	Product of the second		L	and the second second		Cr	edits
<u>S. No.</u>		Crumtography and Network Security					3
1		Data Mining	and the second sec				3
	Professional E		3	0			5
5			4				
		Information Retrieval Systems	4				
			4				
			12	10		$\frac{1}{2}$	3
4			$-1^{3}$				2
			-				
		Internet of Things	-				
		Software Process & Project Management	12	+	0	0	3
5		Open Elective - II	-	+	-	-	1
	R20CSE41L1	Cryptography and Network Security Lab				$\frac{2}{2}$	1
	R20CSE41P1	Technical Seminar					3
8	R20CSE41P2	Comprehensive Viva-voce	_	-+		6	
REGULATIONS – BR20B. Tech. COMPUTER SCIENCE & ENGINEERINGCOURSE TOURSE TOURSET TOURSET TOURSET TOURS TOURSET TOURSET TOURS TOURSET TOURSET TOURSET TOURSET TOURSET TOURSET TOURSET TOURSET TOURSETTOURS TOU		0	2*				
,	10000001110	Internship			0	10	21
				4	U	10	41

\* To be carried out during the summer vacation between 6th and 7th semesters Note: Students should submit report of Industrial Oriented Mini Project/Summer Internship for evaluation.

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### COURSE STRUCTURE

IV YE.	AR II SEMEST		T	T	P	Credits
S. No.	<b>Course Code</b>	Course Title	2	0	0	3
1	R20HAS4201	Organizational Behaviour	2	0	0	3
2	Professional E	lective -VI	3	0	0	
2	R20CSE4261	Distributed Systems				
	R20CSE4262	Cyber Forensics	-			
	R20CSE4263	Human Computer Interaction	4			
	R20MAC4200	MOOCs-IV	1_	+	+	1 2
2	TC OT A STATE	Open Elective-III	3	1		3
<u>з</u> Л	R20CSE42P1	Project Work	0		0 1	4 7
4		Total Credits	19	)	0 1	4 16
		10000 0100000				

\*MC – Satisfied/Unsatisfied

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BR20 - B.TECH. -CSE (INTERNET OF THINGS (IoT))

### **LIST OF OPEN ELECTIVES**

# **Open Elective – I**

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S. No.	Course Code	Course Title	L	T	P	Credit s
1	R20CIV3271	Disaster Management & Mitigation				
2	R20CSE3272	Database Concepts				
3	R20ECE3273	Consumer Electronics				
4	R20EEE3274	Electrical Estimation & Costing	3	0	0	3
5	R20INF3275	Information Technology Essentials				
6	R20MED3276	Introduction to Robotics				
7	R20HMS3277	Fundamentals of Entrepreneurship				
8	R20HMS3278	Day to Day Biology				

# **Open Elective – II**

S. No.	Course Code	Course Title	L	T	P	Credit s
1	R20CIV3271	Disaster Management & Mitigation				
2	R20CSE3272	Database Concepts	1			
3	R20ECE3273	Consumer Electronics	1			
4	R20EEE3274	Electrical Estimation & Costing	3	0	0	3
5	R20INF3275	Information Technology Essentials				
6	R20MED3276	Introduction to Robotics				
7	R20HMS3277	Fundamentals of Entrepreneurship				
8	R20HMS3278	Day to Day Biology				

# **Open Elective – III**

S. No.	Course Code	Course Title	L	T	P	Credits
1	R20CIV4291	Remote Sensing Concepts				
2	R20CSE4292	Fundamentals of Soft Computing	-			
3	R20ECE4293	Audio & Video Engineering				
4	R20EEE4294	Non Conventional Energy Resources				
5	R20INF4295	Information Security Fundamentals	3	0	0	3
6	R20MED4296	Total Engineering Quality Management	1			
	DA0773 (0 1005	Human Values & Professional Ethics for				
7	R20HMS4297	Engineers				
8	R20HMS4298	Science Fiction				

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BR20 - B.TECH. -CSE (INTERNET OF THINGS (IoT))

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution under UGC, New Delhi)

# Choice Based Credit System (CBCS)

# **REGULATIONS – BR22**

# B. Tech. CSE ( INTERNET OF THINGS )

COURSE STRUCTURE

IV VE	AR I SEMES	TER	COORE	T	1 161	UCIU	RE
S. No.	Course Code	Course Title	L	7		PC	redit
	Code	IoT Cloud Processing and Analytics	3	1	0	0	3
1		IoT Security	2		0	0	2
2		Ioi Security					
3	Professional	Quantum Computing	3		0	0	3
		Windless Networks					
		Augmented Reality & Virtual Reality					
		IoT Automation					
		Ad-hoc & Sensor Networks					
4	Professional 1	Elective - V					or the sector and columns
+ F	10103101111	Embedded Software Design	3		0	0	3
		5G & IoT Technologies					
		Cognitive Computing					
		Distributed Systems					
		Edge Computing		_			
5	Open Electiv		3	5	0	0	-
6	open street	IoT Security & Cloud Computing Lab	(	)	0	2	
7		Industrial Oriented Mini Project / Summer	r (		0	0	
·		Internship					
3		Seminar		0	0	2	
,		Project Stage - I		0	0	6	
		Total Credits	1	.4	0	10	

#### IV YEAR II SEMESTER

# COURSE STRUCTURE

S. No.	Course Code	Course Title	L	T	P	Credit
1		Organizational Behaviour	3	0	0	3
2	Professional E	lective – VI	 			
		Industrial IoT	3	0	0	3
		Fog Computing	2			
		Smart Sensor Technologies				
		Digital Forensics				
		Blockchain Technology				
3	<b>Open Elective</b>		 2	10		
4		Project Stage – II	 3	0	0	3
		Total Credits	0	0	14	7
	]	Total Creuits	9	0	14	16

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

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### **Choice Based Credit System (CBCS)**

### **REGULATIONS – BR20**

### **B. Tech. - INFORMATION TECHNOLOGY**

#### IV YEAR I SEMESTER

#### COURSE STRUCTURE

S. No.	Course Code	Course Title	L	т	Р	Credits	s
1	R20INF4101	Information Security	3	0	0	3	
2	R20CSE4102	Data Mining	2	0	0	2	
	Professional E		3	0	0	3	
3	R20INF4142	Pattern Recognition					
	R20CSE4143	Cloud Computing					
	R20INF4141	Adhoc Sensor Networks					
	R20MAC4100						
	Professional El		3	0	0	3	
4	R20CSE4152	Internet of Things					
4	R20CSE3123	Distributed Databases					
	R20CSE4153	Software Process & Project Management					
5		Open Elective-II	3	0			6
6	R20INF41L1	Information Security Lab	0	C			1
7	R20INF41P1	Technical Seminar	0	(		2	1
8	R20INF41P2	Comprehensive Viva-voce	0	(		-	3
9	R20INF41P3	Industrial Oriented Mini Project/ Summer	0	1	C	0	2*
		Internship					
		Total Credit	ts 14	1	0	10	21

#### IV YEAR II SEMESTER

#### COURSE STRUCTURE

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S. No.	Course Code	Course Title	L	Т	Р	Credits	
1	R20HAS4201	Organizational Behaviour	3	0	0	3	
	Professional E	Elective –VI	3	0		3	
_	R20CSE4261	Distributed Systems					
2	R20CSE4262	Cyber Forensics					
	R20CSE4263	Human Computer Interaction					
I	R20MAC4200	MOOCs-IV					
+		Open Elective-III	3	0	0	3	
	R20INF42P1	Project Work	0	(	) 14	4	
+		Total Credits	9	1	) 1	4 1	

# Choice Based Credit System (CBCS)

### **REGULATIONS - BR20**

# B. Tech. - COMPUTER SCIENCE & INFORMATION TECHNOLOGY

### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

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S. No.	Course Code	Course Title	L	Т	Р	Credits
1	R20INF4101	Information Security	3	0	0	3
2	R20CSE4102	Data Mining	2	0	0	2
	Professional I	Elective –IV	3	0	0	3
	R20INF4142	Pattern Recognition				
3	R20CSE4143	Cloud Computing				
	R20INF4141	Adhoc Sensor Networks				
	R20MAC4100	MOOCs-III				
	Professional E	lective –V	3	0	0	3
	R20CSE4152	Internet of Things				
4	R20CSE3123	Distributed Databases				
	R20CSE4153	Software Process & Project Management				
5		Open Elective-II	3	0	0	3
6	R20INF41L1	Information Security Lab	0	0	2	1
7	R20INF41P1	Technical Seminar	0	0	2	1 1
8	R20INF41P2	Comprehensive Viva-voce	0	0	6	3
9	R20INF41P3	Industrial Oriented Mini Project/ Summer Internship	0	0	0	2
		Total Credits	14	0	10	

### IV YEAR II SEMESTER

### COURSE STRUCTURE

S. No.	Course Code	Course Title	L	T	P	Credits
1	R20HAS4201	Organizational Behaviour	3	0	0	2
	<b>Professional E</b>	lective –VI	3	0	0	3
	R20CSE4261	Distributed Systems	5	0	0	3
2	R20CSE4262	Cyber Forensics				
	R20CSE4263	Human Computer Interaction				
]	R20MAC4200	MOOCs-IV				
3		Open Elective-III				
4		Project Work	3	0	0	3
		Total Credits	0	0	14	7
			9	0	14	16

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### Choice Based Credit System (CBCS)

### **REGULATIONS – BR20**

### B. Tech. CSE(CYBER SECURITY)

#### IV YEAR I SEMESTER

### COURSE STRUCTURE

S. No.	Course Code		L	Т	Р	Cre	dit
1	R20CSC4101	Vulnerability Assessment & Penetration Testing	3	0	0		3
2	R20CSC4102	Network Management Systems and Operations	2	0	0		2
3	Professional E	Clective - IV					
ener Transformiertaume	R20CSC4109	Edge Analytics	3	0	0		3
ngerffineenecturespectromist	R20CSC4105	Web & Database Security					
	R20CSC4108	Computer Security & Audit Assurance					
	R20CSC4105	Social Media Security					
	R20CSM4101	Deep Learning					
4	Professional E	lective - V	10				
	R20CSE4102	Quantum Computing	3	<u> </u>		0	3
	R20CSC4106	Data Analytics for Fraud Detection		_			
	R2041CSC04	5G Technologies					
	R20INF4104	Security Incident & Response Management					
		(SOC)					
	R20CSC4104	Authentication Techniques					
5	<b>Open Elective</b>	- 11	3		0	0	3
	R20CSC41L1	Vulnerability Assessment & Penetration Testing	0		0	2	1
		Lab			0		1
7 F	R20CSC41P1	Technical Seminar			0	2	1
	20CSC41P2	Comprehensive Viva-voce	0		0	6	3
R	20CSC41P3	Industrial Oriented Mini Project / Summer	(	C	0	0	
		Internship					1
		Tot	al 1	4	0	10	

### IV YEAR II SEMESTER

### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	T	Р	Credit s		
1	R20HMS420	Organizational Behavior	3	0	0	3		
2	Professional Elective – VI							
	R20CSE4202	Quantum Cryptography	3	0	0	3		
	R20CSO4204	IoT Cloud Processing and Analytics						
	R20CSC4201	Cloud Security						
	R20CSC4205	Digital Watermarking and Steganography						

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution under UGC, New Delhi) Choice Based Credit System (CBCS)

(SUCMO)

### **REGULATIONS - BR20**

Course Title

# B. Tech. CSE (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

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Credits

IV YE	ARISEMESTER	
S. No.	Course	
	Code	Neural Network
1	R2041CSM01	1 vourant

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	S.N	lo. Course		*		P	Credi	ls
	1	R2041CSM0		3	0	0	3	-
	2	R20MED420	2 Reinforcement Learning	2	0	0	2	_
-	3	Professional	Elective - IV	J	1		1	_
1	3	R20CSE4102	Quantum Computing	3	0	0	3	
-		R2041CSM04	Expert Systems	-				
		R2041CSM05	Conversational AI					
		R20CSM4106	Game Theory					
		R20CSM4102	Mobile Computing	1				
	4	Professional El	ective - V					
		R20CSM4107	Social Network Analysis	3	(	) (	)	3
	Ī	R20CSM4201	Federated Machine Learning					
	R	20CSE4201	Augmented Reality & Virtual Reality					
	R	20CSI4101	Web Security					
	R	20INF4101	Ad-hoc & Sensor Networks	_				
5	10	pen Elective -	II		3	0	0	3
6		0CSM41L1	Deep Learning Lab		0	0	2	1
7	R20	OCSM41P1	Technical Seminar		0	0	2	1
	R20	CSM41	Comprehensive Viva-voce		0	0	6	3
	R20	CSM41	Industrial Oriented Mini Project / Summer Internship		0	0	0	2*
			Total Credits		14	0	10	21
				And the second second	and the second	A CONTRACTOR OF THE OWNER OWNER OF THE OWNER		

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		1	A ELECTRONICS ENGINEERIN	G		-	1		
5	Г		ELECTRICAL & ELECTRONICS ENGINEERING NDU COLLEGE OF ENGINEERING & T (An Autonomous Institution under UGC, New I (An Autonomous Institution UGC, New I (An Autonomous I)	Dallal	HNC)	DLO	GY		
	RECONICS ENGINEERING								
			rach ELECTRICAL & ELECTRICAL	CO	URS	Est			
		TEAR	I SEMILS Course Title	L	URS	P	RUCE C		
	Г	S.   Cours		3	0	0	Cred		
	F	No. 1 R20EE 2 R20EEI	34131       Digital Control systems         34132       Optimization Techniques         34132       Optimization Techniques	3	0	0	~ ))~		
		2 R20EEE R20EEE R20EEE4 R20EEE4	4141HVDC Transmission142Power System Reliability142Industrial Electrical Systems	3	1	0	-		
		R20EEE4		3	0	0	-		
-	4	R20EEE41	LI Electrical & Electrometer 2008	0	0	3	2		
F	6	R20EEE41	1.2 Technical Seminar	0	0	3	100		
F	7	R20EEE411		0	0	4	~		
F	8	R20EEE41P		0	0	6	-		
E			Total Credits	12	1	16	21		
No	te: St	udents should sub	during the summer vacation between 6 <sup>th</sup> and 7 <sup>th</sup> nit report of Industrial Oriented Mini Project/ Summer Intern	ship fo		rs. uation.			
S. No		/EAR II SEM Course Code	Course Title	OUF	RSE	STRI	JCTUR		
1	+		Open Elective-III	L	Т	P	Credi		
	_		open Licenve-III	-					

S. No.   Course Code   Course Title	001	XSE 3	STRUCTUR	
	L	T	P	Credi
1         Open Elective-III	2		-	Crea
Professional Elective-V	3	0	0	3
R20EEE4251 Power Quality & FACTS				
2 R20EEE4252 Control System Design				
R20CSE4265 AI Techniques in Di	3	0	0	3
Electrical Engineering	-			
Protessional El.				
3 R20EEE4261 Smart Grid Technologies				
3 R20EEE4262 Electrical Disc it				T
R20EEE4262     Electrical Distribution Systems       4     R20pp	3	0	0	3
NUFFEAD	3	0		
Project Work				
*MC-Satisfied/Unsation	0	0	14	11
*MC - Satisfied/Unsatisfied	9	0	14	16
SRI INDU COLLEGE OF S	9	0	14	

# Choice Based Credit System (CBCS)

# **REGULATIONS – BR20**

# B. Tech. - Artificial Intelligence & Data Science

		B. Tech Artificial Intelligent COURSE S	TRUCT	UR	E			
	IV YEAR I SE	EMESTER	L	T	P	1	Credit	ts
S. N	No. Course Cou		2	0	0		2	
1	R20AID410	Introduction to Predictive Analytics           Introduction to Predictive Analytics	3	0	0	3	5	
2	R20CSM410	1 Neural Networks & Deep Learning	3	0	-	0	3	_
3	Professional	Elective –IV	3	10		0	3	
	R20CSE410							1
	R20CSM410	04 Expert Systems						1
		2 Cloud Computing						
	R20CSM410	06 Game Theory						
	R20CSM4102	Mobile Computing	3	+		0	+	3
4	Professional	Elective -V	3	1	1	0	-	2
		3 Social Network Analysis						
	R20CSM420	1 Federated Machine Learning						
	R20CSE4201							
	R20CSI4101	Web Security						
	R20INF4101	Ad-hoc & Sensor Networks		_				2
5	Open Electiv			3	0	0		3
6	R20CSM41L1	Deep Learning Laboratory	0			2	1	
7		Technical Seminar	0		1	2	1	
8		Comprehensive Viva-voce	0		0	6	3	
9		Industrial Oriented Mini Project/Summer Internship	0		0	0	2	
		Total		14	0	_	10	21
IVY	YEAR II SEM	AESTER COURS	SE STR	UC	T	UR		
No.	Course Code	Course Title		L	]]		P	Cre
	R20HMS4201	Organizational Behaviour		3	1	0	0	
	Professional E							
	R20AID4202	Speech and Video Processing		3		0	0	
		Robotic Process Automation						
1		Randomized Algorithms						
	20CSM4202							
	20CSM4204	Semantic Web						
0	pen Elective -	- III			3	0	0	
		Project Work			0	0	14	
			Total	1	9	1	14	

# Choice Based Credit System (CBCS)

# **REGULATIONS – BR20**

# B. Tech. - Artificial Intelligence & Data Science

		B. Tech Artificial Intelligent COURSE S	TRUCT	UR	E			
	IV YEAR I SE	EMESTER	L	T	P	1	Credit	ts
S. N	No. Course Cou		2	0	0	Concernance in succession	2	
1	R20AID410	Introduction to Predictive Analytics           Introduction to Predictive Analytics	3	0	0	3	5	
2	R20CSM410	1 Neural Networks & Deep Learning	3	0	-	0	3	_
3	Professional	Elective –IV	3	10		0	3	
	R20CSE410							1
	R20CSM410	04 Expert Systems						1
		2 Cloud Computing						
	R20CSM410	06 Game Theory						
	R20CSM4102	Mobile Computing	3	+		0	+	3
4	Professional	Elective -V	3	1	1	0	-	2
		3 Social Network Analysis						
	R20CSM420	1 Federated Machine Learning						
	R20CSE4201							
	R20CSI4101	Web Security						
	R20INF4101	Ad-hoc & Sensor Networks		_				2
5	Open Electiv			3	0	0		3
6	R20CSM41L1	Deep Learning Laboratory	0			2	1	
7		Technical Seminar	0		1	2	1	
8		Comprehensive Viva-voce	0		0	6	3	
9		Industrial Oriented Mini Project/Summer Internship	0		0	0	2	
		Total		14	0	_	10	21
IVY	YEAR II SEM	AESTER COURS	SE STR	UC	T	UR		
No.	Course Code	Course Title		L	]]		P	Cre
	R20HMS4201	Organizational Behaviour		3	1	0	0	
	Professional E							
	R20AID4202	Speech and Video Processing		3		0	0	
		Robotic Process Automation						
1		Randomized Algorithms						
	20CSM4202							
	20CSM4204	Semantic Web						
0	pen Elective -	- III			3	0	0	
		Project Work			0	0	14	
			Total	1	9	1	14	

COMPUTER SCIENCE & ENGINEERING (DATA SCIENCE)

### **REGULATIONS - BR20**

### B. Tech. - CSE (DATA SCIENCE)

# IVYEAR I SEMESTER

13

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1

COURSE STRUCTURE

O Ma	Course Code	Course Title	L	TT	P	-	edits
S. No.	R20CSD4101	Predictive Analytics	3	0	0	+ <u>cr</u>	edits
2	P20CSD4102		2	0	0		2
3	Professional E	lective-IV	3	0	0		3
,	R20CSE4102	Ouantum Computing					-
-	R20CSD4103	Database Security					
ł	R20CSM4103	Natural Language Processing					
ŀ	R20CSD4104	Information Storage Management					
H	R20CSO4103	Internet of Things					
	Professional El	ective-V	3	0	1	O	3
+	R20CSD4105	Privacy Preserving in Data Mining					
+	R20CSM4145	CoversationalAI					
F	R20CSD4106	Data Science Applications					
+	R20CSD4109	Mining Massive Datasets					
-	R20CSD4107	Exploratory Data Analysis					
	R20C3D4107	Open Elective – II	3	(	)	0	3
	DOOCED4111	Web and social media Analytics Lab	0	(	5	2	1
	R20CSD41L1	Industrial Oriented Mini Project/ Summer	0		$\overline{0}$	0	2
	R20CSD41P3	Industrial Offenced Willing Project Standard					
	220000 (1D1	Technical Seminar	0	-	0	2	1
	R20CSD41P1		$\frac{1}{0}$		0	6	3
	R20AID41P1	Project Stage-I					
		Total Credits	1.	4	0	10	21

### IV YEAR II SEMESTER

### **COURSE STRUCTURE**

S.No.	Course Code	Course Title	L	T	P	Credits
1	R20HMS4201	Organizational Behavior	3	0	0	3
2	<b>Professional El</b>	ective-VI	3	0	0	3
	R20CSD4201	Data Stream Mining				
	R20CSI4101	Web Security				
İ	R20CSD4203	Video Analytics				
t	R20CSC3203	Blockchain Technology				
T	R20CSD4204	Parallel and Distributed Computing				
		Open Elective-III	3	0	0	3
		Project Stage-II	0	0	14	7
		Total Credits	9	0	14	16

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### **1.3.3.2** - Number of programmes offered by the institution during thelast five years:

Academic Year	No. of Programmes have the components of Field Project / Research Project / Internship	No. of Programmes offered during the year	Percentage of Programmes have the components of Field Project / Research Project / Internship	Link to the relevant document
2022-23	13	13	100	
2021-22	13	13	100	
2020-21	12	12	100	
2019-20	6	6	100	
2018-19	6	6	100	



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**Choice Based Credit System (CBCS)** 

### <u>REGULATIONS – BR-18</u>

## **B. Tech. - Civil Engineering**

### **IV YEAR I SEMESTER**

### **COURSE STRUCTURE**

••••								
S.No.	Course Code	Course Title	L	Τ	Р	Credits		
1	R18CIV4101	Estimation, Costing and Project Management	3	0	0	3		
2	R18CIV4102	Transportation Engineering-II	3	0	0	3		
		<b>Professional Elective –III</b>						
	R18CIV4131	Remote Sensing &GIS						
3	R18CIV4132	Ground Improvement Techniques	3	0	0	3		
	R18CIV4133	Advance Structural Analysis						
Professional Elective –IV								
	R18CIV4141	Irrigation and Hydraulic Structures						
4	R18CIV4142	Theory of Elasticity	3	0	0	3		
	R18CIV4143	Ground water Hydrology						
5		Open Elective –II	3	0	0	3		
6	R18CIV41P1	Industrial Oriented Mini Project/ Summer Internship	0	0	0	2*		
7	R18CIV41L1	Seminar	0	0	2	1		
8	R18CIV41P2	Comprehensive Viva-voce	0	0	6	3		
		Total Credits	15	0	8	21		
	• • • •	the second secon						

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation. IV YEAR II SEMESTER COURSE STRUCTURE

S.No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits				
	Professional Elective -V									
	R18CIV4251	Foundation Engineering								
1	R18CIV4252	Environmental Impact Assessment	3	0	0	3				
	R18CIV4253	Air pollution								
	Professional Elective –VI									
	R18CIV4261	Airports, railways and water ways								
2	R18CIV4262	Intelligent Transportation Systems	3	0	0	3				
	R18CIV4263	Urban Transportation Planning								
3		<b>Open Elective –III</b>	3	0	0	3				
4	R18CIV42P1	Project Work	0	0	14	7				
		Total Credits	9	0	14	16				

(An Autonomous Institution under UGC, New Delhi)

Choice Based Credit System (CBCS)

## **REGULATIONS – BR-20**

## **B.** Tech. - Civil Engineering

### **IV YEAR I SEMESTER**

### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	Т	Ρ	Credits		
1	R20CIV4101	Estimation, Costing and Project Management	3	0	0	3		
2	R20CIV4102	Transportation Engineering-II	3	0	0	3		
		Professional Elective –III			-			
	R20CIV4131	Remote Sensing &GIS						
2	R20CIV4132	Ground Improvement Techniques		0	0	0		
3	R20CIV4133	Advance Structural Analysis	3	0	0	3		
	R20MAC4100	MOOCs-III						
		Professional Elective –IV			-			
	R20CIV4141	Irrigation and Hydraulic Structures						
4	R20CIV4142	Theory of Elasticity	3	0	0	3		
	R20CIV4143	Ground water Hydrology						
5		Open Elective –II	3	0	0	3		
6	R20CIV41P1	Technical Seminar	0	0	2	1		
7	R20CIV41P2	Comprehensive Viva-voce	0	0	6	3		
8	R20CIV41P3	Industrial Oriented Mini Project/ Summer Internship	0	0	0	2		
		Total Credits	15	2	4	21		

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

### **IV YEAR II SEMESTER**

COURSE STRUCTURE

S. No.	Course Code	Course Title	L	т	Ρ	Credits				
	Professional Elective -V									
	R20CIV4251	Foundation Engineering								
1	R20CIV4252	Environmental Impact Assessment	3		0	3				
1	R20CIV4253	Air pollution	3	0	0	3				
	R20MAC4200	MOOCs-IV								
		Professional Elective –VI								
	R20CIV4261	Airports, railways and water ways								
2	R20CIV4262	Intelligent Transportation Systems	3	0	0	3				
	R20CIV4263	Urban Transportation Planning								
3		Open Elective –III	3	0	0	3				
4	R20CIV42P1	Project Work	0	0	14	7				
		Total Credits	9	0	14	16				

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**Choice Based Credit System (CBCS)** 

**REGULATIONS – BR-22** 

## **B.** Tech. - Civil Engineering

### **IV YEAR I SEMESTER**

### **COURSE STRUCTURE**

						JUKL
S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1.	R22CIV4111	Quantity Survey & Valuation	2	0	0	2
2.	R22CIV4112	Project Management	2	0	0	2
	<b>Professional Ele</b>	ective – II				
3.	R22CIV4141	Prestressed Concrete Structures	3	0	0	3
	R22CIV4142	Elements of Earth Quake Engineering				
	R22CIV4143	Finite Element Analysis				
	<b>Professional Ele</b>					
4.	R22CIV4144	Remote Sensing &GIS	3	0	0	3
	R22CIV4147	Ground Improvement Techniques				
	R22CIV4146	Advance Structural Analysis				
	<b>Professional Ele</b>	ective - IV				
5.	R22CIV4148	Irrigation and Hydraulic Structures	3	0	0	3
	R22CIV4149	Theory of Elasticity				
	R22CIV4145	Ground water Hydrology				
6.	<b>Open Elective -</b>	II	3	0	0	3
7.	R22CIV4127	Civil Engineering Software Laboratory	0	0	2	1
8.	R22CIV4168	Project Stage - I	0	0	6	3
		Total Credit	s 16	0	8	20
	• • • • •					

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation. IV YEAR II SEMESTER COURSE STRUCTURE

S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
	Professional Ele	ective – V				
1.	R22CIV4243	Advanced Foundation Engineering	3	0	0	3
	R22HAS4241	Environmental Impact Assessment				
	R22CIV4241	Air pollution				
	<b>Professional Ele</b>	ective - VI				
2.	R22CIV4246	Airports, railways and water ways	3	0	0	3
	R22CIV4244	Intelligent Transportation Systems				
	R22CIV4245	Urban Transportation Planning				
3.	<b>Open Elective -</b>	III	3	0	0	3
4.	R22CIV4264	Project Stage – II including seminar	0	0	22	9+2
		Total Credits	9	0	22	20

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**Choice Based Credit System (CBCS)** 

### <u>REGULATIONS – BR-18</u>

### **B.** Tech. – Electrical Electronics Engineering

### **IV YEAR I SEMESTER**

#### **COURSE STRUCTURE**

S.No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1		Open Elective-II	3	0	0	3
		<b>Professional Elective-III</b>				
	R18EEE4131	Digital Control systems				
2	R18EEE4132	Optimization Techniques	3	0	0	3
	R18EEE4133	Electrical and Hybrid Vehicles				
		<b>Professional Elective-IV</b>				
	R18EEE4141	HVDC Transmission				
3	R18EEE4142	Power System Reliability	3	0	0	3
	R18EEE4143	Industrial Electrical Systems				
4	R18MBA4101	Fundamentals of Management for Engineers	3	0	0	3
5	R18EEE41L1	Electrical & Electronics Design Lab	1	0	4	3
6	R18EEE41L2	Technical Seminar	0	0	2	1
7	R18EEE41P1	Industrial Oriented Mini Project/ Summer	0	0	4	2
		Internship				
8	R18EEE41P2	Comprehensive Viva-voce	0	0	6	3
		Total Credits	13	0	16	21

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation. IV YEAR II SEMESTER COURSE STRUCTURE

S. No.	Course Code	Course Title	L	Т	Р	Credits
1		Open Elective-III	3	0	0	3
		<b>Professional Elective-V</b>				
	R18EEE4251	Power Quality & FACTS				
2	R18EEE4252	Control System Design	3	0	0	3
	R18CSE4265	AI Techniques in Electrical Engineering				
		<b>Professional Elective-VI</b>				
	R18EEE4261	Smart Grid Technologies				
3	R18EEE4262	Electrical Distribution Systems	3	0	0	3
	R18EEE4263	Advanced Control of Electric Drives				
4	R18EEE42P1	Project Work	0	0	14	7
		Total Credits	9	0	14	16

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**Choice Based Credit System (CBCS)** 

REGULATIONS - BR-20

### **B.** Tech. – Electrical Electronics Engineering

### IV YEAR I SEMESTER

### **COURSE STRUCTURE**

S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1		Open Elective-II	3	0	0	3
		<b>Professional Elective-III</b>				
	R20EEE4131	Digital Control Systems				
2	R20EEE4132	Optimization Techniques	3	1	0	4
2	R20EEE4133	Electrical and Hybrid Vehicles		1	U	т
	R20MAC4100	MOOCs-III				
		<b>Professional Elective-IV</b>				
	R20EEE4141	HVDC Transmission				
3	R20EEE4142	Power System Reliability	3	1	0	4
	R20EEE4143	Industrial Electrical Systems				
4	R20MBA4101	Fundamentals of Management for Engineers	3	0	0	3
5	R20EEE41L1	Electrical & Electronics Design Lab	0	0	2	1
6	R20EEE41P1	Technical Seminar	0	0	2	1
7	R20EEE41P2	Comprehensive Viva-voce	0	0	6	3
8	R20EEE41P3	Industrial Oriented Mini Project/ Summer	0	0	4	2
0	K20EEE41F3	Internship	0	0 0	4	2
		Total Credits	12	1	14	21

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

### **IV YEAR II SEMESTER**

### **COURSE STRUCTURE**

S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1		Open Elective-III	3	0	0	3
		<b>Professional Elective-V</b>				
	R20EEE4251	Power Quality & FACTS				
2	R20EEE4252	Control System Design	3	0	0	3
2	R20CSE4265	AI Techniques in Electrical Engineering		U		5
	R20MAC4200	MOOCs-IV				
		<b>Professional Elective-VI</b>				
	R20EEE4261	Smart Grid Technologies				
3	R20EEE4262	Electrical Distribution Systems	3	0	0	3
	R20EEE4263	Advanced Control of Electric Drives				
4	R20EEE42P1	Project Work	0	0	14	7
		Total Credits	9	0	14	16

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**Choice Based Credit System (CBCS)** 

<u>REGULATIONS – BR-22</u>

### **B.** Tech. – Electrical Electronics Engineering

### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1	R22EEE4111	Power Electronic Applications to Renewable	3	1	0	4
		Energy Systems				
2	<b>Open Elective</b>	·II	3	0	0	3
3	Professional E	lective-III	3	0	0	3
	R22ECE2114	Signals and Systems				
	R22CSE3247	Mobile Application Development				
	R22EEE4141	Electric and Hybrid Vehicles				
4	<b>Professional E</b>	lective-IV	3	0	0	3
	R22CSE4114	Embedded Applications				
	R22EEE4142	HVDC Transmission				
	R22EEE4143	Power System Reliability				
5	R22HMS4115	Fundamentals of Management for Engineers	2	0	0	2
6	D22EEE4126	Simulation of Renewable Energy Systems	0	0	4	2
	R22EEE4126	Laboratory				
7	R22EEE4167	Project Stage - I	0	0	6	3
		Total Credits	14	1	10	20
		th th				

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

IV YEAR	II SEMESTE	R COU	<u>RSE S</u>	<u>STRU</u>	JCTL	JRE
S. No.	Course Code	Course Title	L	Т	Р	Credit
	Code					S
1	<b>Open Electiv</b>	e-III	3	0	0	3
2	Professional	Elective-V	3	0	0	3
	R22EEE4241	AI Techniques in Electrical Engineering				
	R22EEE4244	Power Quality & FACTS				
	R22EEE4245	Control Systems Design				
3	Professional	Elective-VI	3	0	0	3
	R22EEE4248	Advanced Control of Electric Drives				
	R22EEE4247	Electrical Distribution Systems				
	R22EEE4243	Smart Grid Technologies				
4	R22EEE4264	Project Stage – II including Seminar	0	0	22	9+2
		Total Credit	s 9	0	22	20

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**Choice Based Credit System (CBCS)** 

### **REGULATIONS – BR-18**

# **B.** Tech. – Mechanical Engineering

### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
No.						
1	R18ECE4101	Microwave and Optical Communication	3	0	0	3
2	R18HAS4101	Professional Practice, Law & Ethics	2	0	0	2
		<b>Professional Elective – III</b>				
3	R18ECE4131	Digital Image Processing				
	R18CSE4101	Cryptography and Network Security	3	0	0	3
	R18CSE4142	Artificial Intellengence (AI)				
		<b>Professional Elective – IV</b>				
4	R18ECE4141	Cellular & Mobile Communications	3	0	0	3
	R18ECE4142	Digital Signal Processors & Architectures				
	R18ECE4143	System on Chip Architecture				
5		Open Elective - II	3	0	0	3
6	R18ECE41L1	Microwave & Optical Communications Lab	0	0	2	1
7	R18ECE41L2	Technical Seminar	0	0	2	1
8	R18ECE41P1	Comprehensive Viva-voce	0	0	6	3
9	R18ECE41P2	Industrial Oriented Mini Project/ Summer	0	0	0	2*
		Internship				
		Total Credits	14	0	10	21

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

### IV YEAR II SEMESTER

### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	Т	Р	Credits
		<b>Professional Elective – V</b>				
1	R18ECE4251	Satellite Communications				
	R18ECE4252	Low Power VLSI	3	0	0	3
	R18ECE4253	Wireless Sensor Networks				
		<b>Professional Elective – VI</b>				
2	R18ECE4261	Wireless Communication & Networks				
	R18ECE4262	Electronic Product Design & Packaging	3	0	0	3
	R18ECE4263	Radar Systems				
3		Open Elective - III	3	0	0	3
4	R18ECE42P1	Project Work	0	0	14	7
		Total Credits	9	0	14	16

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**Choice Based Credit System (CBCS)** 

### REGULATIONS – BR-20

# **B.** Tech. – Mechanical Engineering

### IV YEAR I SEMESTER

### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	Т	Р	Credits			
1	R20MED4101	Refrigeration & Air Conditioning	3	0	0	3			
	Professional Elective – II								
	R20MED4121	Additive Manufacturing							
2	R20MED4122	Automation in Manufacturing	3	0	0	3			
	R20MED4123	Micro Electro Mechanical Systems (MEMS)	5	0	0	5			
	R20MAC3200	MOOCs-II							
	Professional Elective – III								
	R20MED4131	Power Plant Engineering							
3	R20MED4132	Automobile Engineering	3	0	0	3			
	R20MED4133	Renewable Energy Sources							
	R20MAC4100	MOOCs-III							
		Professional Elective – IV				•			
	R20MED4141	Computational Fluid Dynamics							
4	R20MED4142	Turbo Machinery	3	0	0	3			
	R20MED4143	Fluid Power Systems							
5		Open Elective - II	3	0	0	3			
6	R20MED41P1	Technical Seminar	0	0	2	1			
7	R20MED41P2	Comprehensive Viva-voce	0	0	6	3			
8	R20MED41P3	Industrial Oriented Mini Project/ Summer Internship	0	0	0	2			
		Total Credits	15	2	4	21			
*	To be carried out	during the summer vacation between 6 <sup>th</sup> and 7 <sup>th</sup> semesters.							

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation. IV YEAR II SEMESTER COURSE STRUCTURE

S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits		
	Professional Elective – V							
	R20MED4251	Industrial Robotics						
1	R20MED4252	Mechanical Vibrations	3	0	0	3		
	R20MED4253	Composite Materials						
	R20MAC4200	MOOCs-IV						
		<b>Professional Elective – VI</b>						
	R20MED4261	Industrial Management						
2	R20MED4262	Production Operation and Management	3	0	0	3		
	R20MED4263	Nanotechnology & Application						
3		Open Elective - III	3	0	0	3		
4	R20ECE42P1	Project Work	0	0	14	7		
		Total Credits	9	0	14	16		

(An Autonomous Institution under UGC, New Delhi)

**Choice Based Credit System (CBCS)** 

REGULATIONS – BR-22

### **B.** Tech. – Mechanical Engineering

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	Τ	Р	Credits		
1.	R22MED4111	Industrial Management	2	0	0	2		
2.	R22MED4112	Refrigeration & Air Conditioning	3	0	0	3		
3.	<b>Professional E</b>	lective – II	3	0	0	3		
	R22CSM4142	Artificial Intelligence in Mechanical Engineering						
	R22MED4141	Industrial Robotics						
	R22MED4142	Mechatronics						
	R22MED4143	Automobile Engineering						
4.	<b>Professional E</b>	lective – III	3 0		0 0	3		
	R22MED4144	Composite Materials						
	R22MED4145	Computational Fluid Dynamics						
	R22MED4146	Production Planning & Control						
	R22MED4147	Solar Energy Technology						
5.	<b>Professional E</b>	lective - IV	3	0	0	3		
	R22MED4149	Renewable Energy Sources						
	R22MED4148	Fundamentals of Electric and Hybrid Vehicles						
	R22MED4165	Re-Engineering						
	R22MTH4145	Operations Research						
6.	<b>Open Elective</b>	- II	3	0	0	3		
7.	R22MED4167	Project Stage - I	0	0	6	3		
		Total Credits	17	0	6	20		

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

V YEAR	<b>II SEMESTER</b>		COU	RSE STRUCTURE			
S. No.	<b>Course Code</b>	Course Title		L	Т	Р	Credits
1.	<b>Professional E</b>	lective – V		3	0	0	3
	R22MED4248	Energy Conservation and Management					
	R22MED4241	Additive Manufacturing					
	R22MED4242	Automation in Manufacturing					
	R22MED4243	Turbo Machinery					
2.	<b>Professional E</b>	lective - VI		3	0	0	3
	R22MED4244	Fluid Power System					
	R22MED4245	Fuzzy Logic and ANN					
	R22MED4246	Industry 4.0					
	R22MED4247	Total Quality Management					
3.	<b>Open Elective</b>	- III		3	0	0	3
4.	R22MED4264	Project Stage – II including seminar		0	0	22	9+2
		Total Credits		9	0	22	20

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**Choice Based Credit System (CBCS)** 

<u>REGULATIONS – BR-18</u>

### **B.** Tech. – Electronics & Communication Engineering

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S.	<b>Course Code</b>	Course Title	L	Т	Р	Credits		
No.								
1	R18ECE4101	Microwave and Optical Communication	3	0	0	3		
2	R18HAS4101	Professional Practice, Law & Ethics	2	0	0	2		
		<b>Professional Elective – III</b>						
3	R18ECE4131	Digital Image Processing						
	R18CSE4101	Cryptography and Network Security	3	0	0	3		
	R18CSE4142	Artificial Intellengence (AI)						
	Professional Elective – IV							
4	R18ECE4141	Cellular & Mobile Communications	3	0	0	3		
	R18ECE4142	Digital Signal Processors & Architectures						
	R18ECE4143	System on Chip Architecture						
5		Open Elective - II	3	0	0	3		
6	R18ECE41L1	Microwave & Optical Communications Lab	0	0	2	1		
7	R18ECE41L2	Technical Seminar	0	0	2	1		
8	R18ECE41P1	Comprehensive Viva-voce	0	0	6	3		
9	R18ECE41P2	Industrial Oriented Mini Project/ Summer	0	0	0	2*		
		Internship						
		Total Credits	14	0	10	21		

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### IV YEAR II SEMESTER

S. No.	Course Code	Course Title	L	Т	Р	Credits	
Professional Elective – V							
1	R18ECE4251	Satellite Communications					
	R18ECE4252	Low Power VLSI	3	0	0	3	
	R18ECE4253	Wireless Sensor Networks					
		<b>Professional Elective – VI</b>					
2	R18ECE4261	Wireless Communication & Networks					
	R18ECE4262	Electronic Product Design & Packaging	3	0	0	3	
	R18ECE4263	Radar Systems					
3		Open Elective - III	3	0	0	3	
4	R18ECE42P1	Project Work	0	0	14	7	
		Total Credits	9	0	14	16	

(An Autonomous Institution under UGC, New Delhi)

**Choice Based Credit System (CBCS)** 

<u>REGULATIONS – BR-20</u>

### **B.** Tech. – Electronics & Communication Engineering

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S. No.	<b>Course Code</b>	Course Title	L	Τ	Р	Credits			
1	R20ECE4101	Microwave and Optical Communication	3	0	0	3			
2	R20HAS4101	Professional Practice, Law & Ethics	2	0	0	2			
	Professional Elective – III								
2	R20ECE4131	Digital Image Processing							
3	R20CSE3201	Machine Learning	3	1	0	4			
	R20ECE4142	Digital Signal Processors & Architectures							
		Professional Elective – IV							
	R20ECE4141	Cellular & Mobile Communications	3	0	0	3			
4	R20CSM3104	Computer Vision and Robotics							
	R20ECE4143	System on Chip Architecture							
	R20MAC4100	MOOCs-III							
5		Open Elective - II	3	0	0	3			
6	R20ECE41L1	Microwave & Optical Communications Lab	0	0	2	1			
7	R20ECE41P2	Comprehensive Viva Voce	0	0	6	3			
8	R20ECE41P3	Industrial Oriented Mini Project/ Summer	0	0	0	2			
		Internship							
		Total Credits	14	3	4	21			

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### **IV YEAR II SEMESTER**

S. No.	<b>Course Code</b>	Course Title	L	Τ	Р	Credits		
	Professional Elective – V							
	R20ECE4251	Satellite Communications						
1	R20ECE4252	Low Power VLSI	2	0	0	2		
	R20ECE4253	Wireless Sensor Networks	3	0	0	3		
	R20MAC4200	MOOCs-IV						
		Professional Elective – VI	•					
2	R20ECE4261	Wireless Communication & Networks						
2	R20ECE4262	Electronic Product Design & Packaging	3	0	0	3		
	R20ECE4263	Radar Systems						
3		Open Elective - III	3	0	0	3		
4	R20ECE42P1	Project Work	0	0	14	7		
		Total Credits	9	0	14	16		

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**Choice Based Credit System (CBCS)** 

**REGULATIONS – BR-22** 

### **B.** Tech. – Electronics & Communication Engineering

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1	R22ECE4111	Microwave and Optical Communications	3	1	0	4
2	Professional H	Elective – III				
	R22ECE4146	Digital Image Processing				
	R22ECE4145	CMOS Analog IC Design	2	0	0	2
	R22ECE4142	Artificial Neural Networks	3	0	0	3
3	Professional H	Elective – IV				
	R22CSE4111	Cryptography and Network Security			0	3
	R22ECE4143	Satellite Communications	3	0		
	R22HAS4143	Biomedical Instrumentation				
4	<b>Open Elective</b>	e – II	3	0	0	3
5	R22HAS4126	Professional Practice, Law & Ethics	0	0	4	2
6	R22ECE4126	Microwave and Optical Communications Laboratory	0	0	4	2
7	R22ECE4167	Project Stage – I	0	0	6	3
		Total Credits	12	1	14	20

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### **IV YEAR II SEMESTER COURSE STRUCTURE** S. No. **Course Code Course Title** L Т Р Credits **Professional Elective - V** R22CSM4143 Artificial Intelligence 1 R22ECE4244 Wireless Communication & Networks 3 0 0 3 R22CSM3112 Machine learning **Professional Elective – VI** Radar Systems 2 R22ECE4245 R22ECE4242 System on Chip Architecture 3 0 0 3 Wireless sensor Networks R22ECE4243 **Open Elective – III** 0 0 3 3 3 Project Stage – II including Seminar 4 R22ECE4264 0 0 22 9+2**Total Credits** 9 0 22 20

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**Choice Based Credit System (CBCS)** 

<u>REGULATIONS – BR-18</u>

### **B.** Tech. – Computer Science & Engineering

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S. No.	<b>Course Code</b>	Course Title	L	Т	P	Credits
1	R18CSE4101	Cryptography & Network Security	3	0	0	3
2	R18CSE4102	Data Mining	2	0	0	2
3	<b>Professional E</b>	lective -IV	3	0	0	3
	R18CSE4141	Graph Theory				
	R18CSE4142	Informational Retrieval Systems	1			
	R18CSE4143	Cloud Computing				
4	Professional E	lective -V	3	0	0	3
	R18CSE4151	Soft Computing				
	R18CSE4152	Internet of Things				
	R18CSE4153	Software Process & Project Management				
5		Open Elective - II	3	0	0	3
6	R18CSE41L1	Cryptography & Network Security Lab	0	0	2	1
7	R18CSE41L2	Technical Seminar	0	0	2	1
8	R18CSE41P1	Comprehensive Viva-voce	0	0	6	3
9	R18CSE41P2	Industrial Oriented Mini Project/ Summer	0	0	0	2*
		Internship				
		Total Credits	14	0	10	21
<u>ж</u> лт 1	• • • • •					

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

IV YEA	R II SEMESTE	URS	URSE STRUCTURE				
S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits	
1	R18HAS4201	Organizational Behaviour	3	0	0	3	
2	Professional Elective -VI				0	3	
	R18CSE4261	Distributed Systems					
	R18CSE4262	Cyber Forensics					
	R18CSE4263	Human Computer Interaction					
3		Open Elective-III	3	0	0	3	
4	R18CSE42P1	Project Work	0	0	14	7	
		Total Credits	9	0	14	16	

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Choice Based Credit System (CBCS)

**REGULATIONS – BR-20** 

## **B.** Tech. – Computer Science & Engineering

#### **IV YEAR I SEMESTER**

#### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	Τ	P	Credits
1	R20CSE4101	Cryptography and Network Security	3	0	0	3
2	R20CSE4102	Data Mining	2	0	0	2
3	<b>Professional E</b>	lective -IV	3	0	0	3
	R20CSE4141	Graph Theory				
	R20CSE4142	Information Retrieval Systems				
	R20CSE4143	Cloud Computing				
	R20MAC4100	MOOCs-III				
4	<b>Professional E</b>	lective -V	3	0	0	3
	R20CSE4151	Soft Computing				
	R20CSE4152	Internet of Things				
	R20CSE4153	Software Process & Project Management				
5		<b>Open Elective - II</b>	3	0	0	3
6	R20CSE41L1	Cryptography and Network Security Lab	0	0	2	1
7	R20CSE41P1	Technical Seminar	0	0	2	1
8	R20CSE41P2	Comprehensive Viva-voce	0	0	6	3
9	R20CSE41P3	Industrial Oriented Mini Project/ Summer Internship	0	0	0	2*
		Total Credits	14	0	10	21

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters. Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### IV YEAR II SEMESTER

S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1	R20HAS4201	Organizational Behaviour	3	0	0	3
2	<b>Professional E</b>	Professional Elective -VI				3
	R20CSE4261	Distributed Systems				
	R20CSE4262	Cyber Forensics				
	R20CSE4263	Human Computer Interaction				
	R20MAC4200	MOOCs-IV				
3		<b>Open Elective-III</b>	3	0	0	3
4	R20CSE42P1	Project Work	0	0	14	7
		Total Credits	9	0	14	16

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**Choice Based Credit System (CBCS)** 

**REGULATIONS – BR-22** 

### **B.** Tech. – Computer Science & Engineering

#### **IV YEAR I SEMESTER**

#### **COURSE STRUCTURE**

•							
	S. No.	<b>Course Code</b>	Course Title	L	Τ	Р	Credits
	1	R22CSE4111	Cryptography and Network Security	3	0	0	3
	2	R22CSE4112	Compiler Design	3	0	0	3
	3	<b>Professional El</b>	lective -IV	3	0	0	3
		R22CSE3145	Graph Theory				
		R22CSE4145	Advanced Operating Systems				
		R22CSE4142	Soft Computing				
		R22CSE4143	Cloud Computing				
		R22CSE4141	Ad hoc & Sensor Networks				
	4	<b>Professional El</b>	lective -V	3	0	0	3
		R22CSE4146	Advanced Algorithms				
		R22CSE4147	Agile Methodology				
		R22EEE4242	Robotic Process Automation				
		R22CSE4244	Blockchain Technology				
		R22CSE4144	Software Process & Project Management				
	5	<b>Open Elective</b>	- II	3	0	0	3
	6	R22CSE4126	Cryptography and Network Security Lab	0	0	2	1
	7	R22CSE4127	Compiler Design Lab	0	0	2	1
	8	R22CSE4168	Project Stage - I	0	0	6	3
			Total Credits	15	0	10	20
	1 1	• 1 • 1 • 1					

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### **IV YEAR II SEMESTER**

S. No	. Course Code	Course Title	L	Т	P	Credits		
1	R22HMS4211	Organizational Behaviour	3	0	0	3		
2	Professional <b>H</b>	Elective – VI	3	0	0	3		
	R22CSE4245	Computational Complexity						
	R22CSE4242	Distributed Systems						
	R22CSM4111	Deep Learning						
	R22INF4142	Human Computer Interaction						
	R22CSC4241	Cyber Forensics						
3	<b>Open Elective</b>	Open Elective – III		0	0	3		
4	R22CSE4264	Project Stage – II including Seminar	0	0	22	9+2		
		Total Credits	9	0	22	20		

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**Choice Based Credit System (CBCS)** 

### REGULATIONS – BR-18

### **B.** Tech. – Information Technology

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S.No.	Course Code	Course Title	L	Т	Р	Credits
1	R18INF4101	Information Security	3	0	0	3
2	R18CSE4102	Data Mining	2	0	0	2
	<b>Professional E</b>	Clective –IV	3	0	0	3
3	R18INF4142	Pattern Recognition				
	R18CSE4143	Cloud Computing				
	R18INF4141	Ad hoc Sensor Networks				
	<b>Professional E</b>	Clective –V	3	0	0	3
4	R18CSE4152	Internet of Things				
	R18CSE3123	Distributed Databases				
	R18CSE4153	Software Process & Project Management				
5		Open Elective-II	3	0	0	3
6	R18INF41L1	Information Security Lab	0	0	2	1
7	R18INF41L2	Technical Seminar	0	0	2	1
8	R18INF41P1	Industrial Oriented Mini Project/ Summer	0	0	0	2*
		Internship				
9	R18INF41P2	Comprehensive Viva-voce	0	0	6	3
		Total Credits	14	0	10	21

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters. Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### **IV YEAR II SEMESTER COURSE STRUCTURE** S. No. Course Code **Course Title** Р L Т Credits R18HAS4201 Organizational Behaviour 3 1 0 0 3 3 **Professional Elective –VI** 0 3 0 R18CSE4261 **Distributed Systems** 2 R18CSE4262 **Cyber Forensics** R18CSE4263 Human Computer Interaction **Open Elective-III** 3 3 0 0 3 0 7 4 **R18INF42P1 Project Work** 0 14 9 **Total Credits** 0 14 16

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**Choice Based Credit System (CBCS)** 

REGULATIONS - BR-20

### **B.** Tech. – Information Technology

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	Т	Р	Credits
1	R20INF4101	Information Security	3	0	0	3
2	R20CSE4102	Data Mining	2	0	0	2
	<b>Professional El</b>	3	0	0	3	
3	R20INF4142	Pattern Recognition				
	R20CSE4143	Cloud Computing				
	R20INF4141	Adhoc Sensor Networks				
	R20MAC4100	MOOCs-III				
	<b>Professional El</b>	3	0	0	3	
4	R20CSE4152	Internet of Things				
	R20CSE3123	Distributed Databases				
	R20CSE4153	Software Process & Project Management				
5		Open Elective-II	3	0	0	3
6	R20INF41L1	Information Security Lab	0	0	2	1
7	R20INF41P1	Technical Seminar	0	0	2	1
8	R20INF41P2	Comprehensive Viva-voce	0	0	6	3
9	R20INF41P3	Industrial Oriented Mini Project/ Summer	0	0	0	2*
		Internship				
		14	0	10	21	

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters. Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

IV YE	EAR II SEMEST	ER	COURSE S	RSE STRUCTURE			
S. No.	Course Code	Course Title	L	Т	Р	Credits	
1	R20HAS4201	Organizational Behaviour	3	0	0	3	
	<b>Professional El</b>	ective –VI	3	0	0	3	
	R20CSE4261	Distributed Systems					
2	R20CSE4262	Cyber Forensics					
	R20CSE4263	Human Computer Interaction					
	R20MAC4200	MOOCs-IV					
3		Open Elective-III	3	0	0	3	
4	R20INF42P1	Project Work	0	0	14	7	
		Total Credits	9	0	14	16	
#CI/iII	Courso 1 oroc	hit with 2 Practical Hours					

#Skill Course - 1 credit with 2 Practical Hours

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**Choice Based Credit System (CBCS)** 

**<u>REGULATIONS – BR-22</u>** 

### **B.** Tech. – Information Technology

#### **IV YEAR I SEMESTER**

#### COURSE STRUCTURE

		00-				
S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1	R22INF4111	Information Security	3	0	0	3
2	R22CSE4143	Cloud Computing	3	0	0	3
3	<b>Professional E</b>	lective -IV				
	R22INF4142	Human Computer Interaction	3	0	0	3
	R22CST4143	High Performance Computing				
	R22CSM4143	Artificial Intelligence				
	R22CSE3149	Information Retrieval Systems				
	R22CSE4141	Ad-hoc & Sensor Networks				
4	<b>Professional E</b>	lective -V				
	R22INF4143	Intrusion Detection Systems	3	0	0	3
	R22INF4144	Real Time Systems				
	R22CSE4244	Blockchain Technology				
	R22CSM4111	Deep Learning				
	R22CSE4144	Software Process & Project Management				
5	<b>Open Elective</b>	-II	3	0	0	3
6	R22INF4126	Information Security Lab	0	0	2	1
7	R22CSE4128	Cloud Computing Lab	0	0	2	1
8	R22INF4168	Project Stage - I	0	0	6	3
		Total	15	0	10	20
		th				

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters. Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### **IV YEAR II SEMESTER**

S. No.	<b>Course Code</b>	Course Title	L	Τ	Р	Credits	
1	R22HMS4211	Organizational Behaviour	3	0	0	3	
2	<b>Professional Ele</b>	ective – VI					
	R22CSM3213	Natural Language Processing	3	0	0	3	
	R22CSE4242	Distributed Systems					
	R22CSE3148	Augmented Reality & Virtual Reality					
	R22CSI4241	Web Security					
	R22CSC4241	Cyber Forensics					
3	<b>Open Elective –</b>	Open Elective – III		0	0	3	
4	R22INF4264	Project Stage – II including Seminar	0	0	22	9+2	
		Tota	l 9	0	22	20	

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Choice Based Credit System (CBCS)

REGULATIONS – BR-20

## **B.Tech.** – Computer Science & Information Technology

#### **IV YEAR I SEMESTER**

**COURSE STRUCTURE** 

S.No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1	R20INF4101	Information Security	3	0	0	3
2	R20CSE4102	Data Mining	2	0	0	2
	<b>Professional El</b>	ective –IV	3	0	0	3
3	R20INF4142	Pattern Recognition				
	R20CSE4143	Cloud Computing				
	R20INF4141	Adhoc Sensor Networks				
	R20MAC4100	MOOCs-III				
	Professional Elective –V				0	3
4	R20CSE4152	Internet of Things				
	R20CSE3123	Distributed Databases				
	R20CSE4153	Software Process & Project Management				
5	<b>Open Elective-</b>	П	3	0	0	3
6	R20INF41L1	Information Security Lab	0	0	2	1
7	R20CSI41P1	Technical Seminar	0	0	2	1
8	R20CSI41P2	Comprehensive Viva-voce	0	0	6	3
9	R20CSI41P3	Industrial Oriented Mini Project/ Summer	0	0	0	2
		Internship				
		14	0	10	21	

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

IV YEA	AR II SEMESTE	R C	OURSE S	SE STRUCTURE			
S.No.	<b>Course Code</b>	Course Title	L	Τ	Р	Credits	
1	R20HAS4201	Organizational Behaviour	3	0	0	3	
	Professional El	ective –VI	3	0	0	3	
2	R20CSE4261	Distributed Systems					
	R20CSE4262	Cyber Forensics					
	R20CSE4263	Human Computer Interaction					
	R20MAC4200	MOOCs-IV					
3	<b>Open Elective-</b>	III	3	0	0	3	
4	R20INF42P1	Project Work	0	0	14	7	
		Total Credits	9	0	14	16	

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Choice Based Credit System (CBCS)

REGULATIONS – BR-22

### **B.Tech. – Computer Science & Information Technology**

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	Т	Р	Credit	
						S	
1	R22INF4111	Information Security	3	0	0	3	
2	R22CSE4143	Cloud Computing	3	0	0	3	
3	Professional Ele	ctive -IV					
	R22INF4142	Human Computer Interaction	3	0	0	3	
	R22CSI4143	High Performance Computing					
	R22CSM4143	Artificial Intelligence					
	R22CSE3147	Embedded Systems					
	R22CSE4141	Ad-hoc & Sensor Networks					
4	<b>Professional Ele</b>	ctive -V					
	R22INF4143	Intrusion Detection Systems	3	0	0	3	
	R22INF4144	Real Time Systems					
	R22CSE4244	Blockchain Technology					
	R22CSM4111	Deep Learning					
	R22CSE4144	Software Process & Project Management					
5	<b>Open Elective-</b>	П	3	0	0	3	
6	R22INF4126	Information Security Lab	0	0	2	1	
7	R22CSE4128	Cloud Computing Lab	0	0	2	1	
8	R22CSI4168	Project Stage - I	0	0	6	3	
		Total	15	0	10	20	
	• 1 4 1 •						

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### IV YEAR II SEMESTER

#### **COURSE STRUCTURE**

S. No.	Course	Course	L	Τ	Р	Credit			
	Code	Title				S			
1	R22HMS4211	Organizational Behaviour	3	0	0	3			
2	Professional Elective – VI								
	R22CSM3213	Natural Language Processing	3	0	0	3			
	R22CSE4242	Distributed Systems							
	R22CSE3148	Augmented Reality & Virtual Reality							
	R22CSI4241	Web Security							
	R22CSC4241	Cyber Forensics							
3	<b>Open Elective</b>	– III	3	0	0	3			
4	R22CSI4264	Project Stage – II including Seminar	0	0	22	9+2			
		Total	9	0	22	20			

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**Choice Based Credit System (CBCS)** 

REGULATIONS – BR-20

**B.Tech.** – CSE (Data Science)

#### **IV YEAR I SEMESTER**

#### **COURSE STRUCTURE**

						UNSE STRUCTURE			
S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits			
1	R20CSD4101	Predictive Analytics	3	0	0	3			
2	R20CSD4102	Web and Social Media Analytics	2	0	0	2			
3	<b>Professional E</b>	lective – IV	3	0	0	3			
	R20CSE4102	Quantum Computing							
	R20CSD4103	Database Security							
	R20CSM4103	Natural Language Processing							
	R20CSD4104	Information Storage Management							
	R20CSO4103	Internet of Things							
4	Professional El	ective – V	3	0	0	3			
	R20CSD4105	Privacy Preserving in Data Mining							
	R20CSM4145	Cloud Computing							
	R20CSD4106	Data Science Applications							
	R20CSD4109	Mining Massive Datasets							
	R20CSD4107	Exploratory Data Analysis							
5	<b>Open Elective</b>	– II	3	0	0	3			
6	R20CSD41L1	Web and Social Media Analytics Lab	0	0	2	1			
7	R20CSD41P1	Technical Seminar	0	0	2	1			
8	R20CSD41P2	Comprehensive Viva-voce	0	0	6	3			
9	R20CSD41P3	Industrial Oriented Mini Project/ Summer	0	0	0	2			
		Internship							
		Total Credits	14	0	10	21			

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

IV YEAF	V YEAR II SEMESTER CO			URSE STRUCTURE			
S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits	
1	R20HMS4201	Organizational Behaviour	3	0	0	3	
2	<b>Professional Ele</b>	ctive -VI					
	R20CSD4201	Data Stream Mining					
	R20CSI4101	Web Security	2	0	0	3	
	R20CSD4203	Video Analytics	5	0	0	3	
	R20CSC3203	Blockchain Technology					
	R20CSD4204	Parallel and Distributed Computing					
3	<b>Open Elective-Il</b>	I	3	0	0	3	
4	R20CSD42P1	Project Work	0	0	14	7	
		Total Credits	9	0	14	16	

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**Choice Based Credit System (CBCS)** 

REGULATIONS – BR-22

**B.Tech.** – CSE (Data Science)

#### **IV YEAR I SEMESTER**

#### **COURSE STRUCTURE**

S. No.	<b>Course Code</b>	Course Title	L	Τ	Р	Credits	
1	R22CSD4111	Predictive Analytics	3	0	0	3	
2	R22CSD4112	Web and Social Media Analytics	3	0	0	3	
3	<b>Professional E</b>	lective – IV					
	R22EEE4144	Quantum Computing	3	0	0	3	
	R22CSD4142	Database Security					
	R22CSM3213	Natural Language Processing					
	R22CSD4143	Information Storage Management					
	R22CSO4143	Internet Of Things					
4	<b>Professional E</b>	lective – V					
	R22CSD4144	Privacy Preserving in Data Mining	3	0	0	3	
	R22CSE4143	Cloud Computing					
	R22CSD4141	Data Science Applications					
	R22CSD4146	Mining Massive Datasets					
	R22CSD4145	Exploratory Data Analysis					
5	<b>Open Elective</b>	– II	3	0	0	3	
6	R22CSD4126	Web and Social Media Analytics Lab	0	0	2	1	
7	R22CSD4127	Predictive Analytics Lab	0	0	2	1	
8	R22CSD4168	Project Stage – I	0	0	6	3	
		Total Credits	15	0	10	20	
		the second secon					

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters. Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### IV YEAR II SEMESTER

### **COURSE STRUCTURE**

S. No.	<b>Course Code</b>	Course Title	L	Τ	Р	Credits			
1	R22HMS4211	Organizational Behavior	3	0	0	3			
2	Professional Elective – VI								
	R22CSD4242	Data Stream Mining	3	0	0	3			
	R22CSI4241	Web Security							
	R22CSD4245	Video Analytics							
	R22CSE4244	Blockchain Technology							
	R22CSD4243	Parallel and Distributed Computing							
3	<b>Open Elective</b>	- III	3	0	0	3			
4	R22CSD4264	Project Stage – II including Seminar	0	0	22	9+2			
		Total Credits	9	0	22	20			

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Choice Based Credit System (CBCS)

REGULATIONS – BR-20

### **B.Tech.** – CSE (Artificial Intelligence & Machine Learning)

#### **IV YEAR I SEMESTER**

#### **COURSE STRUCTURE**

				IUKL		
S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits
1	R20CSM4101	Neural Networks & Deep Learning	3	0	0	3
2	R20MED4202	Reinforcement Learning	2	0	0	2
3	<b>Professional El</b>	ective - IV				3
	R20CSE4102	Quantum Computing				
	R20CSM4104	Expert Systems	3	0	0	
	R20CSM4105	Conversational AI	3	0	0	
	R20CSM4106	Game Theory				
	R20CSM4102	Mobile Computing				
4	<b>Professional El</b>	ective - V				3
	R20CSM4107	Social Network Analysis				
	R20CSM4201	Federated Machine Learning	3	0	0	
	R20CSE4201	Augmented Reality & Virtual Reality	3	0	0	
	R20CSI4101	Web Security				
	R20INF4101	Ad-hoc & Sensor Networks				
5	<b>Open Elective</b> -	·II	3	0	0	3
6	R20CSM41L1	Deep Learning Lab	0	0	2	1
7	R20CSM41P1	Technical Seminar	0	0	2	1
8	R20CSM41P2	Comprehensive Viva-voce	0	0	6	3
9	R20CSM41P3	Industrial Oriented Mini Project/ Summer	0	0	0	2
		Internship				
		Total Credits	14	0	10	21

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

IV YEAI	IV YEAR II SEMESTER COU			URSE STRUCTURE			
S. No.	<b>Course Code</b>	Course Title	L	Т	P	Credits	
1	R20HMS4201	Organizational Behaviour	3	0	0	3	
2	<b>Professional El</b>	ective - VI					
	R20AID4202	Speech and Video Processing					
	R20MED4202	Robotics Process Automation	3	0	0	3	
	R20CSD4202	Randomized Algorithms	3	0	U	5	
	R20CSM4202	Cognitive Computing					
	R20CSM4204	Semantic Web					
3	<b>Open Elective</b> ·	· III	3	0	0	3	
4	R20CSM42P1	Project Work	0	0	14	7	
		Total Credits	9	0	14	16	

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**Choice Based Credit System (CBCS)** 

REGULATIONS – BR-22

**B.Tech.** – CSE (Artificial Intelligence & Machine Learning)

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

S. No.	Course Code	Course Title	L	Т	Р	Credits	
1	R22CSM4111	Deep Learning	3	0	0	3	
2	R22CSM4112	Nature Inspired Computing	2	0	0	2	
3	Professional Elec	Professional Elective -III					
	R22CSO4143	Internet Of Things					
	R22INF3245	Data Mining					
	R22CSE3248	Scripting Languages	3	0	0	3	
	R22CSE3247	Mobile Application Development					
	R22CSE4143	Cloud Computing					
4	Professional Elective -IV						
	R22EEE4144	Quantum Computing					
	R22AID4144	Expert Systems					
	R22CSM4145	Semantic Web	3	0	0	3	
	R22CSM4144	Game Theory					
	R22CSM4141	Mobile Computing					
5	Open Elective - I	Π	3	0	0	3	
6	R22HAS4126	Professional Practice, Law & Ethics	0	0	4	2	
7	<b>Professional Elec</b>	ctive - III Lab					
	R22CSO2128	Internet Of Things Lab	0	0	2	1	
	R22INF3258	Data Mining lab					
	R22CSE3252	Scripting Languages Lab					
	R22CSE3258	Mobile Application Development Lab					
	R22CSE4128	Cloud Computing Lab					
8	R22CSM4168	Project Stage - I	0	0	6	3	
		Total Credits the summer research between $\mathcal{L}^{\text{th}}$ and $\mathcal{I}^{\text{th}}$ competence.	14	0	12	20	

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

IV YE	AR II SEMESTER		COURS	COURSE STRUCTURE							
S. No.	Course Code	Course Title	L	Т	Р	Credits					
1	<b>Professional Elec</b>	Professional Elective - V									
	R22CSM4241	Social Network Analysis									
	R22AID4241	Federated Machine Learning									
	R22CSE3148	Augmented Reality & Virtual Reality	3	0	0	3					
	R22CSI4241	Web Security									
	R22CSE4141	Ad-hoc & Sensor Networks									
2	<b>Professional Elec</b>	tive – VI									
	R22AID4242	Speech and Video Processing									
	R22EEE4242	Robotic Process Automation									
	R22CSM4244	Randomized Algorithms	3	0	0	3					
	R22CSM4242	Cognitive Computing									
	R22CSM4245	Conversational AI									
3	Open Elective –	Ш	3	0	0	3					
4	R22CSM4264	Project Stage – II including Seminar	0	0	22	<u>9+2</u>					
	urse - 1 credit with 2 Prac	Total Credits	9	0	22	20					

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**Choice Based Credit System (CBCS)** 

**<u>REGULATIONS – BR-20</u>** 

### **B.Tech.** – CSE (Cyber Security)

#### **IV YEAR I SEMESTER**

#### COURSE STRUCTURE

S.No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits		
1	R20CSC4101	Vulnerability Assessment & Penetration Testing	3	0	0	3		
2	R20CSC4102	Network Management Systems and Operations	2	0	0	2		
3	Professional El	ective - IV						
	R20CSC4109	Edge Analytics	3	0	0	3		
	R20CSC4105	Web & Database Security						
	R20CSC4108	Computer Security & Audit Assurance						
	R20CSC4107	Social Media Security						
	R20CSM4101	Deep Learning						
4	Professional Elective - V							
	R20CSE4102	Quantum Computing	3	0	0	3		
	R20CSC4106	Data Analytics for Fraud Detection						
	R20CSC4104	5G Technologies						
	R20INF4104	Security Incident & Response Management (SOC)						
	R20CSC4103	Authentication Techniques						
5	<b>Open Elective</b>	- II	3	0	0	3		
6	R20CSC41L1	Vulnerability Assessment & Penetration Testing Lab	0	0	2	1		
7	R20CSC41P1	Technical Seminar	0	0	0	2		
8	R20CSC41P2	Comprehensive Viva Voce	0	0	2	1		
9	R20CSC41P3	Industrial Oriented Mini Project / Summer	0	0	6	3		
		Internship						
		Total	14	0	10	21		
		th - th						

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

### **IV YEAR II SEMESTER**

#### **COURSE STRUCTURE**

S. No.	<b>Course Code</b>	Course Title	L	Т	Р	Credits			
1	R20HMS4201	Organizational Behavior	3	0	0	3			
2	Professional Elective – VI								
	R20CSE4202	Quantum Cryptography	3	0	0	3			
	R20CSO4204	IoT Cloud Processing and Analytics							
	R20CSC4201	Cloud Security							
	R20CSC4205	Digital Watermarking and Steganography							
	R20CSC4204	Data Privacy							
3	<b>Open Elective</b> -	- III	3	0	0	3			
4	R20CSC42P1	Project Stage – II	0	0	14	16			
		Total	9	0	14	16			

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**Choice Based Credit System (CBCS)** 

### **REGULATIONS – BR-22**

### **B.Tech.** – CSE (Cyber Security)

#### IV YEAR I SEMESTER

#### **COURSE STRUCTURE**

<b>S.</b>	<b>Course Code</b>	Course Title	L	Т	Р	Credits
No.						
1	R22CSC4111	Vulnerability Assessment & Penetration Testing	3	0	0	3
2	R22CSE3246	Web Technologies	3	0	0	3
3	Professional El	lective - IV				
		Edge Analytics	3	0	0	3
	R22CSC4145	Web & Database Security				
	R22CSC4142	Computer Security & Audit Assurance				
	R22CSC4143	Social Media Security				
	R22CSM4111	Deep Learning				
4	<b>Professional E</b>					
	R22EEE4144	Quantum Computing	3	0	0	3
	R22CSC4146	Data Analytics for Fraud Detection				
	R22CSC4141	5G Technologies				
	R22INF4145	Security Incident & Response Management (SOC)				
	R22CSC4144	Authentication Techniques				
5	<b>Open Elective</b>	- II	3	0	0	3
6	R22CSC4126	Vulnerability Assessment & Penetration Testing	0	0	2	1
		Lab				
7	R22CSE3257	Web Technologies Lab	0	0	2	1
8	R22CSC4168	Project Stage - I	0	0	6	3
9	R22CSC4119	Skill Development Course (Infection Monkey/	0	0	4	0
		Conjur)				
		Total	15	0	14	20

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### IV YEAR II SEMESTER

**COURSE STRUCTURE** 

S.No.	Course Code	Course Title		L	Τ	Р	Credits
1	R22HMS4211	Organizational Behaviour		3	0	0	3
2	Professional E	lective – VI					
	R22CSC4246	Quantum Cryptography		3	0	0	3
	R22CSO4111	IoT Cloud Processing and Analytics					
	R22CSC4243	Cloud Security					
	R22CSC4245	Digital Watermarking and Steganography					
	R22CSC4244	Data Privacy					
3	<b>Open Elective</b>	e – III		3	0	0	3
4	R22CSC4264	Project Stage – II including Seminar		0	0	22	9+2
			Total	9	0	22	20

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**Choice Based Credit System (CBCS)** 

**<u>REGULATIONS – BR-20</u>** 

### **B.Tech.** – CSE (Internet of Things)

#### **IV YEAR I SEMESTER**

#### **COURSE STRUCTURE**

		ι	COURSE STRUCTURE			IUKL
S. No.	Course Code	Course Title	L	Τ	Р	Credits
1	R20CSO4101	IoT Cloud Processing and Analytics	3	0	0	3
2	R20CSO4102	IoT Security	2	0	0	2
3	<b>Professional El</b>	ective -IV				
	R20CSE4102	Quantum Computing	3	0	0	3
	R20ECE4103	Wireless Networks				
	R20CSE4201	Augmented Reality & Virtual Reality				
	R20CSO4104	IoT Automation				
	R20INF4101	Ad-hoc & Sensor Networks				
4	<b>Professional El</b>	ective - V				
	R20CSO4106	Embedded Software Design	3	0	0	3
	R20CSO4107	5G & IoT Technologies				
	R20CSM4202	Cognitive Computing				
	R20CSE4204	Distributed Systems				
	R20CSO4105	Edge Computing				
5	<b>Open Elective</b>	- II	3	0	0	3
6	R20CSO41L1	IoT Security & Cloud Computing Lab	0	0	2	1
7	R20CSO41P1	Technical Seminar	0	0	2	1
8	R20CSO41P2	Comprehensive Viva-voce	0	0	6	3
9	R20CSO41P3	Industrial Oriented Mini Project / Summer	0	0	0	2
		Internship				
		Total Credits	14	0	10	21
* TT 1	• • • • •	at the set of the set				

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### **IV YEAR II SEMESTER**

		-	00110	- • ·		
S. No.	Course Code	Course Title	L	Т	Р	Credits
1	R20HMS4201	Organizational Behaviour	3	0	0	3
2	<b>Professional Elect</b>	ive – VI				
	R20CSO4203	Industrial IoT	3	0	0	3
	R20CSO4202	Fog Computing				
	R20ECE4202	Smart Sensor Technologies				
	R20CSO4201	Digital Forensics				
	R20CSC3203	Blockchain Technology				
3	<b>Open Elective – I</b>	II	3	0	0	3
4	R20CSO42P1	Project Work	0	0	14	7
		Total Credits	9	0	14	16

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**Choice Based Credit System (CBCS)** 

**REGULATIONS – BR-22** 

### **B.Tech.** – **B.Tech.** – **CSE** (Internet of Things)

#### **IV YEAR I SEMESTER**

#### **COURSE STRUCTURE**

			COUNCE	011	1001			
S. No.	Course Code	Course Title	L	Т	Р	Credits		
1	R22CSO4111	IoT Cloud Processing and Analytics	3	0	0	3		
2	R22CSO4112	IoT Security	2	0	0	2		
3	<b>Professional Elect</b>	ive -III						
	R22CSO4145	Mobile Application Development for IoT			P 0			
	R22CSE3244	Software Testing Methodologies						
	R22CSO4142	Cloud Computing and Virtualization	3	0	0	3		
	R22CSM4143	Artificial Intelligence						
	R22CSO4144	Lightweight Cryptography						
4	Professional Elective -IV							
	R22EEE4144	Quantum Computing		0	0			
	R22ECE4144	Wireless Networks						
	R22CSE3148	Augmented Reality & Virtual Reality	3			3		
	R22CSO4146	IoT Automation						
	R22CSE4141	Ad-hoc & Sensor Networks						
5	Open Elective - I	I	3	0	0	3		
6	R22HAS4126	Professional Practice, Law & Ethics	0	0	4	2		
7	<b>Professional Elect</b>	ive -III Lab						
	R22CSO4149	Mobile Application Development for IoT Lab						
	R22CSE3253	Software Testing Methodologies Lab						
	R22CSO4147	Cloud Computing and Virtualization Lab	0	0	2	1		
	R22CSM4157	Artificial Intelligence Lab						
	R22CSO4148	Lightweight Cryptography Lab						
8	R22CSO4168	Project Stage - I	0	0	6	3		
		Total Credits	14	0	12	20		

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation. **IV YEAR II SEMESTER** 

#### COURSE STRUCTURE

S. No.	Course Code	Course Title	L	Т	Р	Credits		
1	Professional Elective - V							
	R22ECE4241	Embedded Software Design						
	R22CSO4241	5G & IoT Technologies						
	R22CSM4242	Cognitive Computing	3	0	0	3		
	R22CSE4242	Distributed Systems						
	R22CSO4243	Edge Computing						
2	Professional Elective – VI							
	R22CSO4242	Industrial IoT						
	R22CSO4244	Fog Computing						
	R22CSO4245	Smart Sensor Technologies	3	0	0	3		
	R22CSC4242	Digital Forensics						
	R22CSE4244	Blockchain Technology						
3	Open Elective – III		3	0	0	3		
4	R22CSO4264	Project Stage – II including Seminar	0	0	22	<u>9+2</u>		
		Total Credits	9	0	22	20		

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**Choice Based Credit System (CBCS)** 

REGULATIONS – BR-20

### B.Tech. – Artificial Intelligence & Data Science

#### **IV YEAR I SEMESTER**

#### COURSE STRUCTURE

S.No.	<b>Course Code</b>	Course Title	L	Τ	Р	Credits		
1	R20AID4101	Introduction to Predictive Analytics	2	0	0	2		
2	R20CSM4101	Neural Networks & Deep Learning	3	0	0	3		
3	<b>Professional El</b>	ective –IV	3	0	0	3		
	R20CSE4102	Quantum Computing						
	R20CSM4104	Expert Systems						
	R20CSE4142	Cloud Computing						
	R20CSM4106	Game Theory						
	R20CSM4102	Mobile Computing						
4	<b>Professional El</b>	ective -V	3	0	0	3		
	R20CSM4203	Social Network Analysis						
	R20CSM4201	Federated Machine Learning						
	R20CSE4201	Augmented Reality & Virtual Reality						
	R20CSI4101	Web Security						
	R20INF4101	Ad-hoc & Sensor Networks						
5	<b>Open Elective</b>	- II	3	0	0	3		
6	R20CSM41L1	Deep Learning Laboratory	0	0	2	1		
7	R20AID41P1	Technical Seminar	0	0	2	1		
8	R20AID41P2	Comprehensive Viva-voce	0	0	6	3		
9	R20AID41P3	Industrial Oriented Mini Project/Summer Internship	0	0	0	2		
		Total	14	0	10	21		
* To	be corried out de	uring the summer vacation between 6 <sup>th</sup> and 7 <sup>th</sup> semesters						

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

IV YEAR II SEMESTER COURS		SE STRUCTURE				
S. No.	<b>Course Code</b>	Course Title	L	T	Р	Credits
1	R20HMS4201	Organizational Behaviour	3	0	0	3
2	<b>Professional Ele</b>	ctive – VI				
	R20AID4202	Speech and Video Processing	3	0	0	3
	R20MED4202	Robotic Process Automation				
	R20CSD4202	Randomized Algorithms				
	R20CSM4202	Cognitive Computing				
	R20CSM4204	Semantic Web				
3	<b>Open Elective</b> –	<u>III</u>	3	0	0	3
4	R20AID42P1	Project Work	0	0	14	7
		Total	9	0	14	16

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**Choice Based Credit System (CBCS)** 

**REGULATIONS – BR-22** 

### **B.Tech.** – Artificial Intelligence & Data Science

#### **IV YEAR I SEMESTER**

#### **COURSE STRUCTURE**

**COURSE STRUCTURE** 

	_/	•••••					
S. No.	Course Code	Course Title	L	Т	Р	Credits	
1	R22AID4111	Introduction to Predictive Analytics	2	0	0	2	
2	R22CSD4112	Web and Social Media Analytics	3	0	0	3	
3	<b>Professional Elect</b>	ive -III	3	0	0	3	
	R22CSO4143	Internet of Things					
	R22INF3245	Data Mining					
	R22CSE3248	Scripting Languages					
	R22CSE3247	Mobile Application Development					
	R22CSE4111	Cryptography and Network Security					
4	Professional Elect	ive -IV	3	0	0	3	
	R22EEE4144	Quantum Computing					
	R22AID4144	Expert Systems					
	R22CSE4143	Cloud Computing					
	R22CSM4144	Game Theory					
	R22CSM3211	Knowledge Representation and Reasoning					
5	<b>Open Elective - I</b>	I	3	0	0	3	
6	R22HAS4126	Professional Practice, Law & Ethics	0	0	4	2	
7	<b>Professional Elec</b>	tive -III Lab	0	0 0		1	
	R22CSO2128	Internet of Things Lab					
	R22INF3258	Data Mining Lab					
	R22CSE3252	Scripting Languages Lab					
	R22CSE3258	Mobile Application Development Lab					
	R22CSE4126	Cryptography and Network Security Lab					
8	R22AID4168	Project Stage - I	0	0	6	3	
		Total	14	0	12	20	
* T.	he counted and	during the summer velocition between $\ell^{\rm th}$ and $7^{\rm th}$ semesters				•	

\* To be carried out during the summer vacation between 6<sup>th</sup> and 7<sup>th</sup> semesters.

Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.

#### **IV YEAR II SEMESTER**

Т S. No. **Course Code Course Title** L Р Credits **Professional Elective - V** 1 R22CSM4241 Social Network Analysis 3 0 0 3 R22AID4241 **Federated Machine Learning** R22CSE3148 Augmented Reality & Virtual Reality R22CSI4241 Web Security Ad-hoc & Sensor Networks R22CSE4141 2 **Professional Elective – VI** R22AID4242 Speech and Video Processing 3 0 0 3 R22CSM4111 **Deep Learning** R22CSM4244 **Randomized Algorithms** R22CSM4242 **Cognitive Computing** R22CSM4145 Semantic Web 0 3 **Open Elective – III** 3 0 3 **R22AID4264** 4 Project Stage – II including Seminar 0 0 22 9+20 Total 9 22 20



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(Vill): SHERIGUDA-501 510, Ibrahimpatnem(M), R.R.Dist