Annexure-V

Study Scheme for B.Tech – CSE (Batch 2024)

NEP 2020 Implementation in B.Tech - CSE

S. No.	Certification Type	Stage of Exit	Programme duration	Mandatory credits to be secured for the certification
1	Undergraduate Certificate in Computer Science & Engineering	For those who exit after the first year (2 semesters) of the undergraduate programme.	First year or 2 semesters of the undergraduate programme	40
2	Undergraduate Diploma in Computer Science & Engineering	For those who exit after two years (4 semesters) of the undergraduate programme	First two years or 4 semesters of the undergraduate programme	80
3	Bachelor of Science in Computer Science & Engineering	For those who exit after three years (6 semesters) of the undergraduate programme	First three years or 6 semesters of the undergraduate programme	120
4	Bachelor of Technology in Computer Science and Engineering	For those who exit after four years (8 semesters) of the undergraduate programme	First four years or 8 semesters of the undergraduate programme	156
Multiple Entry				
	Entry Level	**Eligibility**		
1	Second Year (3rd Semester)	• Subject to availability of seats in respective category and programme. • Student must have earned required number of credits defined in the respective programme. • Subject to the equivalence verification of credits from the department admission committee. • Admission will be on the basis of merit in the last qualified exam. • Any other criteria decided by the department fronm time to time.		
2	Third Year (5th Semester)	• Subject to availability of seats in respective category and programme. • Student must have earned required number of credits defined in the respective programme. • Subject to the equivalence verification of credits from the department admission committee.		

		• Admission will be on the basis of merit in the last qualified exam. • Any other criteria decided by the department fronm time to time.
3	Fourth Year (7^{th} Semester)	• Subject to availability of seats in respective category and programme. • Student must have earned required number of credits defined in the respective programme. • Subject to the equivalence verification of credits from the department admission committee. • Admission will be on the basis of merit in the last qualified exam. • Any other criteria decided by the department fronm time to time.

Semester –I

Course Code	Course Title	Credits	L	T	P	MID	END	CIA	Total
	Induction Program	0	0	0	0	0	0	0	0
BECSE1C01	Engineering Mathematics - I	3	3	0	0	22.5	37.5	15	75
BECSE1C02	Engineering Physics - I	4	3	0	-	22.5	37.5	15	75
	Engineering Physics – I Lab	0	0	0	1	7.5	12.5	5	25
BECSE1C03	English for Technical Communication	4	3	0	-	22.5	37.5	15	75
	Language Lab	0	0	0	1	7.5	12.5	5	25
BECSE1C04	Data Structure using C Programming	5	3	0	-	22.5	37.5	15	75
	Data Structure using C Programming Lab	0	0	0	2	15	25	10	50
BECSE1C05	Problem Solving and Computer Programming in C	4	3	0	-	22.5	37.5	15	75
	Problem Solving and Computer Programming in C Lab	0	0	0	2	7.5	12.5	5	25
BECSE1C06	Environment Studies (Audit Course)*	0	2	0	0	0	50	0	50
Total		**20**	**17**	**0**	**6**	**-**	**-**	**-**	**500**

*** Audit Course: Course without credit and qualifying in nature**

Semester –II

Course Code	Course Title	Credits	L	T	P	M1D	END	CIA	Total
BECSE1C07	Engineering Mathematics - II	3	3	0	0	22.5	37.5	15	75
BECSE1C08	Data Science	4	3	0	-	22.5	37.5	15	75
	Data Science Lab	0	0	0	1	7.5	12.5	5	25
BEECE1C09	Basic Electronics	4	3	0	-	22.5	37.5	15	75
	Basic Electronics Lab.	0	0	0	1	7.5	12.5	5	25
BECSE1C10	Computer Architecture	3				22.5	37.5	15	75
BECSE1C11	Professional Communication	4	3	0	-	22.5	37.5	15	75
	Language Lab	0	0	0	1	7.5	12.5	5	25
BECSE1C12	Introduction to Biology (In-house/MOOC course from Swayam/NPTEL)	2	2	0	0	15	25	10	50
BECSE1C13	Rights, Responsibilities, Law and Constitution (Audit Course)* In-house/MOOC course from Swayam/NPTEL	0	2	0	0	0	50	0	50*
Total		**20**	**16**	0	3	**-**	**-**	**-**	**500**

*** Audit Course: Course without credit and qualifying in nature**

Mandatory Internship/Training

Students will have to take up summer internship/training/MOOC Course of 4 - 6 weeks (40/60 Hrs.) at industry/organizations of repute/online platforms after 2th semester, that will be accredited in 3th semester.

Semester –III

Course Code	Course Title	Credits	L	T	P	MID	END	CIA	Total
BECSE2C01	Discrete Mathematics	3	3	0	0	22.5	37.5	15	75
BECSE2C02	Artificial Intelligence	3	3	0	0	22.5	37.5	15	75
BECSE2C03	Design and Analysis of Algorithms	4	3	0	-	22.5	37.5	15	75
	Design and Analysis of Algorithms Lab.	0	0	0	1	7.5	12.5	5	25
BECSE2C04	Data Communication & Computer Networks	4	3	0	-	22.5	37.5	15	75
	Data Communication & Computer Networks Lab	0	0	0	1	7.5	12.5	5	25
BECSE2C05	Object Oriented Programming using C++	4	3	0	-	22.5	37.5	15	75
	Object Oriented Programming using C++ Lab	0	0	0	1	7.5	12.5	5	25
BECSE2C06	Professional Ethics (Audit Course)* In-house/MOOC course from Swayam/NPTEL	-	-	-	-	-	50	-	50*
BECSE2C07	Indian Knowledge Systems In-house/MOOC course from Swayam/NPTEL	-	-	-	-	-	50	-	50*
BECSE2C08	Mandatory Internship /Training**	2	-	-	-	-	50	-	50
Total		**20**	**15**	**0**	**3**	**-**	**-**	**-**	**500**

*** Audit Course: Course without credit and qualifying in nature**

****4 - 6 weeks Mandatory Internship/Training undertaken after 2nd semester during summer vacations.**

SEMESTER IV

Course Code	Course Title	Credits	L	T	P	MID	END	CIA	Total
BECSE2C09	DBMS	4	3	0	-	22.5	37.5	15	75
	DBMS Lab	0	0	0	1	7.5	12.5	5	25
BECSE2C10	Machine Learning	4	3	0	-	22.5	37.5	15	75
	Machine Learning Lab	0	0	0	1	7.5	12.5	5	25
BECSE2C11	Operating Systems	4	3	0	-	22.5	37.5	15	75
	Operating Systems Lab	0	0	0	1	7.5	12.5	5	25
BECSE2C12	Software Engineering	4	3	0	-	22.5	37.5	15	75
	Software Engineering lab	0	0	0	1	7.5	12.5	5	25
BEECE2C13	Digital Electronics	4	3	0	-	22.5	37.5	15	75
	Digital Electronics Lab	0	0	0	1	7.5	12.5	5	25
BECSE2C14	Universal Human Value In-house/MOOC course from Swayam/NPTEL	0	0	0	0	0	50	0	50*
Total		20	15	0	5	-	-	-	500

***Audit Course: Course without credit and qualifying in nature**

Mandatory Internship/Training

Students will have to take up summer internship/training/MOOC Course of 4 - 6 weeks (40/60 Hrs.) at industry/organizations of repute/online platforms after 4th semester, that will be accredited in 5th semester.

SEMESTER V

Course Code	Course Title	Credits	L	T	P	MID	END	CIA	Total
BECSE3C01	Introduction to Information & Network Security	4	3	0	-	22.5	37.5	15	75
	Introduction to Information & Network Security Lab	0	0	0	1	7.5	12.5	5	25
BECSE3C02	Theory of Computation	3	3	0	0	22.5	37.5	15	75
BECSE3C03	Internet of Things (IoT)	4	3	0	-	22.5	37.5	15	75
	Internet of Things (IoT) Lab	0	0	0	1	7.5	12.5	5	25
BECSE3C04	Cloud Computing	3	3	0	0	22.5	37.5	15	75
BECSE3C05	Elective – I	4	4	0	0	30	50	20	100
BECSE3C06	Industrial Economics In-house/MOOC course from Swayam/NPTEL (Open Elective)	0	0	0	0	0	50	0	50*
BECSE3C07	Mandatory Internship/ Training**	2	0	0	0	0	50	0	50
Total		**20**	**16**	**0**	**2**	**-**	**-**	**-**	**500**

*** Audit Course: Course without credit and qualifying in nature**

**** 4 - 6 weeks Mandatory Internship/Training undertaken after 4th semester during summer vacations.**

SEMESTER VI

Course Code	Course Title	Credits	L	T	P	MID	END	CIA	Total
BECSE3C08	Big Data Analytics	4	3	0	-	22.5	37.5	15	75
	Big Data Analytics Lab	0	0	0	1	7.5	12.5	5	25
BECSE3C09	Deep Learning	4	3	0	-	22.5	37.5	15	75
	Deep Learning Lab	0	0	0	1	7.5	12.5	5	25
BECSE3C10	Block Chain	3	3	0	0	22.5	37.5	15	75
BECSE3C11	Cyber Physical Systems	3	3	0	0	22.5	37.5	15	75
BECSE3C12	Elective – II	4	4	0	0	30	50	20	100
BECSE3C13	Human Resource Management In-House/MOOC course from Swayam/NPTEL (Audit Course)*	0	0	0	0	0	50	0	50*
BECSE3C14	Project – I	2	0	0	4	10	25	5	50
Total		**20**	**16**	**0**	**6**	-	-	-	**500**

*** Audit Course: Course without credit and qualifying in nature**

Mandatory Internship/Training

Students will have to take up summer internship/training/MOOC Course of 4 - 6 weeks (40/60 Hrs.) at industry/organizations of repute/online platforms after 6th semester, that will be accredited in 7th semester.

SEMESTER VII

Course Code	Course Title	Credits	L	T	P	MID	END	CIA	Total
BECSE4C01	Digital Forensics & Cyber Security	3	3	0	0	22.5	37.5	15	75
BECSE4C02	Elective – III	4	4	0	0	30	50	20	100
BECSE4C03	Elective - IV	4	4	0	0	30	50	20	100
BECSE4C04	Project – II	5	0	0	6	25	62.5	12.5	125
BECSE4C05	Mandatory Internship/ Training**	4	0	0	0	0	100	0	100
BECSE4C06	MOOC course from Swayam/NPTEL (Audit Course)*	0	0	0	0	0	50	0	50*
Total		**20**	**11**	**0**	**6**	**-**	**-**	**-**	**500**

***Audit Course: Course without credit and qualifying in nature**

****4-6 weeks Mandatory Internship/Training undertaken after 6th semester during summer vacations.**

SEMESTER VIII

Course Code	Course Title	Credits	L	T	P	M1	M2	MJ	CIA	Total
BECSE4C07	Industrial Training/Major Project	16	0	0	0	0	0	400	0	400
Total		**16**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**400**

Elective Bucket

B.Tech. Computer Science and Engineering Program is designed to offer elective bucket as soon as student clears semester IV of the program. Student has to choose EB (Elective Bucket) out of the following six choices and shall continue with this group till his/her study at Central University of Jammu. The various elective bucket choices are:

EB 1. Information and Cyber Security

2.1. Computer & Network Security
2.2. Secure Coding
2.3. Cyber Forensics
2.4. Blockchain Technology and Applications

EB 2. Computer Animation and Gaming

1.1. Computer Vision
1.2. 3D Modelling and Animation
1.3. Game Design & Development
1.4. Augmented and Virtual Reality

EB 3. Data Science

3.1. Foundations of Data Science
3.2. Predictive Analytics Using Statistics
3.3. Data Science Applications: NLP, Computer Vision and IOT
3.4. Building Innovative Systems

EB 4. Full Stack

4.1. UI & UX Design
4.2. NoSQL Databases
4.3. Software Testing & Automation
4.4. Cloud & DevOps

EB 5. Conversational AI

5.1. Accelerated Data Science
5.2. Data Mining and Warehousing
5.3. Natural Language Processing

5.4. Speech Processing & Synthesis
EB 6. Robotics and Edge AI

6.1. Basics of Robotics and AI
6.2. Edge Computing Fundamentals
6.3. Embedded Vision
6.4. Reinforcement Learning

Elective – I	**Elective – II**	**Elective – III**	**Elective - IV**
1.1 Computer Vision **2.1** Computer & Network Security **3.1** Foundations of Data Science **4.1** UI & UX Design **5.1** Accelerated Data Science **6.1** Basics of Robotics and AI	**1.2** 3D Modelling and Animation **2.2** Secure Coding **3.2** Predictive Analytics Using Statistics **4.2** NoSQL Databases **5.2** Data Mining and Warehousing **6.2** Edge Computing Fundamentals	**1.3** Game Design & Development **2.3** Cyber Forensics **3.3** Data Science Applications: NLP, Computer Vision and IOT **4.3** Software Testing & Automation **5.3** Natural Language Processing **6.3** Embedded Vision	**1.4** Augmented and Virtual Reality **2.4** Blockchain Technology and Applications **3.4** Building Innovative Systems **4.4** Cloud & DevOps **5.4** Speech Processing & Synthesis **6.4** Reinforcement Learning

Semester Wise Credits for B.Tech. (Computer Science and Engineering)

Category of Course	**Semesters**								**Credit Breakup**
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	
Basic Sciences Courses	7	5	3						15
Humanities and Social Sciences including Management courses	4	4							8
Engineering Science courses including workshop, drawing, basics of electrical/ mechanical/computer etc.		4		4					8
Professional core courses	9	7	15	16	14	14	3		78
Professional Elective courses					4	4	8		16
Project Work & Internship/Training			2		2	2	9	16	31
Audit Course									
	20	20	20	20	20	20	20	16	156