

**FUTURE UNIVERSITY**  
(Established under Govt. of U. P. Act No. 12, 2024)

# **Study & Evaluation Scheme Of**

## **Bachelor of Technology**

### **B. TECH. (CS)**

**[Applicable w.e.f. Academic Session 2025-26]**

Approved by Academic Council



## **FUTURE UNIVERSITY**

**18th Milestone, Bareilly-Lucknow Highway NH-24**

**Near Faridpur, Bareilly, Uttar Pradesh 243503**

**Website: [www.futureuniversity.in](http://www.futureuniversity.in)**

## SUMMARY

Programme	<b>Bachelor of Technology B. Tech. (CS)</b>				
Duration	<b>Four years Full Time (eight semesters)</b>				
Medium	<b>English</b>				
Minimum Required Attendance	<b>75%</b>				
Maximum Credit	<b>170</b>				
Minimum Credit (required for the degree)	<b>160</b>				
Assessment (Theory)	<b>Mid Term</b>		<b>End Term</b>		<b>Total</b>
	<b>30%</b>		<b>70%</b>		<b>100%</b>
Assessment (Practical)	<b>Mid Term</b>		<b>End Term</b>		<b>Total</b>
	<b>50%</b>		<b>50%</b>		<b>100%</b>
Internal Evaluation (Theory Papers)	<b>Class Test I</b>	<b>Class Test 2</b>	<b>Assignment(s)</b>	<b>Other Activity (including attendance)</b>	<b>Total</b>
	<b>10 marks</b>	<b>10 marks</b>	<b>5 marks</b>	<b>5 marks</b>	<b>30 marks</b>
Internal Evaluation (Practical Papers)	<b>Experiment File Viva</b>	<b>Exam</b>	<b>Attendance</b>	<b>Total</b>	
	<b>10 marks</b>	<b>30 marks</b>	<b>10 marks</b>	<b>50 marks</b>	
Duration of Examination (Theory)	<b>Mid Term</b>			<b>End Term</b>	
	3 hrs.			1 ½ hrs.	
Duration of Examination (Practical)	As per the requirement of the practical paper				

To qualify the course a student is required to secure a minimum of 40% marks in aggregate including the semester end examination and teachers' continuous evaluation. (i.e., both internal and external).

A candidate who secures less than of 40% of marks in a course shall be deemed to have failed in that course. The student should have at least 50% marks in aggregate to clear the semester. In case a student has more than 40% in each course, but less than 50% overall in a semester, he/she shall re-appear in courses where the marks are less than 50% to achieve the required aggregate percentage of 50% in the semester.

### **Question Paper Structure**

- 1. The question paper shall consist of six questions. Out of which first question shall be of short answer type (not exceeding 50 words) and will be compulsory. Question No. 1 shall contain 8 parts representing all units of the syllabus and students shall have to answer any five (weight age 4 marks each).***
- 2. Out of the rest five questions, students shall be required to attempt all five questions, but there will be an internal choice of A or B. Each question will be from one unit of the syllabus. The weight age of Question No. 2 to 6 shall be 10 marks each.***

# FUTURE UNIVERSITY

Faculty of Engineering and Technology (Code: 05)

Department of Engineering and Technology

Bachelor of Technology in Computer Science and Engineering

<b>Credit Framework for the B. Tech. (CS) -NEP-2020</b>									
Sem.	Major (Core)	Minor Stream	Multidisciplinary	Ability Enhancement Course	Skill Enhancement Course	Value Added Courses Common for All UG	Summer Internship	Research Project/ Dissertation	Total Credit
1	10	4	5	0	2	2			23
2	10	2	5	0	2	2			21
Students exiting the programme after securing 40 credits will be awarded UG Certificate in the relevant Discipline / Subject provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester									
3	10	6	2	2	2				22
4	14	3		2					19
Students exiting the programme after securing 80 credits will be awarded UG Diploma in the relevant Discipline / Subject provided they secure 4 credits in skill based vocational courses offered during first year or second year summer term.									
5	15	3			2				20
6	13	4						3	20
Students who want to undertake 3-year UG Programme will be awarded UG Degree in the relevant Discipline/ Subject Upon securing 120 credits									
7	11	3						6	20
8	9	4						12	25
Students will be awarded UG Degree (Honours) with Research in the relevant Discipline/ Subject provided they secure 160 credits (As per NEP guidelines)									

Total = 170 Credit

		<b>Future University</b>										
		<b>B. Tech. in Computer Science (Undergraduate Regular)</b>										
		<b>Course Structure/ Degree Award Checklist 2025-2029</b>										
<b>Program Name:</b>		<b>B. Tech. (CS)</b>					<b>Program Code:</b>		<b>07</b>			
		<b>Total Credit of Program: 170</b>					<b>Branch Code:</b>		<b>05</b>			
		<b>Theory</b>				<b>Week</b>			<b>Evaluation Scheme</b>		<b>Total</b>	<b>Credit</b>
<b>S N</b>	<b>Course Category</b>	<b>Code</b>	<b>Course Title</b>		<b>L</b>	<b>T</b>	<b>P</b>	<b>C A</b>	<b>E E</b>			
<b>Semester –I</b>												
1	Multidisciplinary Course	HSS1101	Engineering Mathematics-1		3	0	0	3	7	10	3	
2	Minor Course	HSS1102	Advanced Engineering Physics		2	0	0	3	7	10	2	
3	Major Core Courses	EEE1103/EEC1103	Essentials of Electrical Engineering / Essentials of Electronics Engineering		3	0	0	3	7	10	3	
4	Major Core Courses	ECS1104/EME1104	Principles of Problem-Solving Using Advance C / Elements of Mechanical		3	0	0	3	7	10	3	
5	Value added course	ECS1105	AI for Everyone		2	1	0	3	7	10	3	
6	Minor Course	ECS1106	MOOC		Self-Paced Learning					10	3	
<b>Practical</b>												
7	Minor Course	HSS1170	Advanced Engineering Physics LAB		0	0	2	5	5	10	1	
8	Major Core Courses	ECS1171/EME1171	Programming using advanced C LAB / EME Lab		0	0	2	5	5	10	1	
9	Major Core Courses	EEE1172/EEC1172	Essentials of Electrical Engineering LAB / Essentials of Electronics Engineering LAB		0	0	2	5	5	10	1	
10	Skill Enhancement Course	EME1173/EME1174	Workshop Practice Lab / Engineering Graphics Lab		0	0	4	5	5	10	2	

11	Multidisciplinary Course	IKS1101	IKS-1 (Indian Knowledge System-1)	1	0	0	50		50	1
<b>TOTAL</b>				<b>14</b>	<b>1</b>	<b>10</b>	<b>400</b>	<b>550</b>	<b>1050</b>	<b>23</b>

SN	Course Category	Code	Theory Course Title	Week			Evaluation Scheme		Total	Credit
				L	T	P	CA	EE		
<b>Semester –II</b>										
1	Multidisciplinary Course	HSS1201	Engineering Mathematics – II	3	0	0	30	70	100	3
2	Minor Course	HSS1202	Environmental Science	2	0	0	30	70	100	2
3	Major Core Courses	EEC1203/EEE1203	Essentials of Electronics Engineering / Essentials of Electrical Engineering	3	0	0	30	70	100	3
4	Major Core Courses	EME1204/EC S1204	Elements of Mechanical Engg. / Principles of Problem Solving Using Advance C	2	1	0	30	70	100	3
5	Value added course	ECS1205	AI for Engineers	2	1	0	30	70	100	3
6	Minor Course	ECS1206	MOOC	Self-Paced Learning					100	3
<b>Practical</b>										
7	Major Core Courses	EME1271/EC S1271	EME Lab/Programming using advanced C LAB	0	0	2	50	50	100	1
8	Major Core Courses	EEC1272/EEE1272	Essentials of Electronics Engineering LAB / Essentials of Electrical Engineering	0	0	2	50	50	100	1
9	Skill Enhancement Course	EME1273/EME1274	Engineering Graphics Lab / Workshop Practice Lab	0	0	2	50	50	100	1
10	Skill Enhancement Course	LSM1210	LSM - I (Life Skill & Mentoring I)	0	0	0				1
<b>TOTAL</b>				<b>14</b>	<b>3</b>	<b>8</b>	<b>300</b>	<b>500</b>	<b>900</b>	<b>21</b>

S N	Course Category	Code	Theory  Course Title	Week			Evaluat ion Scheme		Tot al	Credit
				L	T	P	C A	EE		
<b>Semester –III</b>										
1	Multidisciplinary Course	HSS2301	Discrete Mathematics	2	0	0	3 0	70	10 0	2
2	Minor Course	HSS2302	Mathematics-III	2	0	0	3 0	70	10 0	2
3	Major Core Courses	ECS2303	Data Structures	2	1	0	3 0	70	10 0	3
4	Minor Course	ECS2304	MOOC	Self-Paced Learning					10 0	3
5	Major Core Courses	EEE2305	Digital Electronics	2	1	0	3 0	70	10 0	3
6	Skill Enhancement Course	ECS2306	Python Programming	2	1	0	3 0	70	10 0	3
<b>Practical</b>										
1	Major Core Courses	ECS2370	Data Structures Lab	0	0	4	50	50	10 0	2
2	Major Course	EEE2371	Digital Electronics Lab	0	0	4	50	50	10 0	2
3	Major Core Courses	ECS2372	Python Programming Lab	0	0	4	50	50	10 0	2
			<b>TOTAL</b>	<b>13</b>	<b>2</b>	<b>8</b>	<b>28 0</b>	<b>520</b>	<b>90 0</b>	<b>22</b>

			Theory	WEEK			Evaluation Scheme				
SN	Course Category	Code	Course Title	L	T	P	CA	EE	Total	Credit	
<b>Semester-IV</b>											
1	Major Core Courses	ECS2401	OOP's Concept using Java	3	0	0	30	70	100	3	
2	Major Core Courses	ECS2402	Computer Organization & Architecture	3	0	0	30	70	100	3	
3	Major Core Courses	ECS2403	Operating Systems	2	0	0	30	70	100	2	
5	Minor Course	ECS2404	Recent Advances in Technology	2	0	0	30	70	100	2	
6	Minor Course	ECS2405	MOOC	Self-Paced Learning						100	3
<b>Practical</b>											
7	Major Core Courses	ECS2470	OOP's Concept using Java Lab	0	0	4	50	50	100	2	
8	Major Core Courses	ECS2471	Computer Organization & Architecture Lab	0	0	4	50	50	100	2	
9	Major Core Courses	ECS2472	Operating System Lab	0	0	4	50	50	100	2	
			<b>TOTAL</b>	<b>12</b>	<b>0</b>	<b>12</b>	<b>300</b>	<b>500</b>	<b>900</b>	<b>19</b>	

			Theory	Week			Evaluation Scheme				
SN	Course Category	Code	Course Title	L	T	P	CA	EE	Total	Credit	
<b>Semester -V</b>											
1	Major Core Courses	ECS3501	Design and Analysis of Algorithms	3	0	0	30	70	100	3	
2	Major Core Courses	ECS3502	Database Management System	3	0	0	30	70	100	3	
3	Major Core Courses	ECS3503	Compiler Design	2	0	0	30	70	100	2	
4	Major Core Courses	ECS3504	Elective-1	3	0	0	30	70	100	3	
5	Minor Course	ELA3505	Professional Law and Ethics	2	0	0	30	70	100	2	
6	Minor Course	ECS3506	MOOC	Self-Pace Learning						100	1
<b>Practical</b>											
8	Major Core Courses	ECS3571	Design and Analysis of Algorithms Lab	0	0	4	50	50	100	2	
9	Major Core Courses	ECS3572	Database Management System Lab	0	0	4	50	50	100	2	

10	Skill Enhancement Course	ECS3573	Internship	0	0	4	50	50	100	2
			<b>TOTAL</b>	<b>13</b>	<b>0</b>	<b>12</b>	<b>300</b>	<b>500</b>	<b>900</b>	<b>20</b>

S N	Course Category	Code	Theory Course Title	Week		Evaluation Scheme			Total	Credit
				L	T	P	CA	EE		
<b>Semester-VI</b>										
1	Major Core Courses	ECS3601	Computer Networks	2	0	0	30	70	100	2
2	Major Core Courses	ECS3602	Elective II	3	0	0	30	70	100	3
3	Major Core Courses	ECS3603	Cryptography	2	0	0	30	70	100	2
4	Minor Course	ECS3604	Open Elective-I	3	0	0	30	70	100	3
5	Major Core Courses	ECS3605	Digital Image Processing	2	0	0	30	70	100	2
6	Minor Course	ECS3606	MOOC	Self-Pace Learning					100	1
<b>Practical</b>										
8	Major Core Courses	ECS3671	Computer Networks Lab	0	0	4	50	50	100	2
9	Major Core Courses	ECS3672	Elective II Lab	0	0	4	50	50	100	2
10	Research Project/ Dissertation	ECS3673	Mini Project	0	0	6	50	50	100	3
			<b>TOTAL</b>	<b>12</b>	<b>0</b>	<b>14</b>	<b>300</b>	<b>500</b>	<b>900</b>	<b>20</b>

S N o	Course Category	CODE	Theory Course Title	Week			Evaluation Scheme		Total	Credit
				L	T	P	CA	EE		
<b>Semester –VII</b>										
1	Major Core Courses	ECS4701	Elective- III	3	0	0	30	70	100	3
2	Major Core Courses	ECS4702	Elective- IV	3	0	0	30	70	100	3
3	Major Core Courses	ECS4703	Open Elective-II	3	0	0	30	70	100	3

4	Minor Courses	ECS4704	Engineering Research Methodology	2	0	0	30	70	100	2
5	Minor Courses	ECS4705	MOOC	Self-Pace Learning				100	1	
<b>Practical</b>										
6	Research Project/ Dissertation	ECS4771	Project-I	0	0	1 2	50	10 0	150	6
7	Major Core Courses	ECS4772	Elective- IV Lab	0	0	4	50	50	100	2
			<b>TOTAL</b>	<b>11</b>	<b>0</b>	<b>1 6</b>	<b>22 0</b>	<b>43 0</b>	<b>750</b>	<b>20</b>

S N	Course Category	Code	Theory  Course Title	Week			Evaluat ion Scheme		Total	Credi t
				L	T	P	C A	E E		
<b>Semester-VIII</b>										
1	Major Core Courses	ECS4801	Artificial Intelligence and Expert Systems	3	0	0	30	70	100	3
2	Major Core Courses	ECS4802	Elective-V	3	0	0	30	70	100	3
3	Minor Course	ECS4803	Elective- VI	3	0	0	30	70	100	3
4	Major Core Courses	ECS4804	Data Compression	3	0	0	30	70	100	3
5	Minor Course	ECS4805	MOOC	Self-Pace Learning				100	1	
<b>Practical</b>										
6	Research Project/ Dissertati on	ECS4871	Project – II	0	0	2 4	10 0	30 0	400	12
			<b>TOTAL</b>	<b>1 2</b>	<b>0</b>	<b>2 4</b>	<b>22 0</b>	<b>58 0</b>	<b>900</b>	<b>25</b>

SN	Course Category
1	Major (Core)
2	Minor Stream
3	Multidisciplinary
4	Ability Enhancement Course

5	Skill Enhancement Course
6	Value Added Courses Common for All UG
7	Summer Internship
8	Research Project/ Dissertation

<b>SN</b>		<b>B. Tech. CS ELECTIVE-I</b>
1	ECS3504	Fuzzy logic
2	ECS3507	Soft Computing
3	ECS3508	Discrete Mathematics
4	ECS3509	Graph Theory
5	ECS3510	System Programming
<b>SN</b>		<b>B. Tech. CS ELECTIVE-II</b>
1	ECS3602	Software Testing
2	ECS3607	Multimedia Systems
3	ECS3608	Principles of Programming Language
4	ECS3609	Web Development
5	ECS3610	Linux Administration
<b>SN</b>		<b>B. Tech. CS ELECTIVE-III</b>
1	ECS4701	Cyber Security
2	ECS4704	Pattern Recognition
3	ECS4705	Parallel Algorithm
4	ECS4706	Introduction to Machine Learning

5	ECS4707	Introduction to IOT
<b>SN</b>		<b>B. Tech. CS ELECTIVE-IV</b>
1	ECS4702	Embedded and Real Time Systems/Embedded and Real Time Systems Lab
2	ECS4708	Neural Networks/Neural Networks Lab
3	ECS4709	OS for Smart Devices (Android)/ OS for Smart Devices (Android) Lab
4	ECS4710	Client Server Computing/Client Server Computing Lab
5	ECS4711	Cloud Computing/Cloud Computing Lab
<b>SN</b>		<b>B. Tech. CS ELECTIVE-V</b>
1	ECS4802	Distributed Databases
2	ECS4806	Entrepreneurship & Technology Management
3	ECS4807	Simulation and Modeling
4	ECS4808	Block Chain
5	ECS4809	Edge & Fog Computing
<b>SN</b>		<b>B. Tech. CS ELECTIVE-VI</b>
1	ECS4803	Advanced Computer Networks
2	ECS4810	Data Warehouse and Data Mining
3	ECS4811	Computational Complexity
4	ECS4812	DevOps
5	ECS4813	Autonomous Systems & Robotics
<b>SN</b>		<b>CSE OPEN ELECTIVE-I</b>
1	ECS3604	Total Quality Management
2	ECS3608	Human Computer Interaction
3	MBA3650	Entrepreneurship Development
4	HAS3626	Non-Conventional Energy Resource
5	HAS3628	Operational Research
<b>SN</b>		<b>CSE OPEN ELECTIVE-II</b>
1	HAS4725	Soft Skills and Interpersonal Communications

2	MBA4751	Human Resource Development and Organizational Behaviour
3	ECS4703	Product Development
4	HAS4727	Queuing Theory and Modelling
5	ECS4707	E-Governance and Digital Transformation