

**Course Structure of  
Bachelor of Technology (B. Tech)  
in  
Computer Science and Engineering  
(CSE)**



Birla School of Applied Sciences  
Birla Global University  
Bhubaneswar

## B. Tech in Computer Science and Engineering 2024

<b>I Semester [First Year]</b>						
SN	CC	Name of the Subject	L	T	P	C
<b>THEORY</b>						
1	ES	Programming for Problem Solving using C	3	0	0	3
2	BS	Engineering Mathematics-I	3	1	0	4
3	ES	Basic Electrical Engineering	3	0	0	3
4	HS	Universal Human Values	3	0	0	3
5	HS	Technical Communication	2	0	0	2
<b>PRACTICAL/SESSIONAL</b>						
6	MC	Sports/Yoga	0	0	1	1
7	ES	Problem Solving using C Lab	0	0	2	1
8	ES	Basic Electrical Engineering Lab	0	0	2	1
9	HS	Technical Communication Lab	0	0	2	1
		<b>TOTAL</b>				<b>19</b>

<b>II Semester [First Year]</b>						
SN	CC	Name of the Subject	L	T	P	C
<b>THEORY</b>						
1	PC	Data Structures	3	0	0	3
2	BS	Engineering Mathematics-II	3	1	0	4
3	ES	Basic Electronics	3	0	0	3
4	BS	Engineering Physics	3	0	0	3
5	HS	Corporate Communications	2	0	0	2
6	ES	Design Thinking	2	0	0	2
<b>PRACTICAL/SESSIONAL</b>						
7	ES	Basic Electronics Laboratory	0	0	2	1
8	PC	Data Structure Laboratory	0	0	2	1
9	HS	Corporate Communication Lab	0	0	2	1
		<b>TOTAL</b>				<b>20</b>

III Semester [Second Year]						
SN	CC	Name of the Subject	L	T	P	C
<b>THEORY</b>						
1	PC	Discrete Mathematics	3	1	0	4
2	PC	Database Management Systems	3	0	0	3
3	ES	Digital System Design	3	0	0	3
4	PC	Object-Oriented Programming through Java	3	0	0	3
5	PC	Computer Network	3	0	0	3
<b>PRACTICAL/SESSIONAL</b>						
6	ES	Digital System Design Lab	0	0	2	1
7	PC	Object-Oriented Programming through Java Lab	0	0	2	1
8	PC	Data Base Management Systems Lab	0	0	2	1
9	HS	Social Responsibly and Community Engagement/NSS	0	0	2	1
11	PST	Learning Project-I	0	0	0	1
<b>TOTAL</b>			<b>21</b>			

IV Semester [Second Year]						
SN	CC	Name of the Subject	L	T	P	C
<b>THEORY</b>						
1	ES	Fundamentals of Python Programming	3	0	0	3
2	PC	Computer Organization & Architecture	3	0	0	3
3	PC	Design and Analysis of Algorithms	3	0	0	3
4	PC	Operating System	3	0	0	3
5	PE	Professional Elective-I(From Bucket)	3	0	0	3
6	PC	Artificial Intelligence	3	0	0	3
<b>PRACTICAL/SESSIONAL</b>						
7		Fundamentals of Python Programming Lab	0	0	2	1
8	PC	Design and Analysis of Algorithms Lab	0	0	2	1
9	PC	Unix and Shell Programming Laboratory	0	0	2	1
10	PST	Learning Project-II	0	0	0	1
<b>TOTAL</b>			<b>22</b>			

V Semester [Third Year]						
SN	CC	Name of the Subject	L	T	P	C
<b>THEORY</b>						
1	HS	Engineering Economics and Costing	2	0	0	2
2	PC	Formal Language and Automata Theory	3	0	0	3
3	PC	Data Mining and Data Warehousing	3	0	0	3
4	PE	Professional Elective-II (From Bucket)	3	0	0	3
5	PC	Software Engineering	3	0	0	3
6	PC	Introduction to Cyber Security	3	0	0	3
<b>PRACTICAL/SESSIONAL</b>						
7	PC	Software Engineering Lab	0	0	2	1
8	PC	Data Mining Lab	0	0	2	1
9	PST	Minor Project -I	0	0	4	2
10	PST	Summer Internship-I	0	0	1	1
11	MC	Constitution of India	0	0	2	1
<b>TOTAL</b>			<b>23</b>			

VI Semester [Third Year]						
SN	CC	Name of the Subject	L	T	P	C
<b>THEORY</b>						
1	ES	Optimization Techniques	3	0	0	3
2	PC	Introduction to Machine Learning	3	0	0	3
3	PC	Microprocessors and Microcontroller	3	0	0	3
4	PE	Professional Elective-III (From Bucket)	3	0	0	3
5	PC	Cloud Computing	3	0	0	3
6	OE	Open Elective-I (From Bucket)	3	0	0	3
<b>PRACTICAL/SESSIONAL</b>						
7	PC	Cloud Computing Lab	0	0	2	1
8	PC	Machine Learning Lab	0	0	2	1
9	PST	Minor Project Work-II	0	0	4	2
10	MC	Essence of Indian Knowledge Tradition	0	0	2	1
<b>TOTAL</b>			<b>23</b>			

<b>VII Semester [Fourth Year]</b>						
<b>SN</b>	<b>CC</b>	<b>Name of the Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>THEORY</b>						
1	PC	Compiler Design	3	0	0	3
2	PC	Introduction to Internet of Things	3	0	0	3
3	PE	Professional Elective-IV (From Bucket)	3	0	0	3
4	HS	Entrepreneurship Development	3	0	0	3
	OE	Open Elective-II (From Bucket)	3	0	0	3
<b>PRACTICAL/SESSIONAL</b>						
6	PC	Internet of Things Lab	0	0	2	1
7	PC	Compiler Design Lab	0	0	2	1
8	PST	Major Project Work-I	0	0	6	3
9	PST	Summer Industry Internship-II	0	0	0	1
		<b>TOTAL</b>	<b>21</b>			

<b>VIII Semester [Fourth Year]</b>						
<b>SN</b>	<b>CC</b>	<b>Name of the Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>THEORY</b>						
1	PE	Professional Elective-V (From Bucket)	3	0	0	3
2	PE	Professional Elective-VI (From Bucket)	3	0	0	3
3	OE	Open Elective-III (From Bucket)	3	0	0	3
<b>PRACTICAL/SESSIONAL</b>						
4	PST	Technical Seminar	0	0	0	1
5	PST	Major Project Work-II	0	0	8	4
6	PST	Comprehensive Viva-Voice	0	0	2	1
		<b>TOTAL</b>	<b>15</b>			

<b>Professional Electives Bucket</b>	
PE I	Introduction to Data Science
	Introduction to Soft Computing
	Fuzzy Logic & Applications
	UI/UX Design
	Data Modelling
PE II	Data Preparation and Analysis
	Data Storage and Management in Cloud
	Cloud Security
	Wireless Sensor Network
	Introduction to Distributed System
	Computational Intelligence
PE III	Parallel Computing
	Digital Image Processing
	Big Data Analytics
	Business Intelligence and Analytics
	Serverless Computing
	Cryptography and Network security
PE IV	Natural Language Processing
	Pattern Recognition
	Computer Vision
	Health Care Data Analytics
	Information Retrieval System
	Mobile Computing
PE V	Block Chain Technology
	Edge Computing
	Robotics and Automation
	Bio-inspired Computing
	Cloud Dev-Ops
	Secure Cloud Architecture
PE VI	Intrusion Detection System
	Software Testing
	Real Time System
	Software Project Management
	Computer Graphics
	Generative AI

<b>Open Electives Bucket</b>	
OE I	Web Development with PHP
	Advanced Java
	Bioinformatics
	Introduction to Digital Signal Processing
	Genetic Algorithm
OE II	Android Application Development using Kotlin
	IOT Security and Privacy
	IOS Development
	Medical Image processing
	IOT Application Development
OE III	Data Analytics using R
	.NET programming
	Embedded System
	Genome Data Science
	Deep Learning

## Credit Distribution of the Courses

Semester	HS	BS	ES	PC	PE	OE	PST	MC	
Sem I	6	4	8	-	-	-	-	1	19
Sem II	3	7	6	4	-	-	-	-	20
Sem III	1	-	4	15	-	-	1	-	21
Sem IV	-	-	4	14	3	-	1	-	22
Sem V	2	-	-	14	3	-	3	1	23
Sem VI	-	-	3	11	3	3	2	1	23
Sem VII	3	-	-	8	3	3	4	-	21
Sem VIII	-	-	-	-	6	3	6	-	15
<b>Total Credit</b>	15	11	25	65	15	12	17	3	<b>164</b>
<b>Percentage of the Course</b>	9.1%	6.7%	15.2%	40.2%	10.9%	5.4%	10.3%	1.8%	

- HS – Humanities Science
- BS – Basic Science
- ES – Engineering Science
- PC – Professional Core
- PE – Professional Elective
- OE – Open Elective
- PST – Project/Seminar/Internship
- MC – Mandatory Course