

# Curriculum Structures of the B. Tech programme Computer Science and Engineering (CSE)

**Effective from Batch 2018 (Autumn 2018)**

## Basic Science Courses:

Course Code	Course Name	Credit				CH
		L	T	P	Total	
MS104	Mathematics-I	3	1	0	4	4
MS105	Mathematics-II	3	1	0	4	4
MS205	Mathematics-III	3	0	0	3	3
CO105	Discrete Maths	3	1	0	4	4
PH103	Physics-I	2	0	1	3	4
PH104	Physics-II	2	0	0	2	2
CH103	Chemistry	3	0	1	4	5
BT201	Biology	3	0	0	3	3
	Total-	22	3	2	27	29

## HSS and Management Courses:

Course Code	Course Name	Credit				CH
		L	T	P	Total	
EF103	English	2	0	1	3	4
BA201	Economics	3	0	0	3	3
IC361	Accounting and Financial Management	3	0	0	3	3
	HMS Elective-I	3	0	0	3	3
	Total-	11	0	2	12	13

## HSS and Management Elective Courses:

Course Code	Course Name	Credit				CH
		L	T	P	Total	
EG4XX	Introduction to Academic Reporting in English	2	0	1	3	4
BA4XX	Fundamentals of Management	3	0	0	3	3
BA4XX	Social Responsibility and Professional Ethics in Engineering	3	0	0	3	3

## Engineering Science Courses:

Course Code	Course Name	Credit				CH
		L	T	P	Total	
CE1XX	Engineering Graphics and Design	1	0	2	3	5
EE1XX	Basic Electrical Engineering	3	0	0	3	3
EE1XX	Basic Electrical Engineering Lab	0	0	1	1	2
EL1XX	Basic Electronics	2	1	1	4	5
ME1XX	Workshop Practice	0	0	2	2	4
CO103	Introductory Computing	2	1	0	3	3
CO104	Computing Laboratory	0	0	2	2	4
EL2XX	Signals and Systems	2	1	0	3	3
CO218	Data Communication	3	0	0	3	3
CO209	Computing Workshop (SciLab/ MatLab/ R & Simulator Lab)	0	0	2	2	4
	Total-				26	36

**Professional Core Courses:**

Course Code	Course Name	Credit				CH
		L	T	P	Total	
CO202	Digital Logic Design	3	0	1	4	5
CO210	Data Structures	3	1	0	4	4
CO216	Formal Languages and Automata	3	0	0	3	3
CO214	Computer Architecture and Organization	3	1	0	4	4
CO215	Computer Architecture and Organization lab	0	0	1	1	2
CO206	Design and Analysis of Algorithm	3	0	1	4	5
CO211	Data Structures using Object Oriented Programming Lab	0	1	2	3	5
CO309	Operating Systems	3	0	0	3	3
CO312	Database Systems	3	0	0	3	3
CO315	Computer Networks	3	0	0	3	3
CO310	Operating Systems Lab	0	0	1	1	2
CO316	Computer Network Lab	0	0	1	1	2
CO313	Database Systems Lab	0	1	1	2	3
CO314	System software and Compiler Design	3	0	1	4	5
CO311	Software Engineering	3	0	0	3	3
CO401	Artificial Intelligence	3	0	0	3	3
CO217	Graph Theory	3	0	0	3	3
CO303	Computer Graphics	3	0	1	4	5
	Total-			10	53	63

**Category-wise Break-up:**

Course Category	Credits
Humanities, Social Science and Management Courses (HSMC)	12
Basic Science Courses (BSC)	27
Engineering Science Courses (ESC)	26
Professional Core Courses (PCC)	53
Professional Elective Courses (PEC)	17
Open Elective Courses (OEC)	12
Projects	14
Total-	161

## Semester-wise Distribution of Courses, B. Tech (CSE)

### Semester-I

S. No.	Course Code	Course Name	L	T	P	CR	CH
1.	CH103	Chemistry	3	0	1	4	5
2.	PH103	Physics-I	2	0	1	3	4
3.	MS104	Mathematics-I	3	1	0	4	4
4.	EE103	Basic Electrical Engineering	3	0	0	3	3
5.	EE104	Basic Electrical Engineering Lab	0	0	1	1	2
6.	EF103	Communicative English	2	0	1	3	4
7.	SE100	Induction Program	-	-	-	-	8
		Total-	13	1	4	18	22

### Semester-II

S. No.	CourseCode	Course Name	L	T	P	CR	CH
1.	PH104	Physics-II	2	0	0	2	2
2.	MS105	Mathematics-II	3	1	0	4	4
3.	CO105	Discrete Mathematics	3	1	0	4	4
4.	EC102	Basic Electronics	2	1	1	4	5
5.	ME102	Workshop Practice	0	0	2	2	4
6.	CO103	Introductory Computing	2	1	0	3	3
7.	CO104	Computing Lab	0	0	2	2	4
8	CE103	Engineering Graphics	1	0	2	3	5
			13	4	7	24	31

### Semester-III

S. No.	CourseCode	Course Name	L	T	P	CR	CH
1	MS205	Mathematics – III	3	0	0	3	3
2	CO202	Digital Logic Design	3	0	1	4	5
3	CO209	Computing Workshop	0	0	2	2	4
4	BA201	Economics	3	0	0	3	3
5	CO210	Data Structures	3	1	0	4	4
6	CO211	Data structures using Object Oriented Programming Lab	0	1	2	3	5
7	EC201	Signals and Systems	2	1	0	3	3
8	ES201	Environmental Science	2	0	1	0	3
		Total-	14	3	5	22	30

### Semester-IV

S. No.	Course Code	Course Name	L	T	P	CR	CH
1	BT201	Biology	3	0	0	3	3
2	CO218	Data Communication	3	0	0	3	3
3	CO214	Computer Architecture and Organization	3	1	0	4	4
4	CO215	Computer Organization Lab	0	0	1	1	2
5	CO216	Formal Language and Automata	3	0	0	3	3
6	CO206	Design and Analysis of Algorithms	3	0	1	4	5
7	CO217	Graph Theory	3	0	0	3	3
		Total-	18	1	2	21	23

### Semester-V

S. No.	Course Code	Course Name	L	T	P	CR	CH
1.	CO309	Operating Systems	3	0	0	3	3
2.	CO311	Software Engineering	3	0	0	3	3
3	CO310	Operating Systems Lab	0	0	1	1	2
4	CO312	Database Systems	3	0	0	3	3
5	CO313	Data base Systems Lab	0	1	1	2	3
6	CO303	Computer Graphics	3	0	1	4	5
7		Elective-I (PEC01)	3	0	1	4	5
8		Open Elective-I (OEC01)	3	0	0	3	3
9	LW301	Indian Constitution (MC- Non Credit)	1	0	0	0	1
		Total-	18	1	4	23	27

### Semester-VI

S. No.	CourseCode	Course Name	L	T	P	CR	CH
1.	CO314	System Software and Compiler Design	3	0	1	4	5
2.		Elective-II (PEC02)	3	0	0	3	3
3.		Open Elective-II (OEC02)	3	0	0	3	3
5.	CO315	Computer Networks	3	0	0	3	3
6.	CO316	Computer Networks Lab	0	0	1	1	2
7.	IC361	Accounting and Financial Management	3	0	0	3	3
	CO317	Project-I (using SE perspective)	0	0	2	2	4
		Total-	15	0	4	19	23

### Semester-VII

S. No.	CourseCode	Course Name	L	T	P	CR	CH
1.	XXxxx	* HSS/Management Elective	3	0	0	3	3
2.	CO401	Artificial Intelligence	3	0	0	3	3
3.		Elective-III (PEC03)	3	0	1	4	5
4.		Elective-IV (PEC04)	3	0	0	3	3
5.		Open Elective-III (OEC03)	3	0	0	3	3
6.	CO402	Project-II	0	0	4	4	8
10	CT430	Essence of Indian Traditional Knowledge(MC- Non Credit)	1	0	0	0	1
		Total-	15	0	6	20	26

### Semester-VIII

S. No.	Course Code	Course Name	L	T	P	CR	CH
1.		Elective-V (PEC05)	3	0	0	3	3
2.		Open Elective-IV (OEC04)	3	0	0	3	3
3.	CO403	Project-III	0	0	8	8	16
		Total-	6	0	10	14	22

### Mandatory Non-credit Courses:

S. No.	Course Code	Course Name	Schedule
1	SE100	Induction Programme	Semester I
2	CO404	Summer Internship /Industrial Training	After Semester VI
3	CO405	Comprehensive Written Exam	Semester VII/Semester VIII
4	ES201	Environmental Science	Semester III
5	LW301	Indian Constitution	Semester V
6	CT430	Indian Traditional Knowledge	Semester VI

### Semester-wise Break-up:

Semester	Category-wise Credit Distribution							Total Credits
	HSMC	BSC	ESC	PCC	PEC	OEC	PCE	
I	3	11	4	0	0	0	0	18
II	0	10	14	0	0	0	0	24
III	3	3	5	11	0	0	0	22
IV	0	3	3	15	0	0	0	21
V	0	0	0	16	4	3	0	23
VI	3	0	0	8	3	3	2	19
VII	3	0	0	3	7	3	4	20
VIII	0	0	0	0	3	3	8	14
Total-	12	27	26	53	17	12	14	161

## Professional Elective Courses (PEC)

### Semester VI

Group	Course Name	L-T-P	Credit
PEC01	Web Technology	3-0-1	4
	Embedded Systems	3-0-1	4
	Parallel Programming	3-0-1	4
PEC02	Principles of Programming Languages	3-0-0	3
	Network Management and Security	3-0-0	3
	Cryptography	3-0-0	3
	Logic in Computer Science	3-0-0	3
	Theory of Computations	3-0-0	3

### Semester VII

Group	Course Name	L-T-P	Credit
PEC03	Machine Learning	3-0-1	4
	Distributed Systems	3-0-1	4
	Computer Vision & Image Processing	3-0-1	4
PEC04	Cloud Computing	3-0-0	3
	Quantum Computing	3-0-0	3
	Statistical Modelling and Applications	3-0-0	3
	Internet of Things	3-0-0	3
	Software Defined Networking and Network Function Virtualization	3-0-0	3
	Geometric Algorithms	3-0-0	3
	Bioinformatics	3-0-0	3

### Semester VIII

Group	Course Name	L-T-P	Credit
PEC05	Natural Language Processing	3-0-0	3
	Linear Optimization	3-0-0	3
	Advanced Database Management Systems	3-0-0	3
	Fuzzy Logic and Neural Networks	3-0-0	3
	Mobile Computing	4-0-0	4
	Knowledge Representation and Reasoning	4-0-0	4
	Advanced Algorithms	4-0-0	4
	Data Mining	3-0-0	3
	Computer Architecture Parallel Processing	3-0-0	3
	Operation Research	3-0-0	3