

**DEPARTMENT OF  
COMPUTER SCIENCE AND ENGINEERING**

**B. TECH.: COMPUTER SCIENCE AND ENGINEERING**

<b>FIRST SEMESTER</b>						
<b>S. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Category Code</b>	<b>I</b>	<b>P</b>	<b>C</b>
1.	DS101	Differential and Integral Calculus	BSC	3	0	3
2.	DS102	Engineering Physics	BSC	3	0	3
3.	ME101	Engineering Mechanics	BEC	3	0	3
4.	EC101	Basic Electrical and Electronics Engineering	BEC	3	0	3
5.	CS101	Problem Solving and Computer Programming	BEC	3	0	3
6.	DS103	Technical and Professional Communication	HMC	2	2	3
7.	DS104	Engineering Physics Practice	BSC	0	3	2
8.	CS102	Problem Solving and Computer Programming Practice	BEC	0	3	2
9.	ME102	Engineering Skills Practice	BEC	0	3	2
10.	ID101	NSS/NSO/NCC	HMC	0	0	0
<b>Total No. of Credits</b>						<b>24</b>

<b>SECOND SEMESTER</b>						
<b>S. No.</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Category Code</b>	<b>I</b>	<b>P</b>	<b>C</b>
1.	DS151	Probability and Statistics	BSC	3	0	3
2.	DS152	Linear Algebra	BSC	3	0	3
3.	DS153	Modern Physics	BSC	3	0	3
4.	DSxxx	Design Elective	DES	2	0	2
5.	DSxxx	Humanities Elective	HMC	2	0	0
6.	ME151	Concepts in Engineering Design	DES	3	0	3
7.	ME152	Design Realization Practice	DES	0	3	2
8.	DS154	Modern Physics Practice	BSC	0	3	2
9.	CS151	Digital Logic Design	BEC	2	3	4
10.	CS152	Python Programming Practice	BEC	0	3	2
11.	ID101	NSS/NCC/NSO	HMC	0	0	0
<b>Total No. of Credits</b>						<b>24</b>

THIRD SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS201	Random Variables and Stochastic Processes	BSC	3	0	3
2.	CS201	Discrete Mathematics	PEC	3	0	3
3.	CS202	Data Structures	PEC	3	0	3
4.	CS203	Computer Organization and Architecture	PEC	3	0	3
5.	CS204	Design and Analysis of Algorithms	PEC	3	0	3
6.	CS205	Data Structures Practice	PEC	0	3	2
7.	CS206	Computer Organization and Architecture Practice	PEC	0	3	2
8.	CS207	Design and Analysis of Algorithms Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course I	HMC	0	0	0
<b>Total No. of Credits</b>						<b>21</b>

FOURTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS251	Automata Theory and Compiler Design	PEC	3	0	3
2.	CS252	Artificial Intelligence	PEC	3	0	3
3.	CS253	Operating Systems	PEC	3	0	3
4.	CS254	Data Communication and Computer Networking	PEC	3	0	3
5.	CS255	Embedded Systems and IoT	PEC	2	2	3
6.	CS256	Automata and Compiler Design Practice	PEC	0	3	2
7.	CS257	Operating Systems Practice	PEC	0	3	2
8.	CS258	Computer Networks Practice	PEC	0	3	2
9.	XXxxx	Skill Development Course I	PCD	2	0	2
10.	IDxxx	Self-Improvement Course II	HMC	0	0	0
<b>Total No. of Credits</b>						<b>23</b>

FIFTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS301	Managerial Economics and Financial Accountancy	HMC	3	0	3
2.	CS301	Machine Learning	PEC	3	0	3
3.	CS302	Database Management Systems	PEC	3	0	3
4.	CS303	Software Engineering	PEC	3	0	3
5.	CS304	Data Mining	PEC	3	0	3
6.	CS305	Machine Learning Practice	PEC	0	3	2
7.	CS306	Database Management Systems Practice	PEC	0	3	2
8.	CS307	Software Engineering Practice	PEC	0	3	2
9.	IDxxx	Self-Improvement Course III	HMC	0	0	0
<b>Total No. of Credits</b>						<b>21</b>

SIXTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS351	Entrepreneurship and Management Functions	PEC	3	0	3
2.	CS351	High Performance and GPU Computing	PEC	3	0	3
3.	CS352	Computer Vision	PES	3	0	3
4.	CSxxx	Department Elective I	PEC	3	0	3
5.	XXxxx	Free Elective I	PEC	3	0	3
6.	CS353	High Performance and GPU Computing Practice	PEC	0	3	2
7.	CS354	Computer Vision Practice	PEC	0	3	2
8.	ID351	Product Design Practice	DES	0	3	2
9.	XXxxx	Skill Development Course II	PCD	2	0	2
9.	IDxxx	Self-Improvement Course IV	HMC	0	0	0
<b>Total No. of Credits</b>						<b>23</b>

SEVENTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS498	Project Phase I	PCD	-	-	3
2.	CSxxx	Department Elective II	PEC	3	0	3
3.	CSxxx	Department Elective III	PEC	3	0	3
4.	CSxxx	Department Elective IV	PEC	3	0	3
5.	XXxxx	Free Elective II	PEC	3	0	3
6.	CS496	Seminar	PCD	-	2	1
<b>Total No. of Credits</b>						<b>16</b>

EIGHTH SEMESTER						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS499	Project Phase II	PCD	-	-	8
2.	CS497	Internship	PCD	-	-	3
<b>Total No. of Credits</b>						<b>11</b>

## Elective Courses

List of Design Electives						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS131	Design History	DES	2	0	2
2.	DS132	Sociology of Design	DES	2	0	2
3.	DS133	Earth, Environment and Design	DES	2	0	2

List of Humanities Electives						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	DS136	Professional Ethics for Engineers	HMC	2	0	0
2.	DS137	Universal Human Values	HMC	2	0	0
3.	DS138	Constitution of India	HMC	2	0	0
4.	DS139	History of Science and Technology in India	HMC	2	0	0

List of Department Electives						
S. No.	Course Code	Course Name	Category Code	I	P	C
1	CS401	Game Theory	PEC	3	0	3
2	CS402	Internet of Things	PEC	3	0	3
3	CS403	Natural Language Processing	PEC	3	0	3
4	CS404	Information Retrieval	PEC	3	0	3
5	CS405	Recommender Systems	PEC	3	0	3
6	CS406	Blockchain	PEC	3	0	3
7	CS407	Object Oriented Programming	PEC	3	0	3
8	CS408	Systems Engineering	PEC	3	0	3
9	CS409	Industry 4.0	PEC	3	0	3
10	CS410	Health Analytics	PEC	3	0	3
11	CS411	Social Network Analysis	PEC	3	0	3
12	CS412	Information Theory and Coding	PEC	3	0	3
13	CS413	Unmanned Aerial Vehicle	PEC	3	0	3
14	CS414	Robotics	PEC	3	0	3
15	CS415	Time Series Analysis	PEC	3	0	3
16	CS416	Information Security	PEC	3	0	3
17	CS417	Human Computer Interaction	PEC	3	0	3
18	CS418	Design Patterns	PEC	3	0	3
19	CS419	Modern Computational Algebra	PEC	3	0	3
20	CS420	Affective Computing	PEC	3	0	3
21	CS421	Genetic Algorithms	PEC	3	0	3

22	CS422	Simulation and Modelling	PEC	3	0	3
23	CS423	Decision Science	PEC	3	0	3
24	CS424	Quantum Computing	PEC	3	0	3
25	CS425	Software Testing	PEC	3	0	3
26	CS426	Soft Computing	PEC	3	0	3
27	CS427	Data Science	PEC	3	0	3
28	CS428	Advanced Data Structures and Algorithms	PEC	3	0	3
29	CS429	Graph Theory	PEC	3	0	3
30	CS430	Approximation and Randomized Algorithms	PEC	3	0	3
31	CS431	Digital Image Processing	PEC	3	0	3
32	CS432	Mobile Computing	PEC	3	0	3
33	CS433	Pattern Recognition	PEC	3	0	3
34	CS434	Cloud Computing	PEC	3	0	3
35	CS435	Parallel and Distributed Systems	PEC	3	0	3
36	CS436	Business Intelligence	PEC	3	0	3
37	CS437	Service Oriented Architecture	PEC	3	0	3
38	CS438	Real-time Systems	PEC	3	0	3
39	CS439	Big Data Analytics	PEC	3	0	3
40	CS440	Fault-Tolerant Systems	PEC	3	0	3
41	CS441	Computer Graphics and Multimedia	PEC	3	0	3
42	CS442	Scalable Data Science	PEC	3	0	3
43	CS443	Optimization Techniques	PEC	3	0	3
44	CS444	Embedded Systems	PEC	3	0	3
45	CS445	Data Privacy	PEC	3	0	3
46	CS446	Marketing Science and Predictive Analysis	PEC	3	0	3
47	CS447	Cyber Forensics	PEC	3	0	3
48	CS448	Statistical Learning	PEC	3	0	3
49	CS449	Financial Analytics	PEC	3	0	3
50	CS450	Data Analysis and Visualization	PEC	3	0	3
51	CS451	Tools and Data Management	PEC	3	0	3
52	CS452	Decision Support Systems	PEC	3	0	3
53	CS453	Immersive Technologies	PEC	3	0	3
54	CS454	Bio-Inspired Computing	PEC	3	0	3
55	CS455	Bioinformatics	PEC	3	0	3
56	CS456	Advanced Data Mining	PEC	3	0	3
57	CS457	Computational Learning Theory	PEC	3	0	3
58	CS458	Algorithmic Techniques for Big Data	PEC	3	0	3
59	CS459	Mining of Massive Datasets	PEC	3	0	3
60	CS460	Virtual Reality and Augmented Reality	PEC	3	0	3
61	CS461	Cluster Computing	PEC	3	0	3
62	CS462	Wireless Networked Systems	PEC	3	0	3
63	CS463	Post Quantum Cryptography	PEC	3	0	3
64	CS464	Modern Computational Algebra	PEC	3	0	3
65	CS465	Web Technologies	PEC	3	0	3

66	CS466	Cryptography and Network Security	PEC	3	0	3
67	CS467	Principles of Programming	PEC	3	0	3
68	CS468	Remote Sensing and GIS	PEC	3	0	3
69	CS469	Gen AI	PEC	3	0	3

<b>List of Free Electives</b>						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS470	Principles of Programming	PEC	3	0	3
2.	CS471	Artificial Intelligence and Machine Learning	PEC	3	0	3
3.	CS472	Introduction to Data Science	PEC	3	0	3
4.	CS473	Systems Engineering	PEC	3	0	3
5.	DS470	Differential Equations	PEC	3	0	3
6.	DS471	Materials and Devices for Quantum Technologies	PEC	3	0	3
7.	DS472	Numerical Methods	PEC	3	0	3
8.	DS473	Quantum Computing	PEC	3	0	3
9.	DS474	Sustainable Design	PEC	3	0	3

## Self-Improvement Courses

<b>List of Self Improvement Courses</b>						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	ID401	Physical (Sports, Dance, Body Building, etc.)	HMC	0	0	0
2.	ID402	Health and Nutrition (Medical) Awareness (Basics awareness on Medicine, Diseases, Remedies, Nutrition, etc.)	HMC	0	0	0
3.	ID403	Personality Enhancement/Character Building (emotional development, Reading biography of great personalities, Responsibility and ownership towards nation)	HMC	0	0	0
4.	ID404	Language and music (Learning new languages, poetry, public speaking, vocabulary enhancement, singing, Musical instrument, etc.)	HMC	0	0	0
5.	ID405	Passion (Any passion of the student not registered earlier)	HMC	0	0	0
6.	ID406	Financial Awareness (Awareness on Insurances, Investments, financial planning, Money Management, etc.)	HMC	0	0	0

## Skill Development Courses

<b>List of Skill Development Courses</b>						
S. No.	Course Code	Course Name	Category Code	I	P	C
1.	CS381	Linux Administration	PCD	2	0	2

2.	CS382	Full Stack Development	PCD	2	0	2
3.	CS383	DevOps Toolchain	PCD	2	0	2
4.	CS384	Digital Marketing	PCD	2	0	2
5.	CS385	Graphic Design and Editing	PCD	2	0	2
6.	CS386	Product Automation	PCD	2	0	2
7.	CS387	Systems Programming	PCD	2	0	2
8.	CS388	Software Toolbox	PCD	2	0	2
9.	CS389	Mobile app Development	PCD	2	0	2
10.	CS390	Ethical Hacking	PCD	2	0	2
11.	CS391	Low Code Development	PCD	2	0	2
12.	ME381	Data Science for Engineers	PCD	2	0	2
13.	ME382	Basics of Finite Element Analysis	PCD	2	0	2
14.	ME383	Fuzzy Logic and Neural Network	PCD	2	0	2
15.	ME384	Design, Technology and Innovation	PCD	2	0	2
16.	ME385	Manufacturing Guidelines for Product Design	PCD	2	0	2
17.	ME386	Artificial Intelligence for Mechanical Engineers	PCD	2	0	2
18.	ME387	Database Management System	PCD	2	0	2
19.	ME388	Failure Analysis and prevention	PCD	2	0	2
20.	EC381	Industry 4.0	PCD	2	0	2