

**UNIVERSITY SCHOOL
OF
INFORMATION AND COMMUNICATION TECHNOLOGY**

Department Of Computer Science & Engineering

COURSE STRUCTURE

**B. Tech.
Computer Science And Engineering
Specialization: Machine Learning**

2022-2026



**GAUTAM BUDDHA UNIVERSITY
GAUTAM BUDH NAGAR, GREATER NOIDA
UP (INDIA)**

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29th BOS | Mar 25, 2023

SEMESTER I

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CS101	Fundamentals of Computer Programming	3	1	0	4	CC1/ FC
2	CM101	Fundamentals of Machine Learning	2	0	0	2	CC2/ FC
3	MA101	Engineering Mathematics-I	3	1	0	4	GE1
4	PH102	Engineering Physics	3	1	0	4	GE2
5	EC101	Basic Electronics Engineering	3	1	0	4	GE3/FC
6	EN101	English Proficiency	2	0	0	2	OE1/AECC
7	CE103	Engineering Graphics Lab	1	0	2	2	GE-L1
8	CS181	Computer Programming Lab	0	0	2	1	CC-L1/SEC
9	PH104	Engineering Physics Lab	0	0	2	1	GE-L2
10	EC181	Basic Electronics Engineering Lab	0	0	2	1	GE-L3
11	GP	General Proficiency	Non Credit				
Total Hours and Credits			17	4	8	25	

SEMESTER II

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CM102	Introduction to Python	2	0	0	2	CC3/ FC
2	CM104	Computer Organization & Architecture	3	0	0	3	CC4/ SEC
3	MA102	Engineering Mathematics -II	3	1	0	4	GE4
4	EE102	Basic Electrical Engineering	3	1	0	4	GE4
5	ME101	Engineering Mechanics	3	1	0	4	GE6
6	ES101	Environmental Studies	3	1	0	4	OE2/AECC
7	CM182	Python Programming Lab	0	0	2	1	CC-L2/SEC
9	EE104	Basic Electrical Engineering Lab	0	0	2	1	GE-L4
10	ME102	Workshop Practice	1	0	2	2	GE-L5
11	GP	General Proficiency	Non Credit				
Total Hours and Credits			18	4	6	25	

SEMESTER III

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CM201	Internet Technology	3	0	0	3	CC3/ FC
2	CM203	Operating Systems	3	0	0	3	CC4/ SEC
3	CM205	Data Structure & Algorithms	3	0	0	3	GE4
4	CM207	Computer Vision	3	0	0	3	GE4
5	CM209	Introduction to R Programming	3	0	0	3	GE6
6	MA201	Engineering Mathematics-III	3	1	0	4	OE2/AECC
7	CM281	R Programming Lab	0	0	3	2	CC-L2/SEC
8	CM283	Data Structure & Algorithms	0	0	3	2	CC-L3/SEC
9	CM285	Internet Technology Lab	0	0	3	2	GE-L4
10	GP	General Proficiency	Non Credit				
Total Hours and Credits			18	1	9	25	

SEMESTER IV

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CM202	Software Engineering	3	0	0	3	CC3/ FC
2	CM204	Database Management System	3	0	0	3	CC4/ SEC
3	CM206	Java Programming	3	0	0	3	GE4
4	CM208	Artificial Intelligence	3	0	0	3	GE4
5	CM210	Theory of Automata	3	0	0	3	GE6
6	CM212	Introduction to MATLAB	3	1	0	4	OE2/AECC
7	CM282	Database Management System Lab	0	0	3	2	CC-L2/SEC
8	CM284	Java Programming Lab	0	0	3	2	CC-L3/SEC
9	CM286	MATLAB	0	0	3	2	GE-L4
10	GP	General Proficiency	Non Credit				
Total Hours and Credits			18	1	9	25	

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SEMESTER V

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CM301	Compiler Design	3	0	0	3	CC3/ FC
2	CM303	Soft Computing Techniques	3	0	0	3	CC4/ SEC
3	CM305	Analysis & Design of Algorithms	3	0	0	3	GE4
4	CM307	Big Data Analytics	3	0	0	3	GE4
5	CM309	Machine Learning	3	1	0	4	GE6
6		Elective I	3	0	0	3	OE2/AECC
7	CM381	Analysis & Design of Algorithms Lab	0	0	3	2	CC-L2/SEC
8	CM383	Big Data Analytic sLab	0	0	3	2	CC-L3/SEC
9	CM385	Machine Learning Lab with Python	0	0	3	2	GE-L4
10	GP	General Proficiency	Non Credit				
Total Hours and Credits			18	1	9	25	

SEMESTER VI

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CM302	Web Development using PHP	3	0	0	3	CC3/ FC
2	CM304	Deep Learning	3	0	0	3	CC4/ SEC
3	CM306	Reinforcement Learning	3	1	0	4	GE4
4	CM308	Human Machine Interaction	3	0	0	3	GE4
5	CM310	Knowledge Representation	3	0	0	3	GE6
6		Elective2	3	0	0	3	OE2/AECC
7	CM382	Web Development using PHP Lab	0	0	3	2	CC-L2/SEC
8	CM384	Deep Learning Lab using Python	0	0	3	2	CC-L3/SEC
9	CM386	Reinforcement Learning lab using Python	0	0	3	2	GE-L4
10	GP	General Proficiency	Non Credit				
Total Hours and Credits			18	1	9	25	

- Industrial training will be done after third year during the summer break and it will be of minimum 4 weeks. It will be evaluated at the end of VII Semester.

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SEMESTER VII

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	MA401	Modeling & Simulation	3	1	0	4	CC3/ FC
2	CM401	Data Visualization	3	0	0	3	CC4/ SEC
3	CM403	Applied Machine Learning	2	0	0	2	GE4
4		Elective3	3	0	0	3	GE4
5		Elective4	3	0	0	3	GE6
6	CM481	Applied Machine Learning Lab	0	0	3	2	OE2/AECC
7	CM491	Minor project	0	0	10	5	CC-L2/SEC
8	CM493	Industrial Training	0	0	6	3	IT1/E
9	MA401	Modeling & Simulation	3	1	0	4	CC3/ FC
10	GP	General Proficiency	Non Credit				
Total Hours and Credits			14	1	19	25	

SEMESTER VIII

Sr.No	CourseCode	Courses	L-T-P	Credits
1	CS490	Seminar	0-0-3	2
2	CS492	Major Project	0-0-16	8
3	CS494	Internship	0-0-30	15
4	GP	General Proficiency	Non Credit	
Total Credits				25
Total Contact Hours			0-0-49=25	

GRAND TOTAL OF CREDITS = 200

- In the **Seminar**, student need to study and present individually, on latest research paper of their specialized area and It will be evaluated as per University Examination Rules.
- The **Internship** in Industry will be done by candidate individually during the 8th semester and it will be for 4-6 months. It will be evaluated as per University Examination Rules.
- Minor and Major Project** will be in a group and It will be evaluated as per University Examination Rules. USICT will provide a mentor/supervisor for industrial training, seminar, internship, minor and major projects.

ELECTIVES

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CM311	Computational Intelligence	3	0	0	3	E1
2	CM313	Stochastic Process	3	0	0	3	E1
3	CM315	Machine Learning Algorithms	3	0	0	3	E1
4	CM317	Decision Thinking & Algorithm Design	3	0	0	3	E1
5	CM319	Statistical Machine Learning	3	0	0	3	E2
6	CM312	Artificial Neural Networks	3	0	0	3	E2
7	CM314	Knowledge Engineering	3	0	0	3	E2
8	CM316	Graph Theory	3	0	0	3	E2
9	CM318	Expert Systems	3	0	0	3	E2
10	CM320	Fuzzy logic	3	0	0	3	E3
11	CM405	Computational Neuroscience	3	0	0	3	E3
12	CM407	Intelligent Machining	3	0	0	3	E3
13	CM409	Introduction to Brain & Neuroscience	3	0	0	3	E3
14	CM411	Digital Fabrication	3	0	0	3	E3
15	CM413	Internet of things	3	0	0	3	E4
16	CM415	Digital Image Processing	3	0	0	3	E4
17	CM417	Ensemble Learning	3	0	0	3	E4
18	CM419	Predictive Analysis	3	0	0	3	E4
19	CM421	Embedded Systems	3	0	0	3	E4
20	CM423	Machine Intelligence for Medical Image	3	0	0	3	E4