UNIVERSITY SCHOOL
OF
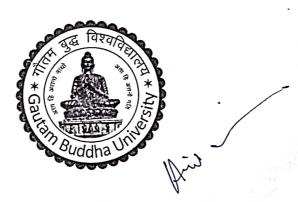# INFORMATION AND COMMUNICATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAMME STRUCTURE

B.TECH. COMPUTER SCIENCE AND ENGINEERING
SPECIALIZATION : ARTIFICIAL INTELLIGENCE
2023-2027

30.01.01

08.09.23

GAUTAM BUDDHA UNIVERSITY
GAUTAM BUDH NAGAR, GREATER NOIDA, UP, INDIA

B.Tech. Computer Science and Engineering - Specilization : Artificial Intelligence

SEMESTER I

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	MA101	Engineering Mathematics-I	3	1	0	4	GE1
2	PH102	Engineering Physics	3	1	0	4	GE2
3	CS101	Fundamentals of Computer Programming	3	1	0	4	CC1 / FC
4	CS105	Introduction of Artificial Intelligence	2	0	0	2	CC2 / FC
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	PH104	Engineering Physics Lab	0	0	2	1	GE-L2
9	CS181	Computer Programming Lab	0	0	2	1	CC-L1 / SEC
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	MA102	Engineering Mathematics-II	3	1	0	4	GE4
2	AI102	Introduction to Python	2	0	0	2	CC3/SEC
3	EE102	Basic Electrical Engineering	3	1	0	4	GE5
4	ME101	Engineering Mechanics	3	1	0	4	GE6
5	ES101	Environmental Studies	3	1	0	4	OE2 / AECC
6	AI104	Data Structures and Algorithms	2	0	0	2	CC4
7	EE104	Basic Electrical Engineering Lab	0	0	2	1	GE-L4
8	AI182	Python Lab	0	0	2	1	CC-L2 / SEC
9	ME102	Workshop Practice	1	0	2	2	GE-L5
10	AI184	Data Structure and Algorithms Lab	0	0	2	1	CC-L3
11	GP	General Proficiency	Non Credit				
		Total Hours and Credits	17	4	8	25	

SEMESTER III

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	AI201	Software Engineering	3	0	0	3	CC5
2	AI203	Intelligent Systems	3	0	0	3	CC6
3	AI205	Theory of Computations and Theory of Automata	3	0	0	3	CC7
4	AI207	Database Management Systems	3	0	0	3	CC8
5	AI209	Image processing and Computer Vision	3	0	0	3	CC9
6	AI211	Introduction to R Programming	3	1	0	4	CC10 / SEC
7	AI281	Database Management Systems Lab	0	0	3	2	CC-L4
8	AI283	Image processing and Computer Vision Lab	0	0	3	2	CC-L5
9	AI285	R Programming Lab	0	0	3	2	CC-L6 / SEC
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	AI202	Machine Learning	3	1	0	4	CC11
2	AI204	Operating Systems	3	0	0	3	CC12
3	AI206	Computer Interfacing and Embedded Systems	3	0	0	3	CC13
4	AI208	Design and Analysis of Algorithms	3	0	0	3	CC14 / SEC
5	AI210	Quantam Computing	3	0	0	3	CC15
6	AI212	Compter Networks	3	0	0	3	CC16
7	AI282	Machine Learning using Python Lab	0	0	3	2	CC-L7 / SEC
8	AI284	Operating Systems Lab	0	0	3	2	CC-L8
9	AI286	Design and Analysis of Algorithms Lab	0	0	3	2	CC-L9 / SEC
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	AI301	Big Data Analytics	3	0	0	3	CC17
2	AI303	Compiler Design	3	0	0	3	CC18
3	AI305	Deep Learning and Reinforcement Learning	3	0	0	3	CC19 / SEC
4	AI307	Operational Information Security Management and Biometric	3	1	0	4	CC20
5		Elective 1	3	0	0	3	E1 / DSE
6		Elective 2	3	0	0	3	E2 / DSE
7	AI381	Big Data Analytics Lab	0	0	3	2	CC-L10 / SEC
8	AI383	Compiler Design Lab	0	0	3	2	CC-L11
9	AI385	Deep Learning Lab using Python	0	0	3	2	CC-L12
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	AI302	IoT and Its Applications	3	0	0	3	CC21
2	AI304	Expert Systems	3	0	0	3	CC22
3	AI306	Cloud Computing	3	0	0	3	CC23 / SEC
4	AI308	Metaheuristics for Optimization	3	1	0	4	CC24
5		Elective 3	3	0	0	3	E3 / DSE
6		Elective 4	3	0	0	3	E4 / DSE
7	AI382	Internet of Things Lab	0	0	3	2	CC-L13
8	AI384	Expert Systems Lab	0	0	3	2	CC-L14 / SEC
9	AI386	Cloud Computing Lab	0	0	3	2	CC-L15
10	GP	General Proficiency	Non Credit				
		Total Hours and Credits	18	1	9	25	

Industrial Training will be done by candidate individually after third year during the summer break and it will be of minimum 4 weeks. It will be evaluated as per University Examination in VII semester.

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SEMESTER VII

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	AI401	Parallel Processing and CUDA Programming	3	1	0	4	CC25
2	AI403	Computational Intelligence	3	0	0	3	CC26
3	AI405	Robotics and Drones	2	0	0	2	CC27
4	AI407	Natural Language Processing	3	0	0	3	CC28
5		Elective 5	3	0	0	3	E5 / DSE
6	AI481	Robotics and Drones Lab	0	0	3	2	CC-L16
7	AI491	Minor Project	0	0	6	3	IT1 / E
8	AI493	Industrial Traning	0	0	10	5	MP1 / E
9	GP	General Proficiency	Non Credit				
		Total Hours and Credits	14	1	19	25	

SEMESTER VIII

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	AI490	Seminar	0	0	3	2	S / E
2	AI492	Major Project	0	0	16	8	I / E
3	AI494	Intenship	0	0	30	15	MP2 / E
4	GP	General Proficiency	Non Credit				
		Total Hours and Credits	0	0	49	25	

GRAND TOTAL OF CREDITS = 200

In the **Seminar,** students 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 a minimum of 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.

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ELECTIVES FROM DCSE

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	AI309	Computer Graphics	3	0	0	3	E1
2	AI311	Introduction to Brain and Neuroscience	3	0	0	3	E1
3	AI313	Stochastic Processes	3	0	0	3	E1
4	AI315	Computer Based Numerical & Statistical Techniques	3	0	0	3	E1
5	AI317	Seuence Models	3	0	0	3	E1
6	AI319	Bayesian Data Theory	3	0	0	3	E2
7	AI321	Speech Analysis and Systems	3	0	0	3	E2
8	AI323	Graph Theory	3	0	0	3	E2
9	AI325	Distributed Database	3	0	0	3	E2
10	AI327	Pattern Recognition	3	0	0	3	E2
11	AI329	Data Mining	3	0	0	3	E2
12	AI310	Biometric Security	3	0	0	3	E3
13	AI312	Gaming	3	0	0	3	E3
14	AI314	Knowledge Engineering	3	0	0	3	E3
15	AI316	Predictive Analysis	3	0	0	3	E3
16	AI318	Digital Fabrication	3	0	0	3	E3
17	AI320	AI Enabled Cyber Security	3	0	0	3	E4
18	AI322	Augmented and Virtual Reality	3	0	0	3	E4
19	AI324	Fuzzy logic	3	0	0	3	E4
20	AI326	Distributed Operating System	3	0	0	3	E4
21	AI328	Business Analytics	3	0	0	3	E4
22	AI409	Automation and Robotics	3	0	0	3	E5
23	AI411	Blockchain Technology using SALONA	3	0	0	3	E5
24	AI413	3D Printing	3	0	0	3	E5
25	AI415	Parallel Distributed Systems	3	0	0	3	E5
26	AI417	Time Series Analysis and Applications	3	0	0	3	E5
27	AI419	Data Science Basics and Visualization	3	0	0	3	E5

AI	Artificial Intelligence	**SEC**	Skil Enhancement Course
CC	Core Course from USICT for Type of Course	**E**	Elective from USICT
GE	General Elective from related discipline of other Deptt./School	**CC-L**	Core Course Lab from USICT
GE L	General Elective Lab from related discipline of other Deptt./School	**IT1**	Industrial Training
OE	Open Elective from other discipline of other Deptt./School	**MP**	Minor / Major Project
AECC	Ability Enhancement Compulsary Course	**S**	Seminar
DSE	Discipline Specific Course	**I**	Internship

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Annexure 30.1.1