

**UNIVERSITY SCHOOL
OF
INFORMATION AND COMMUNICATION TECHNOLOGY**

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAMME STRUCTURE

MASTER OF COMPUTER APPLICATIONS (MCA)

WITH SPECILIZATION IN DATA SCIENCE

2 YEAR PROGRAMME

2021-23



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

Passed B.Sc/ B.Com/ B.A with Mathematics at 10+2 level or at Graduation level with having at least 50% marks (45% for SC/ST candidates of Haryana only) in aggregate, along with the students admitted with this eligibility will have to simultaneously undertake additional *bridge course as prescribed by the University during the first semester.

Note: * It is compulsory for each student to pass out bridge course (three additional theory papers and one practical as prescribed in scheme of examination of bridge course) as per University norms during the 1st year of MAI-2 year course and the degree will be awarded after the completion of bridge course. However, these papers under bridge course will be taught only in the 1st semester of the course.

OR

Passed BCA/B.Sc.(Hons.)Computer Science/ B.E. or B.Tech.(CSE/IT)/ B.Voc.(Software Development/IT) or an equivalent degree with having at least 50% marks (45% for SC/ST candidates of Haryana only) in aggregate.

BRIDGE COURSE

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	MCB001	Computer Fundamental and Programming	3	1	0	4	BC1
2	MCB003	Introduction to Internet Technology	3	0	0	3	BC2
3	MCB005	Fundamental of Operating Systems	3	0	0	3	BC3
4	MCB081	Operating System Lab	0	0	3	2	BC-L1
5	MCB083	Internet Technology Lab	0	0	3	2	BC-L2
Total Hours and Credits			9	1	6	14	

SEMESTER I

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	MDS101	Computer Fundamental and MS Excel	3	0	0	3	CC1 / FC
2	MDS103	Software Engineering	3	0	0	3	CC2
3	MDS105	Artificial Intelligence	3	0	0	3	CC3 / FC
4	MDS107	Discrete Mathematics	3	0	0	3	CC4
5	MDS109	Theory of Automata	3	0	0	3	CC5
6	MDS111	Operating System	3	0	0	3	CC6
7	MDS113	Data Base Management System	3	0	0	3	CC7
8	ES401	Fundamental of Environmental Science	3	0	0	3	OE1 / AECC
9	MDS181	MS Excel Lab	0	0	3	2	CC-L1 / SEC
10	MDS183	Data Base Management System Lab	0	0	3	2	CC-L2 / SEC
11	GP	General Proficiency	Non Credit				
Total Hours and Credits			24	0	6	28	

SEMESTER II

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	MDS102	Data Modelling and Visualization-I	3	0	0	3	CC8 / SEC
2	MDS104	Data Structure and Algorithms	3	0	0	3	CC9 / SEC
3	MDS106	Data Security and Privacy	3	0	0	3	CC10
4	MDS108	Data Analytics using R	3	0	0	3	CC11
5	MDS110	Data Mining	3	0	0	3	CC12
6		Elective-1	3	0	0	3	E1 / DSE
7		Elective-2	3	0	0	3	E2 / DSE
8	EN532	Fundamental of Language Science	3	0	0	3	OE2 / AECC
9	MDS182	Data Structure and Algorithms Lab	0	0	3	2	CC-L3 / SEC
10	MDS184	Data Analytics using R Lab	0	0	3	2	CC-L4 / SEC
11	GP	General Proficiency	Non Credit				
Total Hours and Credits			24	0	6	28	

SEMESTER III

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	MDS201	Analysis and Design of Algorithm	3	0	0	3	CC13
2	MDS203	Data Modeling and Visualization-II	2	0	0	2	CC14
3	MDS205	Intelligent Information Retrieval	3	0	0	3	CC15
4	MDS207	Python Programming	2	0	0	2	CC16 / SEC
5		Elective-3	3	0	0	3	E3 / DSE
6		Elective-4	3	0	0	3	E4 / DSE
7	MA033	Numerical Algorithms for Machine Learning	3	0	0	3	GE1
8	MDS291	Minor Project	0	0	10	5	MP1 / E
9	MDS281	Analysis and Design of Algorithm Lab	0	0	3	2	CC-L5 / SEC
10	MDS283	Python Programming Lab	0	0	3	2	CC-L6 / SEC
11	GP	General Proficiency	Non Credit				
Total Hours and Credits			19	0	16	28	

SEMESTER IV

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	MDS390	Seminar	0	0	3	2	S / E
2	MDS392	Major Project	0	0	20	10	MP2 / E
3	MDS394	Intenship	0	0	32	16	I / E
4	GP	General Proficiency	Non Credit				
Total Hours and Credits			0	0	55	28	

GRAND TOTAL OF CREDITS = 112

Swayam/NPTEL courses will also be offered as **Discipline Specific Elective** during the II and III semester and Swayam/NPTEL courses list will be provided by the deptt. OR if USICT will offer the course as an Discipline Specific Elective, students will complete it through regular class. It will be evaluated as per University Examination Rules.

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 4th 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 seminar, internship, minor and major projects.

ELECTIVES FROM DCSE

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	MDS112	Data Science Life Cycle	3	0	0	3	E1
2	MDS114	Integrated Development Environment	3	0	0	3	E1
3	MDS116	Machine Learning Techniques	3	0	0	3	E1
4	MDS118	Internet of Things	3	0	0	3	E1
5	MDS120	Advanced Java Programming (J2EE Technologies)	3	0	0	3	E2
6	MDS122	Data Storage Technologies and Networking	3	0	0	3	E2
7	MDS124	Introduction to Statistical Learning	3	0	0	3	E2
8	MDS126	Research Tecniques for Data Science	3	0	0	3	E2
9	MDS209	High Performance Computing	3	0	0	3	E3
10	MDS211	Big Data Platforms	3	0	0	3	E3
11	MDS213	Introduction to Blockchain Technologies	3	0	0	3	E3
12	MDS215	Business Intelligence	3	0	0	3	E3
13	MDS217	Data Visualization using Tableau	3	0	0	3	E4
14	MDS219	Web Analytics	3	0	0	3	E4
15	MDS221	Social Media Analytics and Techniques	3	0	0	3	E4
16	MDS223	Time Series Aanlysis	3	0	0	3	E4

OPEN AND GENERIC ELECTIVES FROM OTHER SCHOOLS

17	MA033	Numerical Algorithms for Machine Learning	3	0	0	3	GE1
18	ES401	Fundamentals of Environmental Science	3	0	0	3	OE1
19	ES507	Energy and Environment	3	0	0	3	OE1
20	EN532	Fundamental of Language Science	3	0	0	3	OE2

MDS Master of Computer Applications and Data Science for Course Code

MCA Master of Computer Applications

CC Core Course from USICT for Course Type

FC Foundation Course

CC-L Core Course Lab from USICT

GE General Elective from related discipline of other Deptt./School

AECC Ability Enhancement Compulsary Course

OE Open Elective from other discipline of other Deptt./School

SEC Skill Enhancement Course

DSE Discipline Specific Course

BC Bridge Course

BC-L Bridge Course Lab

MP Minor / Major Project

S Seminar

I Industrial Training / Internship