DEPARTMENT OF COMPUTER SCIENCE
ALIGARH MUSLIM UNIVERSITY
ALIGARH, U.P. – 202002
Master of Computer Applications (MCA) (CBCS)
Session 2021-2022
Curriculum Structure (For Two Years Programme)

	COURSE NO.	PAPER TITLE	Type of Course	Periods Per Week (L+T)/(P +T)	Credits	Sessional Marks/ Continuous Evaluation	Final Marks	Total Marks
MCA1st Year-I-Semester (wef: January 2022)								
Bridge Courses (Non-Credit Course)	CAMS1N01	Fundamentals of IS & IT	B	1+1	#	30	70	100
	CAMS1N02	Numerical and Statistical Computing	B	3+1	#	30	70	100
Ist SEMESTER	CAMS1001	Data Structure using C++	C	3+1	4	30	70	100
	CAMS1002	Digital Logic and Computer Architecture	C	3+1	4	30	70	100
	CAMS1003	Database Management System	C	3+1	4	30	70	100
	CAMS1004	Analysis and Design of Information Systems	C	3+1	4	30	70	100
	CAMS1005	Soft Skills Development and Technical Communication	A	3+1	4	30	70	100
	CAMS1P01	Laboratory Course –I	C	4+2	4	40	60	100
		Total			**24**			**600**
MCA 1st Year-II-Semester								
IInd SEMESTER	CAMS2001	Object Oriented Programming using Java	C	3+1	4	30	70	100
	CAMS2002	Data Communication & Computer Networks	C	3+1	4	30	70	100
	EL-1	***Elective-1***	E	3+1	4	30	70	100
	EL-2	***Elective-2***	E	3+1	4	30	70	100
	OE	Open Elective**	OE	3+1	4	30	70	100
	CAMS2P01	Laboratory Course –II	C	4+2	4	40	60	100
		Total			**24**			**600**
MCA 2nd Year-III-Semester								
IIIrd SEMESTER	CAMS3001	Operating System and Shell Programming	C	3+1	4	30	70	100
	CAMS3002	Software Engineering	C	3+1	4	30	70	100
	CAMS3003	Theory of Computation	C	3+1	4	30	70	100
	CAMS3004	Data Science using Python	A	3+1	4	40	60	100
	EL-3	***Elective-3***	E	3+1	4	30	70	100
	EL-4	***Elective-4***	E	3+1	4	30	70	100
	CAMS3P01	Laboratory Course–III **(Mini Project)**	A	4+2	4	40	60	100
		Total			**28**			**700**
MCA 2nd Year-IV-Semester								
IVth SEMESTER	CAMS4491	Fundamentals of IT **(Open Elective)**+	OE	3+1	-	30	70	100
	CAMS4D01	Dissertation/Project	C		20	40	60	100
		Total			**20**			**200**

***L** - Lecture; ***T** - Tutorial; ***P** - Practical/Lab;

#Non-credit and qualifying course

Students of the department of Computer Science are required to opt any **Open Elective course offered by other departments of faculty of Science, in **Second Semester** preferably Mathematics, Statistics & OR, GIS, etc.

+ CAMS4491 (Open Elective): Fundamentals of IT (For **fourth semester** students of Faculty of Science **other than Computer Science**).

+Open-elective for the students of other Departments of the Faculty of Science

Course Categories and Credits allotted

S.No.	Type of Courses	Code	Credits Allotted
1	Core	C	64
2	Elective (Discipline Centric)	E	16
3	Ability Enhancement (Discipline Centric)	A	12
4	Ability Enhancement (Open elective)	OE	4
5	Bridge Course	B	Non-Credit
Total Credits			**96**

List of Electives:

- *Students are required to select one course from each set of electives (EL-1 to EL-4) offered by the department from time-to-time.*

Electives	Course No.	Paper Title	Course No.	Paper Title	Course No.	Paper Title	Course No.	Paper Title
EL-1 (Credit-4)	CAMS2E01	Data Mining Techniques and Applications	CAMS2E02	Microprocessor: Architecture and Applications	CAMS2E03	Computer Graphics	CAMS2E04	Discrete Mathematics
EL-2 (Credit-4)	CAMS2E05	Parallel Computing	CAMS2E06	E-Commerce	CAMS2E07	Advanced DBMS and Data Warehouse Design	CAMS2E08	Simulation and Modeling
EL-3 (Credit-4)	CAMS3E01	Mobile based Programming	CAMS3E02	Network Programming	CAMS3E03	Compiler Construction	CAMS3E04	Web based Programming
EL-4 (Credit-4)	CAMS3E05	Cyber Security	CAMS3E06	Introduction to Bioinformatics	CAMS3E07	Optimization Techniques	CAMS3E08	Artificial Intelligence & Soft Computing

Once the 'Credit Transfer Scheme' is adopted by the university and related regulations are framed & becomes operational, students may be allowed to opt for "SWAYAM MOOCs" courses in place of 'Elective Courses' as per the university regulations.

DEPARTMENT OF COMPUTER SCIENCE ALIGARH
MUSLIM UNIVERSITY ALIGARH, U.P. – 202002
Courses: MCA (CBCS)
Session 2017 -2020
Curriculum Structure

Effective from 30.05.2018 as per Office Memo No. XM/RU/F.No. 04/18/04 dated 14.02.2018

	COURSE NO.	PAPER TITLE	Periods Per Week (L+T)/P	Credits	Sessional Marks/ Continuous Evaluation	Final Marks	Total Marks
MCA 1st Year		**(I-Semester) w.e.f. : August-2017**					
Ist SEMESTER	CSM-1101	Problem Solving using C++	3+1	4	30	70	100
	CSM-1102	Data Structure and its Applications	3+1	4	30	70	100
	CSM-1103	Systems Analysis and Design	3+1	4	30	70	100
	CSM-1104	Digital Logic and Computer Organization	3+1	4	30	70	100
	CSM-1105	Fundamentals of IS & IT	1+1	2	30	70	100
	CSM-1106	Soft Skills Development	1+1	2	30	70	100
	CSM-1171	Laboratory Course –I	6	4	40	60	100
		Total		**24**			**700**
MCA 1st Year		**(II-Semester) w.e.f. : January-2018**					
IInd SEMESTER	CSM-2201	Object Oriented Programming using Java	3+1	4	30	70	100
	CSM-2202	Database Management System	3+1	4	30	70	100
	CSM-2203	Object Oriented Analysis and Design of IS	3+1	4	30	70	100
	CSM-2204	Numerical and Statistical Computing	3+1	4	30	70	100
	CSM-2205	Design and Analysis of Algorithms	1+1	2	30	70	100
	CSM-2206	Technical Communication	1+1	2	30	70	100
	CSM-2271	Laboratory Course –II	6	4	40	60	100
		Total		**24**			**700**
MCA 2nd Year		**(III-Semester) w.e.f. : August-2018**					
IIIrd SEMESTER	CSM-3301	Web based Programming	3+1	4	30	70	100
	CSM-3302	Operating System	3+1	4	30	70	100
	CSM-3303	Software Engineering and Quality Assurance	3+1	4	30	70	100
	CSM-3304	Data Communication & Computer Network	3+1	4	30	70	100
	CSM-3305	Microprocessor: Architecture and Applications	1+1	2	30	70	100
	CSM-3306	Discreet Mathematics	1+1	2	30	70	100
	CSM-3371	Laboratory Course–III	6	4	40	60	100
		Total		**24**			**700**

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	COURSE NO.	PAPER TITLE		Periods Per Week (L+T)/P	Credits	Sessional Marks/ Continuous Evaluation	Final Marks	Total Marks
MCA 2nd Year		**(IV-Semester) w.e.f. : January-2019**						
IVth SEMESTER	CSM-4401	Network Programming		3+1	4	30	70	100
	CSM-4402	Theory of Computation		3+1	4	30	70	100
	CSM-4403	Cyber Security		3+1	4	30	70	100
	CSM-4404	Computer Graphics		1+1	2	30	70	100
	CSM-4411	***Elective-1 (EL-1)***		1+1	2	30	70	100
	CSM-4491	Fundamentals of IT ***(Open Elective)***		4	4	30	70	100
	CSM-4471	Laboratory Course –IV		6	4	40	60	100
		Total			**24**			**700**
MCA 3rd Year		**(V-Semester) w.e.f.: August-2019**						
Vth SEMESTER	CSM-5501	Artificial Intelligence and Soft Computing		3+1	4	30	70	100
	CSM-5502	Compiler Construction		1+1	2	30	70	100
	CSM-5522	***Elective-2 (EL-2)***		1+1	2	30	70	100
	CSM-5533	***Elective-3 (EL-3)***		3+1	4	30	70	100
	CSM-5541	***Elective-4 (EL-4)***		3+1	4	30	70	100
	CSM-5552	***Elective-5 (EL-5)***		3+1	4	30	70	100
	CSM-5571	Laboratory Course–V		6	4	40	60	100
		Total			**24**			**700**
MCA 3rd Year		**(VI-Semester) w.e.f.: January-2020**						
VIth SEMESTER	CSM-66D1	**Dissertation/Project Work**	Problem Identification, self study and Development/Field work/ Dissertation Writing		12	200	150	350
			Open Pre-submission Presentation (OPP)					
			Dissertation Presentation/Final Viva		12			350
		Total			**24**			**700**
		Grand Total			**144**			**4200**

*__L__ - Lecture; *__T__ - Tutorial; *__P__ - Practical/Lab; *__D__ - Dissertation/Project;

List of Electives:

1. *Students are required to select one course from each set of electives (EL-1 to EL-5) offered by the department from time-to-time.*
2. *Students of the department of Computer Science are required to opt any Open Elective course offered by other departments of faculty of Science, preferably Mathematics, Statistics & OR, GIS, etc.*

Elective-1 (EL-1): (Credit-2) *(Within Department)*

CSM-4411: Linux Administration & Shell Programming
CSM-4412: Advance Computer Architecture
CSM-4413: Big Data Analytics

Elective-2 (EL-2): (Credit-2) *(Within Department)*

CSM-5521: ERP Systems
CSM-5522: Mobile Computing
CSM-5523: Embedded Systems
CSM-5524: Free and Open Source Software

Elective-3 (EL-3): (Credit-4) *(Within Department)*

CSM-5531: Optimization Techniques
CSM-5532: Simulation and Modeling
CSM-5533: Parallel Computing
CSM-5534: Grid and Cloud Computing

Elective-4(EL-4):(Credit-4) *(Within Department)*

CSM-5541: Advance DBMS and DBA
CSM-5542: Fuzzy Systems and Control
CSM-5543: Intelligent Systems

Elective-5 (EL-5): (Credit-4) *(Within Department)*

CSM-5551: Data Mining and Knowledge Discovery
CSM-5552: E-Commerce
CSM-5553: Business Intelligence
CSM-5554: Accounting and Financial Management

Open Elective: (Credit-4) (Inter-departmental within Faculty) (Offered by other Departments of F/O Science)

CSM-4491: Fundamentals of IT (For students of Faculty of Science other than Computer Science)

Note: Students of Computer Science department will opt any *Open Elective* course offered by other departments of Faculty of Science, preferably Mathematics, Statistics & OR, GIS, etc.

DEPARTMENT OF COMPUTER SCIENCE
ALIGARH MUSLIM UNIVERSITY ALIGARH, U.P. – 202002
Semester Courses: MCA, Session 2015 -2016
Curriculum Structure

	COURSE NO.	PAPER TITLE	Periods per week Theory Lab +Tutorials	Credits	Sessional Marks/ Continuous Evaluation	Mid-Sem Marks	Final Marks	Total Marks
MCA 1st Year	**w.e.f. : 2015-2016**							
Ist SEMESTER	CSM-1001	Fundamentals of Information Technology	3+1	4	10	30	60	100
	CSM-1002	Programming & Problem Solving using C	3+1	4	10	30	60	100
	CSM-1003	Analysis and Design of Information Systems	3+1	4	10	30	60	100
	CSM-1004	Digital Logic and Computer Organization	3+1	4	10	30	60	100
	CSM-1005	Numerical and Statistical Methods	3+1	4	10	30	60	100
	CSM-1071	Laboratory Course – I	4+2	4	40	-	60	100
IInd SEMESTER	CSM-2001	Algorithms and Data Structure using C++	3+1	4	10	30	60	100
	CSM-2002	Object Oriented Programming using Java	3+1	4	10	30	60	100
	CSM-2003	Analysis and Design of Information Systems (Object Oriented Approach)	3+1	4	10	30	60	100
	CSM-2004	Database Management System	3+1	4	10	30	60	100
	CSM-2005	Discrete Mathematical Structure	3+1	4	10	30	60	100
	CSM-2071	Laboratory Course – II	4+2	4	40	-	60	100
M.C.A. 2nd Year	**w.e.f. : 2015-2016**							
IIIrd SEMESTER	CSM-3001	Operating System	3+1	4	10	30	60	100
	CSM-3002	Visual Programming	3+1	4	10	30	60	100
	CSM-3003	Artificial Intelligence	3+1	4	10	30	60	100
	CSM-3004	Theory of Computation	3+1	4	10	30	60	100
	CSM-3021	**Data Warehousing & Data Mining**	3+1	4	10	30	30	100
	CSM-3022	**Soft Computing**						
	CSM-3023	**Computer Graphics**						
	CSM-3024	**ERP System**						
	CSM-3071	Laboratory Course – III	4+2	4	40	-	60	100

IVth SEMESTER	CSM-4001	Data Communication & Computer Network		3+1	4	10	30	60	100
	CSM-4002	Internet and Web Technologies		3+1	4	10	30	60	100
	CSM-4003	Linux and Shell Programming		3+1	4	10	30	60	100
	CSM-4021	**Compiler Construction**		3+1	4	10	30	60	100
	CSM-4022	**Optimization Techniques**							
	CSM-4023	**Parallel Programming with MPI**							
	CSM-4024	**Simulation & Modeling**							
	CSM-4025	Information Technology and its Applications (Open Elective)		3+1	4	10	30	60	100
	CSM-4071	Laboratory Course –IV		4+2	4	40	-	60	100
M.C.A. 3rd Year	**w.e.f.: 2015-2016**								
V SEMESTER	CSM-5001	Software Engineering		3+1	4	10	30	60	100
	CSM-5002	Microprocessor: Architecture Applications		3+1	4	10	30	60	100
	CSM-5003	E-Commerce		3+1	4	10	30	60	100
	CSM-5021	**TCP/IP Programming**		2	2	10	30	60	100
	CSM-5022	**Mobile Computing**							
	CSM-5023	**Software Quality Assurance**							
	CSM-5024	**Account & Finance Management**		2	2	10	30	60	100
	CSM-5025	**Network Security**							
	CSM-5026	**Elective of CS (Information Security)**		3+1	4	10	30	60	100
	CSM-5071	Laboratory Course–V		4+2	4	40	-	60	100
VI Semester	CSM-6D1	Dissertation Work **(4 to 6 month Duration)**	Problem Identification, self study and Development/ Field work/ Dissertation Writing	-	12	40	-	60	100
			Dissertation Presentation/Final Viva		12	40	-	60	100