



MASTER OF COMPUTER APPLICATION

Syllabus w.e.f. the Academic Session 2021-2022



MAULANA ABUL KALAM AZAD
UNIVERSITY OF TECHNOLOGY,
WEST BENGAL



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WEST BENGAL

Objective:

To conduct software industry, corporate sector, academia, research-oriented MCA program following the AICTE model for MCA

Eligibility:

Candidates with the following eligibility can take admission in the 2-year MCA program approved by AICTE:

- A. Students who have passed Bachelor of Computer Application or Bachelor's degree in Computer Science Engineering or equivalent degree
- B. Students who have passed Bachelor of Science, Bachelor of Commerce or Bachelor of Arts with mathematics at 10+2 or at the graduation level with additional bridge courses as per the norms of the concerned university
- C. Candidates must have obtained at least 50 percent marks, or 45 percent marks in the case of candidates belonging to reserved categories, in the qualifying examination

Duration:

2 Years (4 Semesters)

Program Educational Objectives (PEOs)

- PEO 01: Technical Expertise:** Develop the ability to plan, analyze, design, code, implement, test and maintain the software product for real time systems that are technically sound, economically feasible and socially acceptable
- PEO 02: Successful Career:** Exhibit professionalism, ethical attitude with updated technologies in Computer Application based career and capability to set up their own enterprise in various sectors of Computer Applications
- PEO 03: Soft Skills:** Develop communication skills, team work and leadership quality in their professional multidisciplinary projects and adapt to current trends by engaging in lifelong learning
- PEO 04: Life Long Learning:** Prepare the students to pursue higher studies by acquiring knowledge in mathematical, computing and engineering principles in the field of computing and related fields and to work in the fields of teaching and research

Program Specific Outcomes (PSOs)

The post-graduates of Master of Computer Application Program will demonstrate:

- PSO 01: Software System Design and Development:** The ability to apply software development life cycle principles to design and develop the application software that meets the automation needs of society and industry.
- PSO 02: Computing and Research ability:** The ability to employ modern computer languages, environments and platforms in creating innovative career paths in SMAC (Social, Mobile, Analytics and Cloud) technologies.
- PSO 03: Professionalism and Ethics:** Efficient team leaders, effective communicators and capable of working in multi-disciplinary environment following ethical values.

Program Outcomes (POs)

On Completion of MCA program, the post-graduates are expected to

- PO 01: Engineering Knowledge:** Ability to apply knowledge of computing, science, mathematics and engineering fundamentals appropriate to the discipline
- PO 02: Problem Analysis:** Ability to identify, critically analyze, formulate the computing requirements appropriate to its solution and develop computer applications
- PO 03: Design/Development of Solutions:** Ability to design, implement and evaluate a computer-based complex system, process, component, or program to meet desired needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations
- PO 04: Conduct Investigations of Complex Problems:** Use of research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions and develop Software with complete satisfaction to the Customer.
- PO 05: Modern Tool Usage:** Ability to apply current technologies, skills, and modern IT tools necessary for computing practice with an understanding of the limitations.
- PO 06: The Engineer and Society:** Ability to understand the impact of system solutions in a contemporary, global, economical, environmental and societal context for sustainable development.
- PO 07: Environment and Sustainability:** Ability to understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO 08: Ethics:** Ability to discharge their duties with professional and ethical responsibilities as an individual as well as in multidisciplinary teams with positive attitude.
- PO 09: Individual and Team Work:** Ability to function individually in effective manner and on teams, including diverse and multidisciplinary, to accomplish a common goal.
- PO 10: Communication:** Ability to communicate effectively with a range of audiences and be customer friendly.
- PO 11: Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team to manage projects and in multidisciplinary environments and should be economically feasible.
- PO 12: Life-Long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological changes.

Program Structure:

SEMESTER	THEORY		PRACTICAL		SESSIONAL		Semester Credits [A+B+C]
	Courses	Credits [A]	Courses	Credits [B]	Courses	Credits [C]	
I	4(C) + 1(E)	19	3	6	-	-	25
II	4(C) + 1(E)	19	3	6	-	-	25
III	3(C) + 2(E)	18	1	2	1	5	25
IV	1(O)	3	-	-	2	22	25
TOTAL CREDIT→							100

- * C → Compulsory Courses
- * E → Elective Courses
- * O→ Open Elective Courses

Project: Dissertation + Presentation + Project viva

Session:

- Odd Semester/ 1st and 3rd: July - December
- Even Semester/2nd and 4th): January - June
- Lecture Hour: 1 Hour
- Subject wise Lecture per Week: 4

Examination System:

Subject wise Total Marks:	100
Semester Grade Point Average:	SGPA
Yearly Grade Point Average:	YGPA
Degree Grade Point Average:	DGPA

Teaching Methodology:

Lecture, Discussion, Presentation, Case Studies, Group Task, Assignment, Projects, Special Lecture by Industry Professionals

General Guidelines:

The 2-year MCA curriculum will be applicable w.e.f. the academic year 2020 – 2021.

All rules and regulation regarding admission, examination, registration, migration and others shall exist according to MAKAUT norms.

PART – I COURSE STRUCTURE

Semester – I								
THEORY								
Sl. No	Paper Code	Paper Name	Contact Hours / Week				Credit	
			L	T	P	Total		
1	MCAN-101	Programming Concept with Python	3	1	-	4	4	
2	MCAN-102	Relational Database Management System	3	1	-	4	4	
3	MCAN-103	Computer Organization and Architecture	3	1	-	4	4	
4	MCAN-104	Discrete Mathematics	3	1	-	4	4	
5	Elective I		3	-	-	3	3	
	MCAN-E105A	Environment and Ecology						
	MCAN-E105B	Management Accounting						
	MCAN-E105C	Constitution of India						
	MCAN-E105D	Stress Management through Yoga						
	MCAN-E105E	Ethics in Business Profession						
	MCAN-E105F	Managerial Economics						
PRACTICAL								
1	MCAN-190	Soft Skill and Interpersonal Communication	-	-	4	4	2	
2	MCAN-191	Python Programming Lab	-	-	4	4	2	
3	MCAN-192	Relational Database Management System Lab	-	-	4	4	2	
Total Weekly Contact Hours and Credit							31	25
BRIDGE COURSE								
[Only for Students of Category “B” stated in the “Eligibility” Section]								
A minimum 8-week Online Course on Fundamentals of ‘Computer Science’ or ‘Computer Application’ or ‘Information Technology’ or so								

Semester - II

THEORY							
Sl. No.	Paper Code	Paper Name	Contact Hours / Week				Credit
			L	T	P	Total	
1	MCAN-201	Data Structure with Python	3	1	-	4	4
2	MCAN-202	Operating System	3	1	-	4	4
3	MCAN-203	Object Oriented Programming with JAVA	3	1	-	4	4
4	MCAN-204	Networking	3	1	-	4	4
5	Elective II		3	-	-	3	3
	MCAN-E205A	Numerical and Statistical Analysis					
	MCAN-E205B	Computer Graphics					
	MCAN-E205C	Probability and Statistics					
	MCAN-E205D	Introduction to Cyber Security					
	MCAN-E205E	Introduction to IoT					
	MCAN-E205F	Automata Theory and Computational Complexity					
PRACTICAL							
1	MCAN-291	Data Structure Lab with Python	-	-	4	4	2
2	MCAN-292	Operating System Lab (Unix)	-	-	4	4	2
3	MCAN-293	Object Oriented Programming Lab using JAVA	-	-	4	4	2
Total Weekly Contact Hours and Credit						31	25
BRIDGE COURSE							
[Only for Students of Category “B” stated in the “Eligibility” Section]							
A minimum 8-week Online Course on Fundamentals of ‘Software Engineering’ or ‘Systems Analysis and Design’ or ‘Business Systems Applications’ or so							

Semester – III							
THEORY							
Sl. No.	Paper Code	Paper Name	Contact Hours / Week				Credit
			L	T	P	Total	
1	MCAN-301	Software Engineering using UML	3	1	-	4	4
2	MCAN-302	Artificial Intelligence	3	1	-	4	4
3	MCAN-303	Design and Analysis of Algorithm	3	1	-	4	4
4	Elective III		3	-	-	3	3
	MCAN-E304A	Image Processing					
	MCAN-E304B	Web Enabled JAVA Programming					
	MCAN-E304C	Cloud Computing					
	MCAN-E304D	Web Technology using PHP					
	MCAN-E304E	Android Application Development					
	MCAN-E304F	Basic Data Science					
5	Elective IV		3	-	-	3	3
	MCAN-E305A	Information Retrieval					
	MCAN-E305B	Data Warehousing and Data Mining					
	MCAN-E305C	Introduction to Big Data Analytics					
	MCAN-E305D	Graph Theory					
	MCAN-E305E	Operation Research and Optimization Techniques					
	MCAN-E305F	Pattern Recognition					
	MCAN-E305G	Machine Learning					
PRACTICAL							
1	MCAN-E394 (A/B/C/D/E/F)	Elective III Lab	-	-	4	4	2
SESSIONAL							
1	MCAN-381	Minor Project and Viva-voce	-	-	8	8	5
Total Weekly Contact Hours and Credit						30	25

Semester IV

THEORY							
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Sl. No.	Paper Code	Paper Name	Contact Hours / Week				Credit
			L	T	P	Total	
1	Open Elective						
	MCAN-OE401	Open Elective [1] Open Electives preferably be opted from the NPTEL/SWAYAM Platform. [2] While opting for a course for pursuing the Open Elective, a student needs to ensure that: i) The duration of the course must minimum of 12-Weeks. ii) The course must not be covered in previous semesters of the program. iii) Date of Exam and publication of result should be within the tenure of the MCA 4 th Semester i.e. January to June of every Year. [3] Student must submit the course details at the time of 4 th semester enrollment	-	-	-	-	3
SESSIONAL							
1	MCAN-481	Compressive Viva-voce	-	-	-	-	2
2	MCAN-482	Major Project and Viva-voce	-	-	28	28	20
Total Weekly Contact Hours and Credit						28	25