Course Curriculum

2-Year M.C.A Degree Programme (Batch 2020-22)
Credit Structure
Distribution of Total Credits & Contact Hours in all Semesters

S. No.	Semester Number	Credits/Semester	Contact hours/week
1	I	28	48
2	II	36	52
3	III	28	36
4	IV	28	40
	Total	120	176

Course Structure: M.C.A. 2020-22

Semester – I

S. No.	Course Code	Course Title	L	T	P	Credit(s)
1	MCA-T101	Principle of Programming Languages	3	1	0	4
2	MCA-T102	Operating System	3	1	0	4
3	MCA-T103	Database Management System	3	1	0	4
4	MCA-T104	MIS & E-Commerce	3	1	0	4
5	MCA-T105	Python Programming	3	1	0	4
6	MCA-P101	DBMS and OS Lab	0	0	8	4
7	MCA-P102	Python Programming Lab	0	0	8	4
8	MCA-P103	Skill Course	0	0	4	Audit
9*	MCA-B101	Data Structure	3	1	0	Audit
10*	MCA-B102	Basic Mathematics	3	1	0	Audit
					Total Credits	28
					Total Contact hours /week	48

* Bridge Course (For Students not having mathematics in UG or 12th level)

Semester – II

S. No.	Course Code	Course Title	L	T	P	Credit(s)
1	MCA-T201	Design & Analysis of Algorithms	3	1	0	4
2	MCA-T202	Java Programming	3	1	0	4
3	MCA-T203	Software Engineering	3	1	0	4
4	MCA-T204	Computer Networks	3	1	0	4
5	MCA-T205	Computer Architecture	3	1	0	4
6	MCA-P201	Design & Analysis of Algorithm Lab	0	0	8	4
7	MCA-P202	Java Programming Lab	0	0	8	4
8	MCA-P203	Industrial Training			16	8
		Total Credits				36
		Total Contact hours/week				52

UNIT III

Control Design

Control Design: Basic concepts: Introduction, hardwired control, design examples. Micro-programmed control: Basic concepts, multiplier control unit, CPU control unit. Pipeline control: Instruction pipelines, pipeline performance, super-scalar processing.

UNIT IV

Memory Organization

Memory Organization: Memory technology: Memory device characteristics, random-access memories, serial-access memories. Memory systems: Multilevel memories, address translation, memory allocation. Caches: Main features, address mapping, structure versus performance.

UNIT V

System Organization

System Organization: IO and System Control: Programmed IO, DMA and interrupts, IO processors. Parallel processing: Processor-level parallelism, multiprocessors.

Recommended Books

1. Computer Architecture and Organization, J.P. Hayes: McGraw-Hill International
2. Computer Architecture: A Quantitative Approach, J. L. Hennessy, David A. Patterson Morgan Kaufmann
3. Computer Organization and Architecture, William Stallings, Pearson.
4. Advanced Computer Architecture, Kai Hwang, McGraw-Hill
5. Computer Organization and Architecture: Designing for Performance, William Stallings, Pearson Education Limited

MCA-P201   Design and Analysis of Algorithm Lab

Students can get acquainted with the concept Algorithms and its implementation through learning different design methods.

MCA-P202   JAVA Programming Lab

The faculty offering the course can adopt variations in tune with subject.

MCA-P203   Industrial Training

Students will undergo the 45 days of industrial training. Report to be submitted as per the format described for the paper MCA-P401.

Course Curriculum

2-Year M.C.A Degree Programme (Batch 2020-22) Credit Structure
Distribution of Total Credits & Contact Hours in all Semesters

S. No.	Semester Number	Credits/Semester	Contact hours/week
1	I	32	50
2	II	32	40
3	III	32	40
4	IV	24	36
	Total	120	166

Course Structure: M.C.A. (For session 2022-23 onwards)Semester – I

S. No.	Course Code	Course Title	L	T	P	Credit(s)	Internal	External	Total
1	MCA-T101	Web Technologies	3	1	0	4	20	80	100
2	MCA-T102	Operating System	3	1	0	4	20	80	100
3	MCA-T103	Database Management System	3	1	0	4	20	80	100
4	MCA-T104	MIS & E-Commerce	3	1	0	4	20	80	100
5	MCA-T105	Python Programming	3	1	0	4	20	80	100
6	MCA-T106	Advanced Data Structure	3	1	0	4	20	80	100
7	MCA-P101	DBMS Lab	0	0	8	4	20	80	100
8	MCA-P102	Python Programming Lab	0	0	8	4	20	80	100
9*	MCA-B101	Data Structure	3	1	0	Audit	20	80	
10*	MCA-B102	Basic Mathematics	3	1	0	Audit	20	80	
		Total Credits				32			
		Total Contact hours /week				50			
		Total Marks					160	640	800

*Bridge Course [For students other than BCA / B.Sc. (CS/IT) or 12th level)]

It will be an audit course for Non Computer Graduates. No Marks will be added. But Student has to pass this Course; in order have basic knowledge of Computer Science.

Guidelines for Evaluation of Bridge Course

Students except BCA / B.Sc. (CS/IT) have to qualify a Bridge Course as per University norms.

- Bridge course shall be an Audit Course whose award shall not be considered for overall MCA Course credit and percentage. However, the grades will be reflected in the mark sheet of the student.

- The students have to clear the Bridge Course before the End Term Examination of third semester.

Semester – II   (For session 2021-22 onwards)

S. No.	Course Code	Course Title	L	T	P	Credit(s)	Internal	External	Total
1	MCA-T201	Design & Analysis of Algorithms	3	1	0	4	20	80	100
2	MCA-T202	Java Programming	3	1	0	4	20	80	100
3	MCA-T203	Software Engineering	3	1	0	4	20	80	100
4	MCA-T204	Computer Networks	3	1	0	4	20	80	100
5	MCA-T205	Computer Architecture	3	1	0	4	20	80	100
6	MCA-E206	Departmental Elective I	3	1	0	4	20	80	100
7	MCA-P201	Minor Project	0	0	8	4	20	80	100
8	MCA-P202	Java Programming Lab	0	0	8	4	20	80	100
		Total credits				32			
		Total Contact hours/week				40			
		Total					160	640	800

Semester – III   (For session 2022-23 onwards)

	Course Code	Course Title	L	T	P	Credit(s)	Internal	External	Total
1	MCA-T301	Artificial Intelligence and Machine Learning	3	1	0	4	20	80	100
2	MCA-T302	Digital Marketing	3	1	0	4	20	80	100
3	MCA-T303	Embedded Systems	3	1	0	4	20	80	100
4	MCA-T304	Information Systems & Cyber Security	3	1	0	4	20	80	100
5	MCA-E305	Departmental Elective-II	3	1	0	4	20	80	100
6	MCA-E306	Departmental Elective-III	3	1	0	4	20	80	100
7	MCA-P301	Embedded Systems Lab	0	0	8	4	20	80	100
8	MCA-P302	Artificial Intelligence and Machine Learning Lab	0	0	8	4	20	80	100
		Total Credits				32			
		Total Contact hours/week				40			
		Total Marks					160	640	800

Semester – IV (For session 2021-22 onwards)

	Course Code	Course Title	L	T	P	Credit(s)
1	MCA-P401	Industry Project	0	0	36	24
		Total Credits				24
		Total Contact hours/week				36
		Total Marks(Internal + External)				20+80=100

List of Departmental Elective(s) – I

S. No	Course Code	Course Title	L	T	P	Credit
1.	MCA-E206-1	Content Management and Web Development	3	1	0	4
2.	MCA- E206-2	Cloud Computing	3	1	0	4
3.	MCA- E206-3	Real Time Systems	3	1	0	4
4.	MCA- E206-4	Business Intelligence in ERP System	3	1	0	4
5.	MCA- E206-5	Image Processing	3	1	0	4
6.	MCA- E206-6	Mobile Computing	3	1	0	4

List of Departmental Elective(s) – II

S. No	Course Code	Course Title	L	T	P	Credit
1.	MCA- E305-1	Software Testing	3	1	0	4
2.	MCA- E305-2	Robotics	3	1	0	4
3.	MCA- E305-3	Internet of Things	3	1	0	4
4.	MCA- E305-4	Compiler Design	3	1	0	4
5.	MCA- E305-5	Bio-Informatics	3	1	0	4

List of Departmental Elective(s) – III

S. No	Course Code	Course Title	L	T	P	Credit
1.	MCA- E306-1	Ethical Hacking and Digital Forensics	3	1	0	4
2.	MCA- E306-2	Data Mining and Data Warehousing	3	1	0	4
3.	MCA- E306-3	Soft Computing	3	1	0	4
4.	MCA- E306-4	Ad Hoc Networks	3	1	0	4
5.	MCA- E306-5	Natural Language Processing	3	1	0	4

MCA SEMESTER IV

MCA-P401   Industry Project

The projects submitted by the candidates will be evaluated as per the following guidelines.

1. Project Title/Topic to be selected by the student after end of 3rd semester in accordance with his project guide and the same must be finalized on the commencement of 4th semester

2. The project must be of approximately **360** man hours and should be **certified** by the **supervisor** of the project

3. The project must be submitted in the form in consonance with the format enclosed

4. **Monthly progress report** must be **submitted on mail only** through supervisor in the enclosed format.

5. Project must be submitted on and before the prescribed last date.

6. Candidates are required to make a **presentation** of their project work during their project evaluation by examiners.

7. Students whose Projects graded as **unsatisfactory** will **given one more chance** to undertake

   another project under another supervisor.

8. The project work of the candidates whose monthly progress report is not submitted monthly will be considered as incomplete and may be terminated as per the rules.

9. Students are required to **give progress seminar twice** during the project work.

10. Examination of the project work will be conducted by a committee consisting of at least **two internal examiners and one external examiner.**

Guidelines for Project in partial fulfillment of the requirement of MCA course

(a) The project will consist of two parts:

1. Documentation   2. Viva-voce

(b) The **source-code** and the **executable** code have to be submitted on CD/DVD and student must

demonstrate working of the software.

(c) Project shall be original and **not copied** from the existing material from any source and a certificate, as per format given will be provided with the Project, duly countersigned by the supervisor.

(d) Project will be submitted only when the candidate completes all papers though he or she may start the projects earlier.

(e) Presentation of the Project will be in the accepted norms; as laid down in various text-books; IEEE standard/ ISO standards etc., are some models to follow.

(f) As far as possible, the Project should be of **Real life problem / Social Impact / Commercially viable solution.**

(g) Though the Project is given **360** hours, the student is expected to use his/her discretion to ensure that it is large enough to be of **practical value.**

PERFORMA FOR CERTIFICATE

This is to certify that this is a bonafide record of the Project entitled
_____ was done satisfactory at_____ by Mr./Ms.

_____in partial fulfillment of MCA course. He/ She has successfully completed all the subjects.

This report had not been submitted for any other examination and does not form part of any other course undergone by the candidate.

PLACE:

DATE: SIGNATURE

                                                            NAME:

                                                            DESIGNATION:

                                                     (Name & Seal of Supervisor)

PROFORMA FOR THE PROJECT REPORT

1. Title of the Project
2. Objectives
3. Input to the Project
4. Output generated
5. Details of Hardware Platform used
6. Details of Software Tools used
7. Implementation Issues (Clearly defining the area of Application).
8. Miscellaneous
9. Signature of the Candidature.

GUIDELINES FOR THE CHAPTERS AND SECTIONS

1. Microscopic Summary
2. Details of candidate and Supervisor along with certificates of:
   - Original Work;
   - Assistance if any;
   - Credits.
3. Aims and Objectives
4. Approach to Project and Time Frame
5. Project Design Description with Appendices to cover:
   - Flow Charts/Data Flow Diagram-Macro/Micro level
   - Source Code
   - Hardware Platform
   - Software Tools
   - Security measures
   - Quality Assurance Auditability

6. Test Data and Result.

M.C.A. SEMESTER - VI

MCA-T601   Project Work

Only the projects submitted by the candidates as per following guidelines will be evaluated.

1. Project to be selected by the student at the **end** of **fifth Semester**
2. The project must be of approximately **480** man hours and so **certified** by the **supervisor** of the project
3. The project must be submitted in the form in consonance with the format enclosed
4. **Monthly progress report** must be **submitted** through supervisor in the enclosed format.
5. Project must be submitted before the prescribed last date .
6. Candidates are required to make a **presentation** of their project work during their project examination
7. Students whose Projects graded as **unsatisfactory** will **given one more chance** to undertake **another project** under another supervisor /organization.
8. The project work of the candidates whose monthly progress report is not submitted will be considered as incomplete and may be **terminated** within **two weeks** from the prescribed due date.
9. Students will be allowed to undertake project works only at the bonafide organizations / research project under the supervision of departmental faculty.
10. Students are required to **give two seminars** during the project work, one at the **end of 2nd month** and another at the **end of 4th month**. However, candidates working for their project in organizations **outside the state** need **to give only one seminar** during the entire project period.
11. Examination of the project work will be conducted by a committee consisting of at least **two internal examiners and one external examiner.**

Guidelines for Project in partial fulfillment of the requirement of MCA course

(a) The project will consist of two parts:
     1. Documentation   2. Viva-voce
(b) The **source-code** and the **executable** code have to be submitted on CD/DVD and student must **demonstrate** working of the software.
(c) Project shall be original and **not copied** from the existing material from any source and a certificate, as per format given will be provided with the Project, duly countersigned by the supervisor.
(d) Project will be submitted only when the candidate completes all papers though he or she may start the projects earlier.
(e) Presentation of the Project will be in the accepted norms; as laid down in various text- books; IEEE standard/ ISO standards etc., are some models to follow.
(f) As far as possible, the Project should be of **Real life problem / Social Impact / Commercially viable solution.**
(g) Though the Project is given 480 hours, the student is expected to use his/her discretion to ensure that it is large enough to be of **practical value.**
(h) The number of hours will **not include** the hours for writing and documentation of the Project.
(i) During the presentation of the Project at via-voce the candidate is advised to have a computer based or an overhead project presentation material handy.

PERFORMA FOR CERTIFICATE

This is to certify that this is a bonafied record of the Project entitled

_____

was done satisfactory at _____ by Mr./Ms.

_____ in partial fulfillment of MCA course. He/ She has successfully completed all

the subjects.

This report had not been submitted for any other examination and does not form part of any other course undergone by the candidate.

PLACE:

DATE: SIGNATURE

                                                                               NAME:
                                                                               DESIGNATION:

                                                                               (Name & Seal of Supervisor)

PROFORMA FOR THE PROJECT REPORT

1. Title of the Project

2. Objectives

3. Input to the Project

4. Output generated

5. Details of Hardware Platform used

6. Details of Software Tools used

7. Implementation Issues (Clearly defining the area of Application).

8. Miscellaneous

9. Signature of the Candidature.

GUIDELINES FOR THE CHAPTERS AND SECTIONS

1. Microscopic Summary
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   - Original Work;
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   - Flow Charts/Data Flow Diagram-Macro/Micro level
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   - Hardware Platform
   - Software Tools
   - Security measures
   - Quality Assurance
   - Auditability

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