



# 2023-24 Sem - I

# Student Information

# Manual

MCA



# Student Information Manual (SIM)

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# INSTITUTE INFORMATION

Dr J. J. Magdum College of Engineering was established by Dr J. J. Magdum Trust, Jaysingpurin the year 1992 with an objective to promote the cause of higher education. The institute is approved by All India Council of Technical Education (AICTE), New Delhi and Government of Maharashtra, affiliated to Shivaji University, Kolhapur. The college offers B. Tech programs in Mechanical, Civil, Computer Science Engineering, IT and Electronics.

Our Management extends its fullest support in building the institution as a center of excellence with technically superior, ethically strong and competent engineers.

The serene campus vibrant with aesthetic bliss in an exhilarating convenient location, well connected by road, rail and air is easily accessible. The eco-friendly ambience creates and bestows a healthy learning atmosphere.

The institution is meticulous with modern laboratory, workshop facilities and state of art computer center providing an excellent infrastructure.



The institution has spacious library with vast collection of Books, Newspapers, National & International Journals, Magazines, Reference books, Encyclopedia, World of science, ASM hand books and course materials. E-learning through NPTEL Video course by NIT and IIT Professors are available.

The Teaching and Non-Teaching Staff of the institute is a blend of senior experienced and young dynamic faculty members devoted to the noble cause of education. Qualified, experienced, versatile and efficient faculty members mold the students diligently in ethical, moral and academic aspects.

We impart technology based experiential learning through industry visits, live projects, expert talks, MOOC's, workshops, case studies, upscale labs, and virtual classroom sessions.

Industry-Institute interaction and real-time projects nurture and craft the budding engineers to bloom and flourish in the field with the prowess guidance in the campus. The college equips the students with the latest skills which make them employable and future ready.

Due to able and proper guidance and motivation, many of our students have topped at University. Our training and placement work meticulously to improve and develop life skills to the students and tries hard to seek good jobs for our students. In addition to the academics, the students are engaged in sports and cultural activities which helps them to develop versatile personality. Various Club activities are conducted to encourage, motivate and inspire students from diverse culture to harness the talent through their perseverance.

The institute is having spacious ground and the modern facilities for both indoor and outdoor games and ultra-modern Gymnasium. Due to proper guidance and motivation, many of our students have grabbed prizes at University level and different sport events.

We are committed to stakeholders for best results and produced more than 10000+ engineers getting campus placements.



# VISION OF INSTITUTE

To be a Leading academic organization, creating skilled and Ethical Human Resources by leveraging Technical Education for Sustainable Development of Society.



# MISSION OF INSTITUTE

- To promote learn ability of all stakeholders
- To empower rural youth to be competent in technical education and imbibe ethical values.
- To contribute to local social and economic context, leading to satisfied stakeholders.



# PROGRAMME OUTCOMES

We strive for continual improvement in our performance through methodical academic monitoring, student participation, and use of the innovative teaching- learning processes.



# VISION OF DEPARTMENT

To be the source of bringing out globally competent pioneering computing professionals, researchers, innovators and entrepreneurs and thereby succeed and contribute value to the knowledge-based economy and society.





# MISSION OF DEPARTMENT

- To offer high-grade, value-based Post-graduate programme in the field of Computer Applications.
- To provide conducive environment so as to achieve excellence in teaching-learning, and research and development activities.
  - To bridge the gap between industry and academia by framing curricula and syllabi based on industrial and societal needs.
  - To offer tasks for experiential technology-intensive knowledge through collaborative and interdisciplinary activities.
  - To provide appropriate forums to develop innovative talents, practice ethical values and inculcate as enduring learners.
  - To facilitate students to nurture skills to practice their professions competently to meet the ever-changing needs of society



# PROGRAMME EDUCATIONAL OBJECTIVES (PEO'S)

The Master of Computer Application Department strives for excellence in creating, applying and imparting knowledge in Computer Application through comprehensive education programs, research in collaboration with industry and service to professional societies, the community, the state, and the nation.

1. Learn and apply latest Software Technologies in the field of Computer Applications.
2. Identify real time problems and deliver innovative Software solutions for development of society to develop an ability for pursuing higher studies, research and development computer science and engineering, consultancy and entrepreneurship.



# PROGRAMME OUTCOMES (PO'S)

At the end of successful completion of program, the graduates will be able to,

2. **Problem Analysis:** Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental
4. **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid
5. **Modern Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering
7. **Environment and Sustainability:** Understand and the impact of professional engineering solutions in societal and environmental contexts and demonstrates knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering
9. **Individual and Teamwork:** Function effectively as in visual, and as a member or leader in diverse teams and in multidisciplinary s
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear
11. **Project Management and Finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these too noels on work, as a member and leader instead, to manage projects and in multidisciplinary environment.
12. **Lifelong 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



# STUDENTS ROLES AND RESPONSIBILITIES

- Every student must carry his/her identity card while being present on the College Premises.
- Use of Cell phones is strictly prohibited during class/Labs hour.
- Without the permission of the Principal, Students are not allowed to circulate any printed materials within the college campus.
- Every student is expected to maintain the general cleanliness within the classrooms, laboratories and the campus in general.
- Students should handle the college properties with care. Damage to the furniture or any other materials may lead to penalty or suspension from the college.
- Intoxication or possession of narcotics and other dangerous material is strictly prohibited.
- Playing cards, spitting and loitering are strictly prohibited inside the college campus and shall invite severe punishment/disciplinary action
- Attempted or actual theft of and/or damage to property of the College, or property of a member of the College community, or other personal or public property, on or off campus will be considered as a punishable act.
- Every student will remain answerable to the college authority for his/her activity and conduct on the College Premises.
- Any act which obstructs teaching, research, administrative activity and other proceedings of the college is strictly prohibited.
- Indulging ragging, anti-institutional, anti-national, antisocial, communal, immoral or political expressions and activities within the Campus and hostel are strongly prohibited as well as punishable.
- Students are required to check the Notice Board and also website of the college for important announcements.



# LABORATORY INSTRUCTIONS

- ❑ Students must present a valid ID card before entering the computer lab.
- ❑ Remove your shoes/chapels/sandals outside the lab.
- ❑ Playing of games on computer in the lab is strictly prohibited.
- ❑ Before leaving the lab, students must close all programs positively and keep the desktop blank.
- ❑ Students are strictly prohibited from modifying or deleting any important files and install any software or settings in the computer without permission
- ❑ Based on the prime priority, users may be requested by the lab in-charge, to leave the workstation any time and the compliance is a must.
- ❑ Eating and/or drinking inside the computer lab is strictly prohibited.
- ❑ Internet facility is only for educational/ study purpose.
- ❑ Silence must be maintained in the lab at all times.
- ❑ The lab must be kept clean and tidy at all times.
- ❑ If any problem arises, please bring the same to the notice of lab in-charge.
- ❑ No bags/ hand bags/ rain coats/ casual wears will be allowed inside the computer lab, however note book may be allowed.
- ❑ Lab timing will be as per the academic time table of different classes
- ❑ Every user must make an entry in the Computer Lab Register properly.
- ❑ Each student or visitor must take mobile phones in “Switched Off” mode while entering and or working in Computer Lab.
- ❑ Conversation, discussion, loud talking & sleeping are strictly prohibited.
- ❑ Users must turn-off the computer before leaving the computer lab.
- ❑ Maintain silence in lab.
- ❑ Computer Lab Assistants are available to assist with BASIC computer and software problems.
- ❑ Food and drink are not permitted in the computer lab.
- ❑ The use of cell phones is prohibited in the computer lab.
- ❑ Please take your calls outside. We also ask that you put your cell phone on vibrate mode.
- ❑ Unauthorized copying and/or installing of unauthorized software is not permitted
- ❑ Tampering with the hardware or software settings will not be tolerated.



# CLASSROOM INSTRUCTIONS



- Students should know and obey rules and regulations of department as well as college.
- Students strive to meet Academic Expectations
- Students are expected to take all tests at the scheduled times seriously.
- Maintain discipline in the class
- A student should maintain at least 75% attendance in the Lectures of every subject and 100% overall performance. Otherwise, he or she will be debarred from the University Examination.
- Latecomers will not be entertained to enter into the classroom.
- Participate in the activities organized in the Department as well as in the College.
- While discussion, students should conduct and express themselves in a way that is respectful of all persons.
- Develop positive attitudes;
- Be cooperative and considerate.
- Welcome challenges.
- Be helpful to others
- Be kind, polite, and courteous to others
- Do the assigned work on time
- Be prepared for classes with all necessary supplies.
- Be Respectful and Punctual
- Be in the best of behavior



**DEPARTMENT  
ACADEMIC PLANNER**

## ACADEMIC PLANNER 2023-24 SEM-I

Dr. J J Magdum College of Engineering, Jaysingpur.

Department of Master of Computer Application  
Academic Calendar 2023-24 (SEM-I & III)

Date:

July 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

17- Load Distribution, Time Table Semester I & III

24- Commencement of Semester III

4th Week –

Course Outline by individual faculty

Distribution of Academic Diary

Lecture Plan duly signed by HOD

Department Academic Planner Submission

August 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

1<sup>st</sup> Week –

Commencement of Theory Lecture

11- Project Presentation-I

24 - MCASA Activity

28 - Commencement of Semester I

30 - Syllabus Completion Status

September 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

5 - MCASA Activity

7 – FY-MCA Orientation

11, 12 – CIE I (SY-MCA)

16 - TCP Activity

20 - Expert Lecture

25 - Project Presentation-II

26 - Guest lecture

27- Community Services

29 - FDP

October 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

- 5 - Final Report Presentation
- 7- Parents Meet
- 9, 10- CIE I (FY-MCA)
- 13- Expert Lecture
- 16 - Augmentation Non-Technical
- 21 - MCASA Activity
- 26 - Feedback
- 30 - Augmentation Technical

November 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

- 3- Expert Lecture
- 4- Industrial Visit
- 10 -Guest Lecture
- 15, 16- CIE II (FY, SY)
- 24- FDP

### Proctor meeting

Sr. No	FY	SY
Proctor Meeting	5 Sep	10 Aug
	21 Sep	22 Aug
	10 Oct	8 Sept
	30 Oct	22 Sept
	1 Nov	17 Oct
	24 Nov	8 Nov
CMC- I	29 Sept	31 Aug
CMC- II	31 Oct	3 Oct
CMC- III	30 Nov	1 Nov



# DEPARTMENTAL TIME TABLE

Class: FY- MCA

Year: 2023 - 2024

Dr. J. J. Magdum Trust's  
Dr. J. J. Magdum College of Engineering, Jaysingpur W.E.F: 14-09-2023  
Department of Master of Computer Application


Date: 14 /09/2023



S R	TIME	MON	TUE	WED	THU	FRI
1	09:30 am -10:30 am	DBMS ( <u>Prof.N.C.Desai</u> )	DBMS ( <u>Prof.N.C.Desai</u> )	DBMS ( <u>Prof.N.C.Desai</u> )	CO ( <u>Prof.P.N.Patil</u> )	F1- Python - SAB F2- DBMS - NCD
2	10:30 am -11:30 am	Maths ( <u>Prof.S.A.Demasure</u> )	OS ( <u>Prof.S.B.Pati</u> )	Maths ( <u>Prof.S.A.Demasure</u> )	OS ( <u>Prof.S.B.Patil</u> )	F3- Python - SAB
<b>11.30 am - 11.40 am - SHORT BREAK</b>						
3	11:40 am -12:40 pm	F1 - Python - SAB F2 - Python - NCD F3 - CS - AMM	CO(TUT)-PNP	F1 - DBMS - NCD F2 - CS- AMM F3 - DBMS - NCD	Python ( <u>Prof.S.A.Bhagwat</u> )	OS(TUT)-SBP
4	12:40 pm -01:40 pm		CO ( <u>Prof.P.N.Patil</u> )		Maths ( <u>Prof.S.A.Demasure</u> )	CO ( <u>Prof.P.N.Patil</u> )
<b>01.40 pm - 02.30 pm - LUNCH BREAK</b>						
5	02:30 pm -03:30 pm	Python ( <u>Prof.S.A.Bhagwat</u> )	F1 - CS- AMM F2 - Python - SAB F3 - Python - SBP	CS ( <u>Prof.A.M.More</u> )	DBMS ( <u>Prof.N.C.Desai</u> )	
6	03:30 pm -04:30 pm	OS ( <u>Prof.S.B.Pati</u> )		Python ( <u>Prof.S.A.Bhagwat</u> )	Maths(TUT)-SAD	

Prof. S. B. Patil  
I/C Load Distribution

Prof. N. C. Desai  
HOD



# STRUCTURE OF SYLLABUS

SEMESTER – I																		
Sr. No		TEACHING SCHEME									EXAMINATION SCHEME							
		THEORY			TUTORIAL			PRACTICAL			THEORY			PRACTICAL		TERM WORK		
		Credit	No. of Lectures	Hours	Credit	No. of Hours	Hours	Credit	No. of Hours	Hours	Mode	Marks	Total Marks	Min	MAX	MIN	MAX	MIN
1	PCC-MCA-C01	3	3	3	1	1	1	-	-	-	CIE 30 ESE 70	100	12 28	-	-		25	10
2	PCC-MCA-C02	3	3	3	1	1	1	-	-	-	CIE 30 ESE 70	100	12 28	-	-		25	10
3	PCC-MCA-C03	3	3	3	-	-	-	2	4	4	CIE - ESE -	-	-	50	20		50	20
4	PCC-MCA-C04	4	4	4	-	-	-	1	2	2	CIE 30 ESE 70	100	12 28	50	20		50	20
5	BSC-MCA-B01	3	3	3	1	1	1	-	-	-	CIE 30 ESE 70	100	12 28	-	-		25	10
6	MNG-MCA-M01	1	1	1	-	-	-	1	2	2	-	-	-	25	10		50	20
<b>TOTAL</b>		<b>17</b>	<b>17</b>	<b>17</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>8</b>	<b>8</b>		<b>400</b>		<b>125</b>			<b>225</b>	
SEMESTER – II																		
1	PCC-MCA-C05	3	3	3	1	1	1	-	-	-	CIE 30 ESE 70	100	12 28				25	10
2	PCC-MCA-C06	3	3	3	-	-	-	2	4	4	CIE 30 ESE 70	-	-	50	20		50	20
3	PCC-MCA-C07	3	3	3	1	1	1	-	-	-	CIE 30 ESE 70	100	12 28				50	10
4	PCC-MCA-C08	3	3	3	-	-	-	2	4	4	CIE 30 ESE 70	100	12 28	50	20		50	20
5	BSC-MCA-B02	3	3	3	-	-	-	1	2	2	CIE 30 ESE 70	100	12 28	-	-		25	10
6	MNG-MCA-M02	1	1	1	-	-	-	1	2	2	-	-	-	25	10		25	10
<b>TOTAL</b>		<b>16</b>	<b>16</b>	<b>16</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>12</b>	<b>12</b>		<b>400</b>		<b>125</b>			<b>225</b>	
<b>TOTAL</b>		<b>33</b>	<b>33</b>	<b>33</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>10</b>	<b>20</b>	<b>20</b>		<b>800</b>		<b>250</b>			<b>450</b>	



• Candidate contact hours per week : 30 Hours (Minimum)	• Total Marks for MCA Sem I & II : 800 + 250 + 450 = 1500
• Theory and Practical Lectures : 60 Minutes Each	• Total Credits for MCA Sem I & II : 48 (SEM-I: 24 + SEM-II: 24)
• In theory examination there will be a passing based on separate head of passing for examination of CIE and ESE.	
• There shall be separate passing for theory and practical (term work) courses.	
• ** Indicates that the theory examination is of 04 hours duration.	

**Note:**

1. **PCC-MCA:** Professional Core Course (Master in Computer Applications).
2. **BSC-MCA:** Basic Science Course (Master in Computer Applications).
3. **MNG-MCA:** Management Course (Master in Computer Applications).

**Semester - I**

Sl. No	Code No.	Subject	Semester	Credits
1.	PCC- MCA-C01	Computer Organization	1	4
2.	PCC-MCA-C02	Operating System	1	4
3.	PCC- MCA-C03	Python Programming	1	5
4.	PCC- MCA-C04	Database Management System	1	5
5.	BSC-MCA-B01	Mathematical Foundations	1	4
6.	MNG-MCA-M01	Communication Skills	1	2

**Semester - II**

Sl. No	Code No.	Subject	Semester	Credits
1.	PCC- MCA-C05	Design and Analysis of Algorithms	2	4
2.	PCC- MCA-C06	Web Technology	2	5
3.	PCC- MCA-C07	Software Engineering	2	4
4.	PCC- MCA-C08	Java Programming	2	5
5.	BSC-MCA-B02	Data Communication and Network	2	4
6.	MNG-MCA-M02	Business Communication	2	2



# **COURSE DETAILS/SYLLABUS**

Master of Computer Application Sem – I

**SHIVAJI UNIVERSITY, KOLHAPUR**

**Master of Computer Application (MCA)**

Under Faculty of Science and Technology (Engineering and Technology)

**Part I Semester I**

**MCA-C01: Computer Organization**

**Course Details:**

<b>Course Details Class</b>	<b>First Year M.C.A. Sem-I</b>
<b>Course Code and Course Title</b>	<b>PCC- MCA-C01: Computer Organization</b>
<b>Prerequisites</b>	<b>Computer Fundamentals</b>
<b>Teaching scheme: Lectures + Tutorial</b>	<b>3 Hrs. + 1 Hr.</b>
<b>Credits</b>	<b>3 + 1</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>70 (ESE) + 30 (CIE)</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: 3 Hrs. /Week</b>	<b>Theory: 100 Marks, 70 (ESE) +30 (CIE)</b>
<b>Tutorial: 1 Hr./Week</b>	<b>TW: 25 Marks</b>

**Course Outcomes:**

1. To understand the structure and components of computer.
2. To familiarize a student with number systems and logic gates.
3. To understand the combinational and sequential circuits.
4. To familiarize a student with control unit.
5. To understand the memory subsystems.

**UNIT 1**

**(12 HOURS)**

Function and structure of a computer, Functional components of a computer, Interconnection of components, Performance of a computer, Introduction to Computer Organization, CPU Organization Memory subsystem Organization, and Interfacing, I/O Subsystem Organization and Interfacing, a relative Simple Computer, Software, hardware interaction, layers in computer architecture, Central processing and machine language.

**UNIT 2**

**(12 HOURS)**

**Data Representation:** Introduction to Digital Computer, Number Systems- Binary, Octal and Hexadecimal, Inter-conversion between number systems, Coding Schemes.

**Boolean algebra:** Binary Logic, Logic Gates, Boolean Algebra, Postulates of Boolean Algebra, Boolean Function

### UNIT 3

(12 HOURS)

**Combinational Circuits:** Introduction, Design Procedure, Half Adder, Full Adder, Decoder, Encoder, Multiplexer, Demultiplexer.

**Sequential Circuits:** Introduction Flip Flops, Clocked SR Flip flop, D flip flop, T flip flop, JK and JK master-slave flip flop, Registers, Shift Registers.

### UNIT 4

(12 HOURS)

**Control Unit:** Data path and control path design, microprogramming v/s hardwired control, RISC v/s CISC

**Memory Subsystems:** Storage technologies, memory array organization, memory hierarchy, interleaving, cache memory, Auxiliary memory, Associative Memory and virtual memory.

#### Text Books:

1. Computer Architecture & Organization J. P. Hayes MGH 3rd Edition.
2. C. Hamacher, Z. Vranesic and S. Zaky, "Computer Organization", McGrawHill, 2002.

#### References:

1. W. Stallings, "Computer Organization and Architecture - Designing for Performance", Prentice Hall of India, 2002.
2. Computer System Architecture, M. Morris Mano, Third Edition, Pearson Education, 2007
3. D. A. Patterson and J. L. Hennessy, "Computer Organization and Design - The Hardware/Software Interface", Morgan Kaufmann, 1998.
4. Digital Computer Electronics Malvino TMH 3rd Edition.

**SHIVAJI UNIVERSITY, KOLHAPUR**

**Master of Computer Application (MCA)**

Under Faculty of Science and Technology (Engineering and Technology)

**Part I Semester I**

**MCA-C02: Operating System**

**Course Details:**

<b>Course Details Class</b>	<b>First Year M.C.A. Sem-I</b>
<b>Course Code and Course Title</b>	<b>PCC- MCA-C02: Operating System</b>
<b>Prerequisites</b>	<b>Basics of Computer Hardware and software</b>
<b>Teaching scheme: Lectures + Tutorial</b>	<b>3 Hrs. + 1 Hr.</b>
<b>Credits</b>	<b>3 + 1</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>70 (ESE) + 30 (CIE)</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: 3 Hrs. /Week</b>	<b>Theory: 100 Marks, 70 (ESE) +30 (CIE)</b>
<b>Tutorial: 1 Hr./Week</b>	<b>TW: 25 Marks</b>

**Course Outcomes:**

1. To understand the basic concepts and functions of operating systems.
2. To understand Processes and Threads
3. To analyze Scheduling algorithms.
4. To understand the concept of Deadlocks.
5. To analyze various memory management schemes.
6. To understand I/O management and File systems.
7. To be familiar with the basics of Distributed Operating System

**UNIT 1**

**(12 HOURS)**

**Introduction:** Operating system definition, Functions of Operating System, Logical View, System View, Types of operating System, System Calls, System Programs.

**Processes:** Process Concept, Thread Concept, Difference between Process and Thread, Process Control Block, Process operations, Inter-process Communication, Communication in Client-Server.

## UNIT 2

(12 HOURS)

**CPU Scheduling:** Scheduling Concept, Scheduling Criteria, Scheduling algorithms, Scheduling Evaluation, Simulation Concept.

**Process Synchronization:** Synchronization concept, Need for Synchronization, Critical Section Problem, Semaphore, Monitor.

**Deadlock:** Deadlock concepts, Necessary Conditions for Deadlock, Deadlock Prevention, Deadlock Avoidance, Bankers Algorithm, Deadlock Detection, Deadlock Detection Algorithm for Single and Multiple Instance of Resources, Deadlock Recovery.

## UNIT 3

(12 HOURS)

**Memory Management:** Concept, Memory Management Techniques, Contiguous & Non Contiguous allocation, Relocation, Compaction, Logical & Physical Memory, Conversion of Logical to Physical address, Paging, Segmentation, Segment with paging, Virtual Memory Concept, Demand paging, Page fault.

**File Management:** File Structure, Protection, FILE system, Implementation, Directory structure, Free Space Management, File Access Methods, File Allocation Methods, Recovery.

## UNIT 4

(12 HOURS)

**Disk Management:** Disk Structure, Disk Scheduling algorithm, Disk management, Swap Space concept and Management, RAID structure, Disk performance issues.

**Distributed Operating System:** Difference between Distributed & Centralized OS, Advantages of Distributed OS, Types of Distributed OS

Text Books:

1. Operating System Silberschatz, Galvin , Gagne, Wiley publication
2. Operating System Concepts and Design , Milan Milenkovic, MGH

References:

1. Distributed Operating System P.K. Sinha, PHI
2. Operating system Achyut Godbole
3. Operating System In Depth Doeppner Wiley India
4. Operating System Rohit Khurana Vikas pub.

**SHIVAJI UNIVERSITY, KOLHAPUR**

**Master of Computer Application (MCA)**

Under Faculty of Science and Technology (Engineering and Technology)

**Part I Semester I**

**MCA-C03: Python Programming**

**Course Details:**

<b>Course Details Class</b>	<b>First Year M.C.A. Sem-I</b>
<b>Course Code and Course Title</b>	<b>PCC- MCA-C03: Python Programming</b>
<b>Prerequisites</b>	<b>Basics of Programming Languages C, C++</b>
<b>Teaching scheme: Lectures + Practical</b>	<b>3 Hrs. + 4 Hr.</b>
<b>Credits</b>	<b>3 + 2</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>NA</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: 3 Hrs./Week</b>	<b>NA</b>
<b>Practical: 4 Hr./Week</b>	<b>POE: 50 Marks TW: 50 Marks</b>

**Course Outcomes:**

1. To Learn Basic Syntax of Python Programming.
2. To understand and implement concepts of object oriented methodology using Python.
3. To learn collections in Python.
4. To develop problem solving skills and their implementation through Python.

**UNIT 1**

**(12 HOURS)**

**Introduction to Python:** an interpreted high level language, interactive mode and script mode. Variables, Expressions and Statements, Variables and Types-mutable and Immutable variable and Keywords. Operators and Operands in Python. (Arithmetic, relational and logical operators), Operator precedence .Expressions and Statements (Assignment statement); Taking input (using raw\_input() and input()) and displaying output - print statement, Comments in Python. Conditional and Looping Construct if - else statement and nested if – else while, for, use of rangefunction in for, Nested loops, break, continue.

**UNIT 2**

**(12 HOURS)**

**Functions:** Built-In Function, invoking built in functions, Functions from math, random, time & date, User Define Function. **Strings:** Creating, initializing and accessing the elements; String operators: +, \*, in, not in, range, slice [n:m], String built in functions & methods, Strings constants defined in string module, Regular Expression and Pattern Matching.

### UNIT 3

(12 HOURS)

**Lists:** Concept of mutable lists, creating, initializing and accessing the elements of list, List operations. **Tuples:** Immutable concept, creating, initializing and accessing the elements in a tuple; Tuple functions: cmp(), len(), max(), min(), tuple(). **Sets:** Concept of Sets, creating, initializing and accessing the elements of Sets operation (Membership, union, intersection, difference, and symmetric difference). **Dictionaries:** Concept of key-value pair, creating, initializing and accessing the elements in a dictionary, Traversing, Dictionary functions & Methods.

### UNIT 4

(12 HOURS)

**Modules:** Executing modules as scripts, The Module Search Path, “Compiled” Python files Standard Modules, The dir() Function, Packages Importing \* From a Package. I/O and File Handling: Output Formatting, Reading and Writing Files (text and binary mode). Errors and **Exceptions:** Syntax Errors, Exceptions, Handling Exceptions, Raising Exceptions. Introduction to Object Oriented concepts in Python.

This course should consist of 10 to 12 programming exercises with focus on covering the hands-on aspects.

#### Text Books

1. Learning Python By Mark Lutz, O'Reilly Publication
2. Programming with python, A users Book, Michael Dawson, Cengage Learning
3. Python Essential Reference, David Beazley, Third Edition 5. Python Bible

#### References:

1. Practical Programming: An introduction to Computer Science Using Python, second edition, Paul Gries, Jennifer Campbell, Jason Montojo, The Pragmatic Bookshelf.
2. Python for Informatics: Exploring Information, Charles Severance
3. John V Guttag. “Introduction to Computation and Programming Using Python”, Prentice Hall of India
4. R. Nageswara Rao, “Core Python Programming”, Dreamtech
5. Python Learning Guide (BPB publications)



**SHIVAJI UNIVERSITY, KOLHAPUR**

**Master of Computer Application (MCA)**

Under Faculty of Science and Technology (Engineering and Technology)

**Part I Semester I**

**MCA-B01: Mathematical Foundations**

**Course Details:**

<b>Course Details Class</b>	<b>First Year M.C.A. Sem-I</b>
<b>Course Code and Course Title</b>	<b>BSC- MCA-B01: Mathematical Foundations</b>
<b>Prerequisites</b>	<b>Basics of Set theory, algebra</b>
<b>Teaching scheme: Lectures + Tutorial</b>	<b>3 Hrs. + 1 Hr.</b>
<b>Credits</b>	<b>3 + 1</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>70 (ESE) + 30 (CIE)</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: 3 Hrs. /Week</b>	<b>Theory: 100 Marks, 70 (ESE) +30 (CIE)</b>
<b>Tutorial: 1 Hr./Week</b>	<b>TW: 25 Marks</b>

**Course Outcomes:**

1. Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives.
2. Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.
3. Students completing this course will be able to use tree and graph algorithms to solve problems.
4. Students completing this course will be able to evaluate Boolean functions and simplify expressions using the properties of Boolean algebra.

**UNIT 1**

**(12 HOURS)**

**Set theory and Relations**

Elementary set theory. universal set, subset, representation of sets, operations, distributive and De Morgan's laws, characteristic function, computer representation of sets.

Relations & digraphs. Relation, matrix representation, digraph, paths in relation,

Properties, equivalence relation, operations on relation, Computer representation of sets.

## **UNIT 2**

**(12 HOURS)**

### **Functions and recurrence relations**

Functions, Types of functions, functions for computer science, permutation, functions and their manipulations. Recurrence Relations and Solutions, Linear relations with two indices, Principles of inclusions & exclusions.

## **UNIT 3**

**(12 HOURS)**

### **Lattice and Boolean algebra**

Order relations and structures, Partially ordered sets, External element of poset, Lattices and their properties, Finite Boolean algebras, properties.

## **UNIT 4**

**(12 HOURS)**

### **Mathematical logic and Theory of inference**

Mathematical Logic: Statements and notations, Connectives, Normal forms, Theory of inference for Statement calculus.

#### Text Books:

1. A. Doerr, Discrete Mathematics for Computer Science, (Galgotia-86).
2. Kolman B. Busby, Ross S.C.: Discrete Mathematical Structures for Computer Science, (Prentice Hall).

#### References:

1. Olympia Nicodimi : Discrete Mathematics, (CBS publications and distributors)
2. Joshi K.D., Discrete Mathematics, (Wiley Eastern).
3. Liu C.L: Elements of Discrete Mathematics, (TMH).
4. S. Sahni, Concepts in Discrete Mathematics, (Camclot Publisher, USA).
5. Tremblay J.P. and Manohar, R: Discrete Mathematical Structures with applications to Computer Science. (McGraw-Hill book company)
6. Schaums series: Discrete Mathematics. Isaac, A Somasundaram

**SHIVAJI UNIVERSITY, KOLHAPUR**

**Master of Computer Application (MCA)**

Under Faculty of Science and Technology (Engineering and Technology)

**Part I Semester I**

**MCA-M01: Communication Skills**

**Course Details:**

<b>Course Details Class</b>	<b>First Year M.C.A. Sem-I</b>
<b>Course Code and Course Title</b>	<b>MNG- MCA-M01: Communication Skills</b>
<b>Prerequisites</b>	<b>Oral, Written Communication</b>
<b>Teaching scheme: Lectures + Practical</b>	<b>1 Hrs. + 2 Hr.</b>
<b>Credits</b>	<b>1 + 1</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>NA</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: 1 Hrs. /Week</b>	<b>NA</b>
<b>Practical: 2 Hr./Week</b>	<b>OE: 25 TW: 50 Marks</b>

**Course Outcomes:**

The objectives of this course are to introduce communication techniques, professional correspondence

techniques and enhance writing skills of the students.

**UNIT 1**

**(12 HOURS)**

**Communication:** Nature and Importance of Communication, Objectives of Communication, Importance of Communication, Process and barriers to Communication, Elements of Communication, Forms of Communication.

**Verbal Communication Techniques:** Art of Speaking, Speech Styles. Oral Presentation, Preparation of Formal Speech, Meetings, Interviews, Group Discussion, Debate.

**UNIT 2  
HOURS)**

**(12**

**Non-verbal Communication:** Meaning, Characteristics & classification of Non-verbal Communication, Body Language, Gestures, Postures. Listening & observation skills.

**Rapid review of Grammar:** Corrections of common errors, Verb and its subject, forms of verb, Use of phrases and idioms, Use of infinitive Gerund and Participle, Errors & Use of Adjective and adverb , Punctuation and capitalization.

**Text Books:**

1. R.K. Chaddha Communication Techniques and skills – DhanpalRai Publication, NewDelhi.
2. Pravit S. R. Bhatia, Professional Communication Skills- S. Chand and Co.,NewDelhi.
3. J.D.O'Connor, Better English pronunciation.

**References:**

1. Wren and Martin, Highschool English Grammar and Composition – Chand and Co.,New Delhi.
2. Sunita Mishra, C.Muralikrishna, Communication Skills for Engineers – Pearson Education.
3. Aspi Doctor, Principles and Practice of Business Communication Rhoda Doctor, Sheth Publication, Mumbai.
4. John Collin, “Perfect Presentation”, Video Arts MARSHAL
5. Jenny Rogers “Effective Interviews”, Video Arts MARSHAL
6. Raman Sharma, “Technical Communications”, OXFORD



# TEACHING PLAN

<b>Dept Of Master of Computer Application (MCA - I Sem I 2023-24)</b>	
<b>Lecture Plan: Computer Organization</b>	
<b>Lecture No</b>	<b>Unit 1</b>
01	Function and structure of a computer
02	Functional components of a computer
03	Interconnection of components
04	Performance of a computer
05	Introduction to Computer Organization
06	CPU Organization Memory subsystem Organization
07	Interfacing
08	I/O Subsystem Organization and Interfacing
09	A relative Simple Computer
10	Software, hardware interaction
11	layers in computer architecture
12	Central processing and machine language.
	<b>Unit 2</b>
13	Data Representation
14	Introduction to Digital Computer
15	Number Systems- Binary
16	Number Systems- Octal and Hexadecimal
17	Inter-conversion between number systems
18	Coding Schemes
19	Binary Logic
20	Logic Gates
21	Logic Gates
22	Boolean Algebra
23	Postulates of Boolean Algebra
24	Boolean Function
	<b>Unit 3</b>
25	Combinational Circuits: Introduction
26	Design Procedure
27	Half Adder
28	Full Adder
29	Decoder, Encoder
30	Multiplexer, Demultiplexer
31	Sequential Circuits: Introduction
32	Flip Flops
33	Clocked SR Flip flop
34	D flip flop, T flip flop
35	JK and JK master-slave flip flop
36	Registers, Shift Registers
	<b>Unit 4</b>
37	Control Unit:
38	Data path and control path design
39	Microprogramming
40	Hardwired control
41	RISC v/s CISC
42	Memory Subsystems
43	Storage technologies
44	memory array organization
45	memory hierarchy, interleaving, cache memory
46	Auxiliary memory
47	Associative Memory
48	virtual memory

<b>Dept Of Master of Computer Application (MCA - I Sem I 2023-24)</b>	
<b>Lecture Plan: Operating System</b>	
<b>Lecture No</b>	<b>Unit 1</b>
01	Operating system definition
02	Functions of Operating System
03	Logical View, System View,
04	Types of operating System
05	System Calls
06	System Programs
07	Process Concept, Thread Concept
08	Difference between Process and Thread
09	Process Control Block
10	Process operations
11	Inter-process Communication
12	Communication in Client- Server.
	<b>Unit 2</b>
13	CPU Scheduling: Scheduling Concept
14	Scheduling Criteria
15	Scheduling algorithms
16	Scheduling Evaluation
17	Simulation Concept
18	Synchronization concept, Need for Synchronization
19	Critical Section Problem, Semaphore, Monitor
20	Deadlock concepts
21	Necessary Conditions for Deadlock
22	Deadlock Prevention, Deadlock Avoidance
23	Bankers Algorithm, Deadlock Detection, Deadlock Detection Algorithm for Single and Multiple Instance of Resources
24	Deadlock Recovery
	<b>Unit 3</b>
25	Memory Management: Concept
26	Memory Management Techniques
27	Contiguous & Non Contiguous allocation
28	Relocation, Compaction
29	Logical & Physical Memory. Conversion of Logical to Physical address
30	Paging, Segmentation, Segment with paging
31	Virtual Memory Concept,
32	Demand paging, Page fault.
33	File Management: File Structure
34	Protection, FILE system, Implementation
35	Directory structure, Free Space Management
36	File Access Methods, File Allocation Methods, Recovery.
	<b>Unit 4</b>
37	Disk Management: Disk Structure
38	Disk Scheduling algorithm
39	Disk management
40	Swap Space concept and Management
41	RAID structure
42	Disk performance issues
43	Distributed Operating System
44	Centralized OS
45	Difference between Distributed & Centralized OS
46	Advantages of Distributed OS
47	Types of Distributed OS
48	Types of Distributed OS

<b>Dept Of Master of Computer Application (MCA - I Sem I 2023-24)</b>	
<b>Lecture Plan: Database Management System</b>	
<b>Lecture No</b>	<b>Unit 1</b>
01	Database Concept
02	Characteristics of DBMS
03	Architecture of DBMS
04	Database users
05	Database users
06	2-tier Architecture
07	3-tier Architecture
08	2-tier Architecture Vs 3-tier Architecture
09	Introduction of Parallel
10	Distributed Databases
11	Mobile databases
12	Cloud databases
	<b>Unit 2</b>
13	Entity introduction
14	Characteristics of Entity
15	Comparison between DBMS and RDBMS
16	Generalization
17	Specialization and Aggregation
18	Functional dependency
19	Types of normalization
20	1NF
21	2NF
22	3NF
23	Primary key, Foreign key, Unique key
24	Null, Not Null, Default key
	<b>Unit 3</b>
25	Introduction to SQL
26	Features of SQL
27	Basic data types, SQL statements/commands
28	Set operations in SQL
29	Order by and group by clause
30	between, in, like, create index, view and join command
31	GRANT and REVOKE
32	Commit, Rollback, Save point
33	Join concept, Join Types. View.
34	Introduction to PL/SQL, Difference between SQL AND PL/SQL
35	Block definition structure and Data types. Functions, cursor.
36	trigger, procedures, exceptionhandling
	<b>Unit 4</b>
37	Concurrency Control and Transaction Management
38	Transaction processing
39	Concurrency
40	Concept of transaction processing
41	ACID properties
42	Locking techniques
43	Locking techniques
44	Timestamp based protocols
45	Granularity of data items
46	Deadlocks
47	Database Recovery
48	Backup



<b>Dept Of Master of Computer Application (MCA - I Sem I 2023-24)</b>	
<b>Lecture Plan: Mathematical Foundations</b>	
<b>Lecture No</b>	<b>Unit 1</b>
01	Elementary set theory
02	Universal set, subset
03	Representation of sets, operations.
04	Distributive and De Morgan's laws
05	Characteristic function
06	Computer representation of sets
07	Relations & digraphs. Relation
08	Matrix representation
09	Digraph, paths in relation
10	Properties, equivalence relation
11	Operations on relation
12	Computer representation of sets
	<b>Unit 2</b>
13	Functions
14	Types of functions
15	functions for computer science
16	permutation
17	Functions and their manipulations
18	Functions and their manipulations
19	Recurrence Relations
20	Recurrence Relations
21	Linear relations with two indices
22	Linear relations with two indices
23	Principles of inclusions & exclusions.
24	Principles of inclusions & exclusions.
	<b>Unit 3</b>
25	Lattice
26	Boolean algebra
27	Order relations
28	structures
29	Partially ordered sets
30	Partially ordered sets
31	Externals element of poset
32	Externals element of poset
33	Lattices and their properties
34	Lattices and their properties
35	Finite Boolean algebras
36	Finite Boolean algebras
	<b>Unit 4</b>
37	Mathematical logic
38	Theory of inference
39	Theory of inference
40	Statements
41	notations
42	Connectives
43	Connectives
44	Normal forms
45	Normal forms
46	Theory of inference for Statement calculus
47	Theory of inference for Statement calculus
48	Theory of inference for Statement calculus

**Dept Of Master of Computer Application (MCA - I Sem I 2023-24)****Lecture Plan: Python**

<b>Lect. No</b>	<b>Unit 1</b>
1	Introduction to Python
2	Introduction to python
3	interactive mode and script mode , Variables
4	Expression and statements
5	variables and types-mutable and Immutable variable
6	Operators and Operands
7	expression and statement
8	taking input(using raw-input() and input())
9	display output-print statement
10	comment in python
11	conditional and looping construct if-else statement
12	nested if-else while,for
	<b>Unit 2</b>
13	Build in function
14	Invoking built in function
15	functions from math, random
16	time and date
17	user defined function
18	string: creating , initializing
19	accessing the element
20	string operator: , *, in, not in
21	range, slice[n : m]
22	string built in functions and methods
23	string constants defined in string module
24	regular expression and pattern matching
	<b>Unit 3</b>
25	List: concept of mutable
26	creating, initializing and accessing the element of list
27	list operations
28	Tuple: Immutable concept, creating, initializing and accessing the element
29	tuple functions: cmp(), len(), max(), min(), tuple()
30	sets: concept of sets, creating, initializing
31	accessing the element of set operation
32	membership, union, Intersection, difference and symmetric difference
33	Dictionaries: key-value pair
34	creating and initializing dictionary
35	accessing the elements in a dictionary, traversing
36	dictionary functions and methods
	<b>Unit 4</b>
37	executing module as scripts
38	the module search path
39	"compiled" python files standard modules
40	dir() function
41	packages Importing * from a package
42	I/O and file handling , output formatting
43	reading and writing files(text and binary mode)
44	errors and exceptions. syntax error , exceptions
45	handling exception, raising exception
46	introduction to object oriented concepts in python

<b>Dept Of Master of Computer Application(MCA – I Sem-I 2023-24)</b>	
<b>Lecture Plan: Communcation Skills</b>	
<b>Lecture No</b>	<b>Unit1 : Communcation</b>
01	Nature, Definition of Communication
02	Importance and objective of communication
03	Process and barriers
04	Factors and elements
05	Forms or types
06	Art of speaking
07	Speech styles
08	Oral presentation
09	Meetings
10	Interview
11	Preparation of formal speech
12	Group Discussion
	<b>Unit2</b>
13	Debate
14	Non verbal communication meaning ,its characteristics, classification
15	Body language and its importance
16	Gestures and posters
17	Listening skills
18	Observation Skills
19	Correction of common errors
20	Verb and its subject
21	Use of phrases and idioms
22	Use of infinitive, Gerund and participle
23	Errors and use of Adjectives and adverb
24	Punctuation and capitalisation



**EXPERIMENT LIST  
AND  
ASSIGNMENT LIST**

## 1. Python Programming – I (PCC- MCA-C03)

Lecture		Practical	Tutorial		Total Hr/Wk
3		4	NA		7
Theory	CIE	T/W	OE	POE	Total Marks
0	0	50	--	50	100

Class	MCA I	Sem.: I
Course	Python Programming	

Expt No.	Name of the Experiment	Nature of Experiment
1	What is python describe with the working of Interpreter? Explain the features of python Programming Language.	Non- Performing
2	What is the variables and datatype in python and write the program Simple calculater in python.	Performing
3	Write a program to print Armstrong Number or not	Performing
4	Write a program to print Prime number using function.	Performing
5	Write a program to check Count Vowel and Constant	Performing
6	Accept list from user and write a program To find largest and smallest number from list without using built-in-function.	Performing
7	Program to accept dictionary from user and print the sum of values in dictionary	Performing
8	Program to accept set and perform operations on set like Union, Intersection, Complement.	Performing
9	Write a program which accept one number and display Pattern printing.	Performing
10	Write a program to count uppercasse and lowercase letters in File Handling in python	Performing

#### 4. Database Management System (PCC- MCA-C04)

Lecture		Practical	Tutorial		Total Hr/Wk
4		2	NA		6
Theory	CIE	T/W	OE	POE	Total Marks
70	30	50	--	50	200

Class	MCA I	Sem.: I
Course	Database Management System	

<b>Expt No.</b>	<b>Name of the Experiment</b>	<b>Nature of Experiment</b>
1	Entity relationship diagram.	Non- Performing
2	Normalization of data base	Non -Performing
3	Data definition language ( DDL) Statements	Performing
4	Data manipulation language ( DDL) Statements	Performing
5	Set operator.	Performing
6	Joins in SQL.	Performing
7	Aggregate function.	Performing
8	User defined function.	Performing
9	User procedure.	Performing
10	Exception handling.	Performing

## 1. Computer Organization (PCC- MCA-C01)

Lecture		Practical	Tutorial		Total Hr/Wk
3		0	1		4
Theory	CIE	T/W	OE	POE	Total Marks
70	30	25	--	0	125

Class	MCA I	Sem.: I
Course	Computer Organization	

<b>Tutorial No.</b>	<b>Name of the Tutorial Computer Organization</b>
1	Tutorial No. 1
2	Tutorial No. 2
3	Tutorial No. 3
4	Tutorial No. 4
5	Tutorial No. 5
6	Tutorial No. 6
7	Tutorial No. 7
8	Assignment No. 1

## 2. Operating System (PCC-MCA-C02)

Lecture		Practical	Tutorial		Total Hr/Wk
3		0	1		4
Theory	CIE	T/W	OE	POE	Total Marks
70	30	25	--	0	125

Class	MCA I	Sem.: I
Course	Operating System	

<b>Tutorial No.</b>	<b>Name of the Tutorial Operating System</b>
1	Tutorial No. 1
2	Tutorial No. 2
3	Tutorial No. 3
4	Tutorial No. 4
5	Tutorial No. 5
6	Tutorial No. 6
7	Tutorial No. 7
8	Assignment No. 1



### 5. Mathematical Foundations (BSC-MCA-B01)

Lecture		Practical	Tutorial		Total Hr / Wk
3		0	1		4
Theory	CIE	T/W	OE	POE	Total Marks
70	30	25	--	0	125

Class	MCA I	Sem.: I
Course	Mathematical Foundations	

<b>Tutorial No.</b>	<b>Name of the Tutorial Mathematical Foundations</b>
1	Tutorial No. 1
2	Tutorial No. 2
3	Tutorial No. 3
4	Tutorial No. 4
5	Tutorial No. 5
6	Tutorial No. 6
7	Tutorial No. 7
8	Assignment No. 1

### 6. Communication Skills (MNG-MCA-M01)

Lecture		Practical	Tutorial		Total Hr/Wk
1		2	0		3
Theory	CIE	T/W	OE	POE	Total Marks
0	0	50	25	0	75

Class	MCA I	Sem.: I
Course	Communication Skills	

<b>Tutorial No.</b>	<b>Name of the Assignment CS</b>
1	What is communication? It's importance in the business world.
2	What are the types of the communication?
3	Explain factors of communication and its process.
4	Why speaking as an art? Explain.
5	What is mean by speech style? Explain its types.
6	What is formal speech? Explain its technique.
7	What is group discussion? Explain Dos and don'ts Debate and its benefits
8	Explain importance of body language in the communication?



# FACULTY LIST

## DEPARTMENT FACULTY LIST

Academic Year- 2023-2024 SEM- I

<b>Sr. No.</b>	<b>Faculty Name</b>
01	Prof. Desai N. C.
02	Prof. Patil S. B.
03	Prof. Patil P. N.
04	Prof. Demapure S. A.
05	Prof. Wadkar S. N.
06	Prof. More A. M.



## STAFF LIST

## **DEPARTMENT STAFF LIST**

Academic Year- 2023-2024 SEM- I

<b>Sr. No.</b>	<b>Staff Name</b>
01	Mr. Patil A. J. (Tech. Assistant)
02	Mr. Suryvanshi D.S. (Peon)



2023 Sem - III

# Student Information Manual

MCA



# Student Information Manual (SIM)

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Mission of Institute

Quality Policy

**3. Vision of Department**

Mission of Department

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# INSTITUTE INFORMATION

Dr J. J. Magdum College of Engineering was established by Dr J. J. Magdum Trust, Jaysingpurin the year 1992 with an objective to promote the cause of higher education. The institute is approved by All India Council of Technical Education (AICTE), New Delhi and Government of Maharashtra, affiliated to Shivaji University, Kolhapur. The college offers B. Tech programs in Mechanical, Civil, Computer Science Engineering, IT and Electronics.

Our Management extends its fullest support in building the institution as a center of excellence with technically superior, ethically strong and competent engineers.

The serene campus vibrant with aesthetic bliss in an exhilarating convenient location, well connected by road, rail and air is easily accessible. The eco-friendly ambience creates and bestows a healthy learning atmosphere.

The institution is meticulous with modern laboratory, workshop facilities and state of art computer center providing an excellent infrastructure.



The institution has spacious library with vast collection of Books, Newspapers, National & International Journals, Magazines, Reference books, Encyclopedia, World of science, ASM hand books and course materials. E-learning through NPTEL Video course by NIT and IIT Professors are available.

The Teaching and Non-Teaching Staff of the institute is a blend of senior experienced and young dynamic faculty members devoted to the noble cause of education. Qualified, experienced, versatile and efficient faculty members mold the students diligently in ethical, moral and academic aspects.

We impart technology based experiential learning through industry visits, live projects, expert talks, MOOC's, workshops, case studies, upscale labs, and virtual classroom sessions.

Industry-Institute interaction and real-time projects nurture and craft the budding engineers to bloom and flourish in the field with the prowess guidance in the campus. The college equips the students with the latest skills which make them employable and future ready.

Due to able and proper guidance and motivation, many of our students have topped at University. Our training and placement work meticulously to improve and develop life skills to the students and tries hard to seek good jobs for our students. In addition to the academics, the students are engaged in sports and cultural activities which helps them to develop versatile personality. Various Club activities are conducted to encourage, motivate and inspire students from diverse culture to harness the talent through their perseverance.

The institute is having spacious ground and the modern facilities for both indoor and outdoor games and ultra-modern Gymnasium. Due to proper guidance and motivation, many of our students have grabbed prizes at University level and different sport events.

We are committed to stakeholders for best results and produced more than 10000+ engineers getting campus placements.



# VISION OF INSTITUTE

To be a Leading academic organization, creating skilled and Ethical Human Resources by leveraging Technical Education for Sustainable Development of Society.



# MISSION OF INSTITUTE

- To promote learn ability of all stakeholders
- To empower rural youth to be competent in technical education and imbibe ethical values.
- To contribute to local social and economic context, leading to satisfied stakeholders.



# PROGRAMME OUTCOMES

We strive for continual improvement in our performance through methodical academic monitoring, student participation, and use of the innovative teaching- learning processes.



# VISION OF DEPARTMENT

To be the source of bringing out globally competent pioneering computing professionals, researchers, innovators and entrepreneurs and thereby succeed and contribute value to the knowledge-based economy and society.



# MISSION OF DEPARTMENT

- To offer high-grade, value-based Post-graduate programme in the field of Computer Applications.
- To provide conducive environment so as to achieve excellence in teaching-learning, and research and development activities.
  - To bridge the gap between industry and academia by framing curricula and syllabi based on industrial and societal needs.
  - To offer tasks for experiential technology-intensive knowledge through collaborative and interdisciplinary activities.
  - To provide appropriate forums to develop innovative talents, practice ethical values and inculcate as enduring learners.
  - To facilitate students to nurture skills to practice their professions competently to meet the ever-changing needs of society



# PROGRAMME EDUCATIONAL OBJECTIVES (PEO'S)

The Master of Computer Application Department strives for excellence in creating, applying and imparting knowledge in Computer Application through comprehensive education programs, research in collaboration with industry and service to professional societies, the community, the state, and the nation.

1. Learn and apply latest Software Technologies in the field of Computer Applications.
2. Identify real time problems and deliver innovative Software solutions for development of society to develop an ability for pursuing higher studies, research and development computer science and engineering, consultancy and entrepreneurship.





# PROGRAMME OUTCOMES (PO'S)

At the end of successful completion of program, the graduates will be able to,

2. **Problem Analysis:** Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental
4. **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid
5. **Modern Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering
7. **Environment and Sustainability:** Understand and the impact of professional engineering solutions in societal and environmental contexts and demonstrates knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering
9. **Individual and Teamwork:** Function effectively as in visual, and as a member or leader in diverse teams and in multidisciplinary s
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear
11. **Project Management and Finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these too noels on work, as a member and leader instead, to manage projects and in multidisciplinary environment.
12. **Lifelong 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



# STUDENTS ROLES AND RESPONSIBILITIES



- Every student must carry his/her identity card while being present on the College Premises.
- Use of Cell phones is strictly prohibited during class/Labs hour.
- Without the permission of the Principal, Students are not allowed to circulate any printed materials within the college campus.
- Every student is expected to maintain the general cleanliness within the classrooms, laboratories and the campus in general.
- Students should handle the college properties with care. Damage to the furniture or any other materials may lead to penalty or suspension from the college.
- Intoxication or possession of narcotics and other dangerous material is strictly prohibited.
- Playing cards, spitting and loitering are strictly prohibited inside the college campus and shall invite severe punishment/disciplinary action
- Attempted or actual theft of and/or damage to property of the College, or property of a member of the College community, or other personal or public property, on or off campus will be considered as a punishable act.
- Every student will remain answerable to the college authority for his/her activity and conduct on the College Premises.
- Any act which obstructs teaching, research, administrative activity and other proceedings of the college is strictly prohibited.
- Indulging ragging, anti-institutional, anti-national, antisocial, communal, immoral or political expressions and activities within the Campus and hostel are strongly prohibited as well as punishable.
- Students are required to check the Notice Board and also website of the college for important announcements.



# LABORATORY INSTRUCTIONS

- ❑ Students must present a valid ID card before entering the computer lab.
- ❑ Remove your shoes/chapels/sandals outside the lab.
- ❑ Playing of games on computer in the lab is strictly prohibited.
- ❑ Before leaving the lab, students must close all programs positively and keep the desktop blank.
- ❑ Students are strictly prohibited from modifying or deleting any important files and install any software or settings in the computer without permission
- ❑ Based on the prime priority, users may be requested by the lab in-charge, to leave the workstation any time and the compliance is a must.
- ❑ Eating and/or drinking inside the computer lab is strictly prohibited.
- ❑ Internet facility is only for educational/ study purpose.
- ❑ Silence must be maintained in the lab at all times.
- ❑ The lab must be kept clean and tidy at all times.
- ❑ If any problem arises, please bring the same to the notice of lab in-charge.
- ❑ No bags/ hand bags/ rain coats/ casual wears will be allowed inside the computer lab, however note book may be allowed.
- ❑ Lab timing will be as per the academic time table of different classes
- ❑ Every user must make an entry in the Computer Lab Register properly.
- ❑ Each student or visitor must take mobile phones in “Switched Off” mode while entering and or working in Computer Lab.
- ❑ Conversation, discussion, loud talking & sleeping are strictly prohibited.
- ❑ Users must turn-off the computer before leaving the computer lab.
- ❑ Maintain silence in lab.
- ❑ Computer Lab Assistants are available to assist with BASIC computer and software problems.
- ❑ Food and drink are not permitted in the computer lab.
- ❑ The use of cell phones is prohibited in the computer lab.
- ❑ Please take your calls outside. We also ask that you put your cell phone on vibrate mode.
- ❑ Unauthorized copying and/or installing of unauthorized software is not permitted
- ❑ Tampering with the hardware or software settings will not be tolerated.



# CLASSROOM INSTRUCTIONS

- Students should know and obey rules and regulations of department as well as college.
- Students strive to meet Academic Expectations
- Students are expected to take all tests at the scheduled times seriously.
- Maintain discipline in the class
- A student should maintain at least 75% attendance in the Lectures of every subject and 100% overall performance. Otherwise, he or she will be debarred from the University Examination.
- Latecomers will not be entertained to enter into the classroom.
- Participate in the activities organized in the Department as well as in the College.
- While discussion, students should conduct and express themselves in a way that is respectful of all persons.
- Develop positive attitudes;
- Be cooperative and considerate.
- Welcome challenges.
- Be helpful to others
- Be kind, polite, and courteous to others
- Do the assigned work on time
- Be prepared for classes with all necessary supplies.
- Be Respectful and Punctual
- Be in the best of behaviors





**DEPARTMENT  
ACADEMIC PLANNER**

**ACADEMIC PLANNER 2023-24 SEM-III**

Dr. J J Magdum College of Engineering, Jaysingpur.

Department of Master of Computer Application  
Academic Calendar 2023-24 (SEM-I & III)

Date:

July 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

17- Load Distribution, Time Table Semester I & III

24- Commencement of Semester III

4th Week –

Course Outline by individual faculty

Distribution of Academic Diary

Lecture Plan duly signed by HOD

Department Academic Planner Submission

August 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

1<sup>st</sup> Week –

Commencement of Theory Lecture

11- Project Presentation-I

24 - MCASA Activity

28 - Commencement of Semester I

30 - Syllabus Completion Status

September 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

5 - MCASA Activity

7 – FY-MCA Orientation

11, 12 – CIE I (SY-MCA)

16 - TCP Activity

20 - Expert Lecture

25 - Project Presentation-II

26 - Guest lecture

27- Community Services

29 - FDP

October 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

5 - Final Report Presentation  
 7- Parents Meet  
 9, 10- CIE I (FY-MCA)  
 13- Expert Lecture  
 16 - Augmentation Non-Technical  
 21 - MCASA Activity  
 26 - Feedback  
 30 - Augmentation Technical

November 2023						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

3- Expert Lecture  
 4- Industrial Visit  
 10 -Guest Lecture  
 15, 16- CIE II (FY, SY)  
 24- FDP

### Proctor meeting

Sr. No	FY	SY
Proctor Meeting	5 Sep	10 Aug
	21 Sep	22 Aug
	10 Oct	8 Sept
	30 Oct	22 Sept
	1 Nov	17 Oct
	24 Nov	8 Nov
CMC- I	29 Sept	31 Aug
CMC- II	31 Oct	3 Oct
CMC- III	30 Nov	1 Nov



# DEPARTMENTAL TIME TABLE

Class: SY-MCA  
Year: 2023 - 2024

Dr. J. J. Magdum Trust's  
Dr. J. J. Magdum College of Engineering, Jaysingpur W.E.F: 11-09-2023  
Department of Master of Computer Application


Date: 11/09/2023



SR	TIME	MON	TUE	WED	THU	FRI
1	09:30 am -10:30 am	BD ( <u>Prof.P.N.Patil</u> )	S1 - BD- PNP S2 - BD - PNP S3 - MAD - SAD	IoT ( <u>Prof.S.A.Bhagwat</u> )	S1 - MAD- SAD S2 - MAD - SBP S3 - MP - NCD	CC ( <u>Prof.S.B.Patil</u> )
2	10:30 am -11:30 am	IoT ( <u>Prof.S.A.Bhagwat</u> )		CC ( <u>Prof.S.B.Patil</u> )		MAD ( <u>Prof.S.A.Demasure</u> )
<b>11.30 am - 11.40 am - SHORT BREAK</b>						
3	11:40 am -12:40 pm	CC ( <u>Prof.S.B.Patil</u> )	IoT ( <u>Prof.S.A.Bhagwat</u> )	BD ( <u>Prof.P.N.Patil</u> )	CC ( <u>Prof.S.B.Patil</u> )	IoT ( <u>Prof.S.A.Bhagwat</u> )
4	12:40 pm -01:40 pm	MAD ( <u>Prof.S.A.Demasure</u> )	IoT(TUT) - SAB	MAD ( <u>Prof.S.A.Demasure</u> )	BD ( <u>Prof.P.N.Patil</u> )	MAD ( <u>Prof.S.A.Demasure</u> )
<b>01.40 pm - 02.30 pm - LUNCH BREAK</b>						
5	02:30 pm -03:30 pm	S1 - MAD - SBP S2 - MAD - SAD S3 - BD- PNP	BD ( <u>Prof.P.N.Patil</u> )	S1 - MP - SBP S2 - MP - PNP S3 - MAD - SAD	IoT ( <u>Prof.S.A.Bhagwat</u> )	
6	03:30 pm -04:30 pm		MAD ( <u>Prof.S.A.Demasure</u> )		S3 - CC(TUT) - SBP	

Prof. S. B. Patil  
I/C Load Distribution

Prof. N. C. Desai  
HOD



# STRUCTURE OF SYLLABUS

SECOND YEAR MASTER OF COMPUTER APPLICATION																		
SEMESTER III																		
SR. NO.	SUBJECT CODE	TEACHING SCHEME									EXAMINATION SCHEME							
		THEORY			TUTORIAL			PRACTICAL			THEORY				PRACTICAL		TERM WORK	
		Credit	No. Of Lectures	Hours	Credit	No. Of Hours	Hours	Credit	No. Of Hours	Hours	Mode	Marks	Total Marks	Min	MAX	MIN	MAX	MIN
1	PCC-MCA-C10	4	4	4	1	1	1	-	-	-	CIE ESE	30 70	100	12 28	-	-	50	20
2	PCC-MCA-C11	4	4	4	1	1	1	-	-	-	CSE ESE	30 70	100	12 28	-	-	50	20
3	PCC-MCA-C12	3	3	3	-	-	-	2	4	4	-	-	-	-	50	20	50	20
4	Elective 01 PCC-MCA-C13 OR PCC-MCA-C14 OR PCC-MCA-C15	4	4	4	-	-	-	1	2	2	CSE ESE	30 70	100	12 28	50	20	50	20
5	PCC-MCA-C16	-	-	-	-	-	-	4	8	8	-	-	-	-	100	40	100	40
<b>TOTAL</b>		<b>15</b>	<b>15</b>	<b>15</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>7</b>	<b>14</b>	<b>14</b>			<b>300</b>		<b>200</b>		<b>300</b>	
SEMESTER IV																		
1	Elective 02 PCC-MCA-C17 OR PCC-MCA-C18 OR PCC-MCA-C19	3	3	3	1	1	1	-	-	-	CIE ESE	30 70	100	12 28	-	-	25	10
2	Elective 03 PCC-MCA-C20 OR PCC-MCA-C21 OR PCC-MCA-C22	3	3	3	1	1	1	-	-	-	CIE ESE	30 70	100	12 28	-	-	25	10
3	PCC-MCA-C23	-	-	-	-	-	-	10	20	20	-	-	-	-	200	80	100	40
4	PCC-MCA-C24	-	-	-	-	-	-	6	12	12	-	-	-	-	100	40	50	20
<b>TOTAL</b>		<b>6</b>	<b>6</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>16</b>	<b>32</b>	<b>32</b>			<b>200</b>		<b>300</b>		<b>200</b>	
<b>SECOND YEAR TOTAL</b>		<b>21</b>	<b>21</b>	<b>21</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>23</b>	<b>46</b>	<b>46</b>			<b>500</b>		<b>500</b>		<b>500</b>	

Sr. No.	Code No.	Subject	Semester	Credits
01	PCC-MCA-C10	Internet Of Things	3	05
02	PCC-MCA-C11	Cloud Computing	3	05
03	PCC-MCA-C12	Mobile Application Development	3	05
04	PCC-MCA-C13	Data Analytics	3	05
05	PCC-MCA-C14	Data Mining	3	05
06	PCC-MCA-C15	Big Data Analytics	3	05
07	PCC-MCA-C16	Minor Project	3	04
08	PCC-MCA-C17	Cyber Security	4	04
09	PCC-MCA-C18	Digital Forensics	4	04
10	PCC-MCA-C19	Information Security	4	04
11	PCC-MCA-C20	Enterprise Resource Planning	4	04
12	PCC-MCA-C21	E-Governance	4	04
13	PCC-MCA-C22	Business Intelligence	4	04
14	PCC-MCA-C23	Major Project	4	10
15	PCC-MCA-C24	Seminar	4	06

**\*\*\* For Theory CIE 30 Marks,**

Two tests of 30 marks at college should be conducted and best of two marks should be communicated to university.

**\*\*\* Guidelines to paper setter:**

In theory ESE examination of 70 marks following points should be considered, 1. First question of 10 marks should be allotted to Objective type questions.

2. In Remaining 60 marks, four questions of 15 marks should be considered

**\*\*\* CGPA Calculation**

The CGPA shall be calculated at the end of all semesters.

For calculation of CGPA, a formula given in guidelines shall be used. The standard of passing shall be in accordance with the following table.

Marks Obtained	Numerical Grade (Grade Point)	CGPA	Letter Grade
Absent	0 (zero)	-	-
0 – 39	0 (zero)	0.0 – 4.99	F (Fail)
40 – 49	5	5.00 – 5.49	C
50 – 59	6	5.50 – 6.49	B
60 – 69	7	6.50 – 7.49	B+
70 – 79	8	7.50 – 8.49	A
80 – 89	9	8.50 – 9.49	A+
90 – 100	10	9.50 – 10.0	O (Outstanding)





# **COURSE DETAILS/SYLLABUS**

Master of Computer Application Sem – III

M.C.A. Part-II Semester III  
**Paper MCA-C10: Internet of Things**  
 (Choice Based Credit System)

**Course Details:**

<b>Course Details Class</b>	<b>Second Year M.C.A. Semester III</b>
<b>Course Code and Course Title</b>	<b>PCC- MCA-C10: : Internet of Things</b>
<b>Prerequisites</b>	<b>Computer Fundamentals</b>
<b>Teaching scheme: Lectures + Tutorial</b>	<b>4 Hrs. + 1 Hr.</b>
<b>Credits</b>	<b>4 + 1</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>70 (ESE) + 30 (CIE)</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: 4 Hrs. /Week</b>	<b>Theory: 100 Marks, 70 (ESE) +30 (CIE)</b>
<b>Tutorial: 1 Hr./Week</b>	<b>TW: 50 Marks</b>

**Course Outcomes:**

- After completion of this course student should be able to 1. Understand the role of IoT in various application domains.  
 2. Illustrate different technologies of IoT.  
 3. Identify various communication protocols used for IoT.  
 4. Elaborate emerging trends in IoT.

**Unit 1: Introduction to IoT**

**12 HOURS**

Fundamentals of IoT, IoT architecture: Design principals of IoT architecture, Outline of IoT architecture, IoT architectural Reference Model (ARM), Functional view, Information View, Deployment View and Operational View, Various platforms of IoT, Real time examples of IoT, Challenges of IoT.

**Unit 2: Arduino Environment**

**12 HOURS**

Arduino Uno architecture, Arduino IDE, Software and Libraries, Basics of Embedded C programming for Arduino, Interfacing basic hardware components with Arduino, Types of Sensors, Working of Sensors, Interfacing Sensors with Arduino. IoT communication technologies: Bluetooth, RFID, Wi-Fi.

**Unit 3: IoT Application Development**

**12 HOURS**

Introduction to ESP8266 Wi-Fi module, Wi-Fi libraries, Configuring ESP8266 with Arduino, Setting up Web Client for IoT, Interfacing ESP8266 with web services, Web Server for IoT: Introduction to Web server, Installation of Web server for IoT, Configuration of Web server for IoT, Posting data to web server.

**Unit 4: RaspberryPi and Emerging Trends in IoT****12 HOURS**

Introduction to RaspberryPi, Introduction to board of RaspberryPi, Operating systems on RaspberryPi, Configuring RaspberryPi, Programing RaspberryPi with Python, Accessing RaspberryPi, Other IoT devices, Role of Big data, Machine learning and Cloud computing in IoT.

**Text Books:**

1. Internet of Things, Srinivasa K. G., Cengage Learning India, 2017.
2. Internet of Things (A Hands on approach), Vijay Madisetti and Arshadeep Bagha, 1st edition, VPT, 2014

**Reference Books:**

1. Internet of Things: Architecture and Design principles, 1st edition, McGraw Hill, 2017
2. Arduino Programing in 24 hours, Richard Blum, Sams, 1st edition
3. RaspberryPi cookbook, Simon Mark, O'Reilly, 3rd edition

M.C.A. Part-II Semester III  
**Paper MCA-C11: Cloud Computing**  
 (Choice Based Credit System)

**Course Details:**

<b>Course Details Class</b>	<b>Second Year M.C.A. Semester III</b>
<b>Course Code and Course Title</b>	<b>PCC- MCA-C11: Cloud Computing</b>
<b>Prerequisites</b>	<b>Computer Fundamentals</b>
<b>Teaching scheme: Lectures + Tutorial</b>	<b>4 Hrs. + 1 Hr.</b>
<b>Credits</b>	<b>4 + 1</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>70 (ESE) + 30 (CIE)</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: 4 Hrs. /Week</b>	<b>Theory: 100 Marks, 70 (ESE) +30 (CIE)</b>
<b>Tutorial: 1 Hr./Week</b>	<b>TW: 50 Marks</b>

**Course Outcomes:**

After completion of this course student should be able to

1. Differentiate between different types and services of cloud computing.
2. Assess the role of virtualization in cloud computing.
3. Identify security issues in cloud computing.
4. Describe risk assessment and management in cloud.

**Unit 1: Introduction to Cloud Computing:**

**12 HOURS**

Overview, Roots of Cloud Computing, Layers and Types of Cloud, Desired Features of a Cloud, Cloud Architecture, Services and Applications: Infrastructure as a Service, Platform as a Service, Using PaaS Application Frameworks, Software as a Service, Identity as a Service, and Compliance as a Service. Cloud Infrastructure Management, Infrastructure as a Service Providers, Platform as a Service Providers, Benefits and Disadvantages of Cloud Computing, Challenges and Risks of Cloud computing.

**Unit 2: Abstraction and Virtualization:**

**12 HOURS**

Introduction to Virtualization Technologies, Load Balancing and Virtualization, Understanding Hypervisors, Understanding Machine Imaging, Porting Applications, Virtual Machines Provisioning and Manageability Virtual Machine Migration Services, Virtual Machine Provisioning and Migration in Action, Provisioning in the Cloud Context

**Unit 3: Securing the Cloud:**

**12 HOURS**

Administrating the Clouds, Cloud Management Products, 15 Periods 9 Emerging Cloud Management Standards, Securing the Cloud, Securing Data, Establishing Identity and Presence, Storage Area Networks, Disaster Recovery in Clouds

**Unit 4: Managing Risks in Cloud:****12 HOURS**

Risk of Cloud computing and Related Cost :Risk Assessment and Management , Risk of Vendor Lock-in, Risk of Loss of control over IT services Risk of Poor Provisioning, Risk of Multi, tenant environment , Risk failure of cloud provider, SLA risk, security, malware and Internet Attacks, Risk with Application Licensing

**Reference Books:-**

1. Cloud Computing, U S Pandey & Kavita Choudhary, S.Chand, 1st edition, 2014
2. Sosinsky B., “Cloud Computing Bible”, Wiley India ISBN 13: 9788126529803.
3. Buyya R., Broberg J., Goscinski A., “Cloud Computing: Principles and Paradigm”, John Wiley & Sons ISBN NO: 81-7758- 575-4
4. Velte T., Velte A., Elsenpeter R., “Cloud Computing – A practical Approach”, Tata McGrawHill.
5. Cloud Computing with Security, Naresh KumarSehgal, Springer, 2019

M.C.A. Part-II Semester III  
**Paper MCA-C12: Mobile Application Development**  
 (Choice Based Credit System)

**Course Details:**

<b>Course Details Class</b>	<b>Second Year M.C.A. Semester III</b>
<b>Course Code and Course Title</b>	<b>PCC- MCA-C12: Mobile Application Development</b>
<b>Prerequisites</b>	<b>Computer Fundamentals</b>
<b>Teaching scheme: Lectures + Practical</b>	<b>3 Hrs. + 4Hrs.</b>
<b>Credits</b>	<b>3 + 2</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>NA</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: 3 Hrs. /Week</b>	<b>NA</b>
<b>Practical: 4 Hr./Week</b>	<b>POE: 50 Marks TW: 50 Marks</b>

**Course Outcomes:**

After completion of this course student should be able to

1. Understand fundamentals of Android Application Development Environment.
2. Identify various components of Android Framework for developing mobile Applications.
3. Apply Android Application Framework for developing mobile Applications.
4. Analyze different security threats for android mobile applications.

**Unit 1: Introduction to Android**

**12 HOURS**

Introduction to Mobile operating System, Android versions and its feature, Characteristics of Mobile Applications. Comparison between Android, Windows and iOS. Architecture & Environment: SDK, Android Development Tools, Android Virtual Devices, Emulators, Dalvik Virtual Machine, Android Directory Structure.

**Unit 2: Android Application Framework**

**12 HOURS**

UI components: TextView, Buttons, Check Boxes and Radio Groups, Spinner, DatePicker, TimePicker. Android Menu: Option Menu, Context Menu, Popup Menu. Activity: Activity Lifecycle, Activity Example, View:GridView, WebView, ScrollView. Layout Manager: Relative Layout, Linear Layout, Table Layout, Grid Layout. Intent: Overview, Implicit Intents, Explicit Intents, Intents with Activities

**Unit 3: Advanced Android Applications**

**12 HOURS**

SQLite Database: Creating SQLite Database, Creating, Updating, and Deleting Database Records, Closing and Deleting a SQLite Database. Telephony API: Telephony Manager, Get Call State, Making Phone Call, Send SMS, Send Email. Location API: Location API Fundamental, Example of Android Location API, Working with Google Maps.

**Unit 4: Android Security**

**12 HOURS**

Mobile application threats: Working of mobile applications, Client-side vulnerabilities, Server-side vulnerabilities, Mobile application threats, Risks for users. Android Security: SystemLevel Security, Application Security, Application Security measures, Application Security Scans.

**Reference Books:-**

1. Android, P.K. Dixit, Vikas Publication
2. Android Application Development – BlackBook Pradip Kotari, Dreamtech
3. Composing Mobile Apps Learn, Explorer, Apply using Android Anubhav Pradhan, Anil Deshpande, Wiley.
4. Android Wireless Application Development By Lauren Darcey and Shane Conder, Pearson Education, 2 nd Edition.
5. Unlocking Android Developer’s Guide By Frank Ableson and Charlie Collins and RobiSen, Manning Publication Co.
6. Android Security Internals: An In-Depth Guide to Android's Security Architecture 1st Edition, ElenkovNikolay, No Starch Press

## M.C.A. Part-II Semester III

**Paper MCA-C15: Big Data Analytics**  
(Choice Based Credit System)

**Course Details:**

<b>Course Details Class</b>	<b>Second Year M.C.A. Semester III</b>
<b>Course Code and Course Title</b>	<b>PCC- MCA-C15: Big Data Analytics</b>
<b>Prerequisites</b>	<b>Computer Fundamentals</b>
<b>Teaching scheme: Lectures + Practical</b>	<b>4 Hrs. + 2 Hr.</b>
<b>Credits</b>	<b>4 + 1</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>70 (ESE) + 30 (CIE)</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: 4 Hrs. /Week</b>	<b>Theory: 100 Marks, 70 (ESE) +30 (CIE)</b>
<b>Practical: 4 Hr./Week</b>	<b>POE: 50 Marks TW: 50 Marks</b>

**Course Outcomes:**

- After completion of this course student should be able to 1.  
Understand the Big Data challenges.  
2. Gain conceptual understanding of NOSQL Database, map and reduce and functional programming.  
3. Apply concepts of Hadoop Distributed File System.

**Unit 1: “Big Data” in the Enterprise****12 HOURS**

Big Data Concepts, Challenges. Opportunities from Big Data Enterprise Information Management: New Approach to Enterprise Information Management for Big Data, Capabilities needed for Big data Big Data Implications for Industries Big Data Analytics for Telecom/Banking/Retail/HealthCare/IT/Operations.

**Unit 2: Data Modelling 12 HOURS**

Understanding data integration Pattern Big Data Workload Design Approaches Map-Reduce patterns, Algorithms and Use Cases. Introduction of NoSQL Database concepts: ACID Vs. BASE, Advantages, Where Applicable, Schema, Two Phase Commit, Sharding and Share Nothing Architecture, NoSQL Databases, Brewers CAP Theorem, Features and comparisons of few NOSQL Databases (Cassandra, MongoDB, Cloudera, CouchDB, HBase)

**Unit 3: Hadoop Framework****12 HOURS**

Hadoop Architecture, History of Hadoop – Facebook, Dynamo, Yahoo, Google Components Of Hadoop Framework :HDFS, MAP Reduce Introduction to Pig, Hive, Mahout Installation of Single Node cluster- installation of Java, Hadoop Configuration.

**Unit 4: Big Data Analytics Methodology****12 HOURS**



### M.C.A. Part-II Semester III

Big data Analytics Methodology- Analyse & Evaluate Business Cases Develop Business Hypothesis Analyse outcomes, Build & Prepare Data sets, Select & Build Analytical Model, Design For Big data Scale,  
Build production ready System, Setting up the Big Data Analytics System, Gathering data, Measure & Monitor. Extracting Value From Big Data: Real time Analytics, Apache Spark, In-Memory Data Grid for Real time Analysis , Map Reduce & Real Time Processing ,Use Case.

#### **Text Books:**

1. Madhu Jagadeesh, Soumendra Mohanty, Harsha Srivatsa, “Big Data Imperatives: Enterprise Big Data Warehouse, BI Implementations and Analytics”, 1st Edition, A press (2013)

#### **Reference Books:**

1. Frank J. Ohlhorst, “Big Data Analytics: Turning Big Data into Big Money”, Wiley Publishers (2012)
2. Cristian Molaro, Surekha Parekh, Terry Purcell, “DB2 11: The Database for Big Data & Analytics”, MC Press, (2013)
3. Tom White, “Hadoop –The Definitive Guide, Storage and analysis at internet scale”, SPD,O'Really

M.C.A. Part-II Semester III  
**Paper MCA-C16: Minor Project**  
 (Choice Based Credit System)

**Course Details:**

<b>Course Details Class</b>	<b>Second Year M.C.A. Semester III</b>
<b>Course Code and Course Title</b>	<b>PCC- MCA-C16: Minor Project</b>
<b>Prerequisites</b>	<b>Computer Fundamentals</b>
<b>Teaching scheme: Practical</b>	<b>8 Hrs.</b>
<b>Credits</b>	<b>4</b>
<b>Evaluation Scheme ESE + CIE for Theory</b>	<b>NA</b>

<b>Teaching scheme</b>	<b>Examination scheme</b>
<b>Lectures: NA</b>	<b>NA</b>
<b>Practical: 4 Hr./Week</b>	<b>POE: 100 Marks TW: 100 Marks</b>

**Course Outcomes:**

- After completion of this course student should be able to 1.  
 Identify the problem in existing system.  
 2. Develop SRS document for proposed system.  
 3. Develop application using appropriate technology platform.  
 4. Validate the developed application

A group of maximum two students prepare a mini project under the guidance of internal guide. Project report will be evaluated by the internal teacher out of 20 marks and there will be viva-voce examination for 80 marks. The student should prepare the project report based courses studied in Semester I, Semester II and Semester III. Guidelines of Major Projects should be followed except industry certificate, joining report and industry work progress report.



# TEACHING PLAN

M.C.A. Part-II Semester III

M.C.A. Part-II Semester III

M.C.A. Part-II Semester III

M.C.A. Part-II Semester III



**EXPERIMENT LIST  
AND  
ASSIGNMENT LIST**

## M.C.A. Part-II Semester III

**1. Mobile Application Development– PCC-MCA-C12**

Lecture		Practical	Tutorial		Total Hr/Wk
3		4	NA		7
Theory	CIE	T/W	OE	POE	Total Marks
0	0	50	--	50	100

Class	MCA II	Sem.: III
Course	Mobile Application Development	

Expt No.	Name of the Experiment	Nature of Experiment
1	Installation of Android Studio Version(Giraffe Version)	Non-Performing
2	Display “Hello World” & use custom fonts in Android Studio	Performing
3	Create sample application with Login module(Check username & password)	Performing
4	Create application for demonstration of android activity lifecycle.	Performing
5	Create a simple application for radio button with toast message.	Performing
6	Create E-mail application using Intent in Android.	Performing
7	Create an application for Explicit Intent in Android.	Performing
8	Create Simple Calculator application in Android.	Performing
9	Create an android app for Media Player.	Performing
10	Create an Android Telephony app	Performing
11	Create SQLite database CRUD app	Performing



## M.C.A. Part-II Semester III

**2. Big Data Analytics (PCC-MCA-C04)**

Lecture		Practical	Tutorial		Total Hr/Wk
4		2	NA		6
Theory	CIE	T/W	OE	POE	Total Marks
70	30	50	--	50	200

Class	MCA II	Sem.: III
Course	Big Data Analytics	

<b>Expt No.</b>	<b>Name of the Experiment</b>	<b>Nature of Experiment</b>
1	Installation and configuration of hadoop	Non-Performing
2	Study of NoSQL database using MongoDB to create ,update and insert	Non-Performing
3	Implement basic database queries using MongoDB	Performing
4	Implement arrays and aggregate functions in MongoDB	Performing
5	Implement basic queries using Apache CouchDB	Performing
6	Implement CouchDB views and mapreduce	Performing
7	Implement date queries in MongoDB	Performing
8	Implement date queries using aggregate function in MongDB	Performing
9	Implement embedded documents in MongoDB	Performing
10	Implement Bucket operator in MongoDB	Performing

## M.C.A. Part-II Semester III

**3. Cloud Computing (PCC-MCA-C04)**

Lecture		Practical	Tutorial		Total Hr/Wk
4		0	1		5
Theory	CIE	T/W	OE	POE	Total Marks
70	30	50	--	0	150

Class	MCA II	Sem.: III
Course	Cloud Computing	

<b>Tutorial No.</b>	<b>Name of the Tutorial CC</b>
1	Tutorial No. 1
2	Tutorial No. 2
3	Tutorial No. 3
4	Tutorial No. 4
5	Tutorial No. 5
6	Tutorial No.6
7	Tutorial No. 7
8	Assignment No. 1

M.C.A. Part-II Semester III  
**4. Internet of Things PCC-MCA-C10**

Lecture		Practical	Tutorial		Total Hr/Wk
4		0	1		5
Theory	CIE	T/W	OE	POE	Total Marks
70	30	50	--	0	150

Class	MCA II	Sem.: III
Course	Internet of Things	

<b>Tutorial No.</b>	<b>Name of the Tutorial IOT</b>
1	Tutorial No. 1
2	Tutorial No. 2
3	Tutorial No. 3
4	Tutorial No. 4
5	Tutorial No. 5
6	Tutorial No.6
7	Assignment No. 1

M.C.A. Part-II Semester III

M.C.A. Part-II Semester III



# FACULTY LIST


M.C.A. Part-II Semester III

**DEPARTMENT FACULTY LIST**

Academic Year- 2023-2024 SEM- III

<b>Sr. No.</b>	<b>Faculty Name</b>
01	Prof. Desai N. C.
02	Prof. Patil S. B.
03	Prof. Patil P. N.
04	Prof. Demapure S. A.
05	Prof. Wadkar S. N.

M.C.A. Part-II Semester III

A decorative graphic consisting of several overlapping, semi-transparent blue and white shapes that create a layered, abstract effect. The shapes are primarily horizontal and slightly curved, with some darker blue areas and some lighter, almost white areas.

## STAFF LIST

M.C.A. Part-II Semester III  
**DEPARTMENT STAFF LIST**

Academic Year- 2023-2024 SEM- III

<b>Sr. No.</b>	<b>Staff Name</b>
01	Mr. Patil A.J. (Tech. Assistant)
02	Mr. Suryvanshi D.S(Peon)