2023-24 Sem - II

Student Information Manual

MCA

Student Information Manual (SIM)

- **Covering page**
- **Index**

1. Institute Information
2. Vision of Institute
Mission of Institute
Quality Policy
3. Vision of Department
Mission of Department
Programme Educational Objectives (PEO's)
Programme Outcomes (PO's)
Programme Specific Outcomes (PSO)
4. Students role Responsibilities:
Code-of-Conduct:
5. Laboratory and Classroom Instructions
Laboratory instructions:
Classroom instructions:
6. Department Academic Planner
7. Departmental time table
8. Structure of Syllabus
9. Subject Details
Course details/syllabus
Recommended Books
Teaching Plan
List of Experiment
Assignments
10. Department Faculty
11. Department Staff

INSTITUTE INFORMATION

Dr. J. J. Magdum College of Engineering was established by Dr J. J. Magdum Trust, Jaysingpur in 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 Governmentof Maharashtra, affiliated to Shivaji University, Kolhapur. The college offers B. Tech programs in Mechanical, Civil, Computer Science Engineering, IT and Electronics, Master of Computer Apllication.

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 specious 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 imbibeethical values.
- To contribute to local social and economic context, leading to satisfiedstakeholders.

PROGRAMME OUTCOMES

Graduates will be able to,

1. Understand the structure, development methodologies of software systems, possess professional skills and obtain competency with a broad range of programming languages and platforms.
2. Apply principles of analysis, design and development to provide user interactive solutions for various challenges.

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 scienceand engineering, consultancy and entrepreneurship.

PROGRAMME OUTCOMES (PO'S)

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

1. Apply knowledge and skills to solve information technology problems using advanced available tools.

2. Function effectively in multi-disciplinary teams and work as a team member and team leader to get technical solutions.

3. Understand, Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

4. Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

5. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

6. Communicate with customer, colleagues, and managers. Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

7. Maintain professional work ethic, appearance, and demonstration of personal responsibility.

8. Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

9. Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

10. Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

11. Implement cost effective and improved system.

12. Develop confidence for self-education and ability for lifelong learning.

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-II

Dr. J. J. Magdum Trust's
Dr. J. J. Magdum College of Engineering, Jaysingpur
Department of Master of computer Application
Academic Calendar 2023 – 2024 (Sem – II & IV)

Date: 08.01.2024

Week No.	Month	Weekdays							No of working days	Events
		MON	TUE	WED	THU	FRI	SAT	SUN		
1	January	1	2	3	4	5	6	7	6	**Subject Choice – 3rd January** **Course outline by individual faculty lecture plan duly signed by HOD – 6th January**
2	January	8	9	10	11	12	13	14	5	**Department Academic Planner Submission – 8th January** **Load Distribution, Time Table – 8th January**
3	January	15	16	17	18	19	20	21	6	**FDP – 18th to 20th January**
4	January	22	23	24	25	26	27	28	4	**Project Seminar 1 – 22nd January**
5	January February	29	30	31	1	2	3	4	6	**Monthly Report – 29th January** **CMC Report submission – 30th January**
6	February	5	6	7	8	9	10	11	5	**MCASA Activity – 8th February**
7	February	12	13	14	15	16	17	18	6	**Expert Lecture – 13th February** **Augmentation Technical - 16th February**
8	February	19	20	21	22	23	24	25	4	**Syllabus Completion Status - 20th February** **Project Seminar 2 – 23rd February** **Community Service – 24th February**
9	February March	26	27	28	29	1	2	3	6	**Monthly Report – 29th February** **CMC Report submission – 29th February**
10	March	4	5	6	7	8	9	10	4	**CIE – I (FY & SY) – 5th to 6th March**
11	March	11	12	13	14	15	16	17	6	**Parents Meet – 12th March** **Expert Lecture – 16th March**
12	March	18	19	20	21	22	23	24	5	**Guest Lecture by MCASA – 20th March** **Industrial Visit – 22th March**
13	March	25	26	27	28	29	30	31	4	**Augmentation Non-Technical – 27th March** **Syllabus Completion Status - 30th March** **Monthly Report – 30th March** **CMC Report submission – 30th March**
14	April	1	2	3	4	5	6	7	6	**CIE – II (FY & SY) - 5th to 6th April**
15	April	8	9	10	11	12	13	14	3	**Project Seminar 3 – 8th April** **Major Project report submission – 12th April**
16	April	15	16	17	18	19	20	21	5	**Parents Meet – 15th April** **MCASA Activity – 18th April**

17	April	22	23	24	25	26	27	28	5	**Feedback(FY & SY) – 23rd April** **Syllabus Completion Status - 24th April** **Monthly Report - 25th April** **CMC Report submission - 26th April**
18	April	29	30						2	
No. of Working Days		16	17	16	16	14	09		88	

Note: Proctor meeting – In 1st and 3rd week of every month

Courses	Term Commencement	End of Term
F.Y- Semester II	**15.01.2024**	**08.05.2024**
S.Y – Semester IV	**12.01.2024**	**29.04.2024**

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: 15-01-2024
Department of Master of Computer Application

Date: 20/01/2024

SR	TIME	MON	TUE	WED	THU	FRI
1	09:30 am -10:30 am	WT (Prof. N. C. Desai)	F1-WT(NCD) F2-BC(AMM) F3- JAVA(SNW)	F1-BC (AMM) F2-JAVA(PNP) F3-WT(SAD)	WT (Prof. N. C. Desai)	F1-JAVA(SBP) F2-JAVA(PNP) F3-BC(AMM)
2	10:30 am -11:30 am	SE (Prof. P. N. Patil)			DCN (Prof. S. B. Patil)	
11.30 am - 11.40 am - SHORT BREAK						
3	11:40 am -12:40 pm	JAVA (Prof. S. N. Wadkar)	SE (Prof. P. N. Patil)	DCN (Prof. S. B. Patil)	JAVA (Prof. S. N. Wadkar)	DA (Prof. S. A. Demapure)
4	12:40 pm -01:40 pm	DA (Prof. S. A. Demapure)	BC (Prof. A. M. More)	SE (Prof. P. N. Patil)	F1- DA(TUT) F2- SE(TUT) F3- DCN(TUT)	BC (Prof. A. M. More)
01.40 pm - 02.30 pm - LUNCH BREAK						
5	02:30 pm -03:30 pm	F1-DCN(TUT) F2- DA(TUT) F3- SE(TUT)	F1- SE(TUT) F2- DCN(TUT) F3- DA(TUT)	DA (Prof. S. A. Demapure)	F1-JAVA(SBP) F2-WT(NCD) F3-JAVA(SNW)	
6	03:30 pm -04:30 pm	DCN (Prof. S. B. Patil)	WT (Prof. N. C. Desai)	JAVA (Prof. S. N. Wadkar)		

Prof. P. N. Patil
I/C Load Distribution

Prof. N. C. Desai
HOD

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STRUCTURE OF SYLLABUS

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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	100	12		-	-		25	10
											ESE	70		28						
2	PCC-MCA-C02	3	3	3	1	1	1	-	-	-	CIE	30	100	12		-	-		25	10
											ESE	70		28						
3	PCC-MCA-C03	3	3	3	-	-	-	2	4	4	CIE	-	-	-		50	20		50	20
											ESE	-								
4	PCC-MCA-C04	4	4	4	-	-	-	1	2	2	CIE	30	100	12		50	20		50	20
											ESE	70		28						
5	BSC-MCA-B01	3	3	3	1	1	1	-	-	-	CIE	30	100	12		-	-		25	10
											ESE	70		28						
6	MNG-MCA-M01	1	1	1	-	-	-	1	2	2	-	-	-	-		25	10		50	20
	TOTAL	**17**	**17**	**17**	**3**	**3**	**3**	**4**	**8**	**8**			**400**			**125**			**225**	

SEMESTER – II

1	PCC-MCA-C05	3	3	3	1	1	1	-	-	-	CIE	30	100	12					25	10
											ESE	70		28						
2	PCC-MCA-C06	3	3	3	-	-	-	2	4	4	CIE	30	-	-		50	20		50	20
											ESE	70								
3	PCC-MCA-C07	3	3	3	1	1	1	-	-	-	CIE	30	100	12					50	10
											ESE	70		28						
4	PCC-MCA-C08	3	3	3	-	-	-	2	4	4	CIE	30	100	12		50	20		50	20
											ESE	70		28						
5	BSC-MCA-B02	3	3	3	-	-	-	1	2	2	CIE	30	100	12		-	-		25	10
											ESE	70		28						
6	MNG-MCA-M02	1	1	1	-	-	-	1	2	2	-	-	-	-		25	10		25	10
	TOTAL	**16**	**16**	**16**	**2**	**2**	**2**	**6**	**12**	**12**			**400**			**125**			**225**	
	TOTAL	**33**	**33**	**33**	**5**	**5**	**5**	**10**	**20**	**20**			**800**			**250**			**450**	

CIE- Continuous Internal Evaluation

ESE – End Semester Examination

• 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:** ManagementCourse (Master in Computer Applications).

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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 andAnalysis ofAlgorithms	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 – II

SHIVAJI UNIVERSITY, KOLHAPUR

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Semester II

MCA-C05: Design and Analysis of Algorithms

Course Details Class	**First Year M.C.A. Sem-II**
Course Code and Course Title	**PCC- MCA-C05: Design and Analysis of Algorithms**
Prerequisites	**Basic of Computer Algorithm and flowchart**
Teaching scheme: Lectures + Tutorial	**3 Hrs. + 1 Hr.**
Credits	**3 + 1**
Evaluation Scheme ESE + CIE for Theory	**70 (ESE) + 30 (CIE)**

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

Course Outcomes:

1. Analyze the asymptotic performance of algorithms.
2. Compare algorithms based on time & space complexity.
3. To learn how data structure concepts are useful in problem solving..
4. To implement different ways of data structures such as stacks, linked lists and trees
5. Understand different algorithm design approaches.

UNIT 1 **(12 HOURS)**

Algorithm Analysis: Introduction to algorithms, analyzing and designing algorithms, Growth functions, asymptotic notations, Recursive algorithm complexity.
Solving recurrences: Substitution method, recursion tree method, master method.
Searching: Binary search.
Sorting: Quick sort, Counting sort, Radix sort, Merge sort, Heap sort, Insertion sort and selection sort.

UNIT 2 **(12 HOURS)**

Linear Data Structures:

Linked Lists - Linked Representation in memory, traversing and searching a linked list, insertion and deletion from a linked list, singly.
Stack - Definition, array and linked representation of stacks, arithmetic expression, polish notation, application of stack.

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

Course Details:

Queue - Definition, array and linked representation of Queue.

Non-Linear Data Structures:

Trees - General tree, Binary tree, binary search tree, operations on binary search tree, AVL tree, Red-Black Trees, B-trees.

Graphs - Representations of graph, Traversing Graphs, Breadth-first search, Depth-First Search, topological sort.

UNIT 4 **(12 HOURS)**

Algorithm design approaches:

Greedy Algorithm - General Characteristics of greedy algorithms, Elements of Greedy Strategy, Huffman code, Job Scheduling Problem

Branch and Bound – Introduction, Travelling Salesman problem Backtracking - Introduction, N Queen Problem.

Text Books:

1. Introduction to algorithms, Third Edition. by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, PHI
2. Fundamentals of Computer Algorithms, Second edition. By Ellis Horowitz, SartajSahani, SanguthevarRajasekaran, University Press.

References:

1. Data structures and algorithm analysis in C, Second edition. By Mark Allen weiss
2. Fundamental algorithms by Donald E. Knuth, Pearson Education.
3. Data and file structure by A. Tanenbaum by PHI

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

MCA-C06: Web Technology

Course Details:

Course Details Class	**First Year M.C.A. Sem-II**
Course Code and Course Title	**PCC- MCA-C06: Web Technology**
Prerequisites	**Basics of HTML, CSS, Database**
Teaching scheme: Lectures + Practical	**3 Hrs. + 2 Hr.**
Credits	**3 + 1**
Evaluation Scheme ESE + CIE for Theory	**NA**

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

Course Outcomes:

1. To familiarize a student with Client-side and Server-side Programming.
2. To understand the website development using ASP.NET.
3. To inculcate skills pertaining to data access technology geared to facilitate the development of disconnected systems using .NET platform.
4. To familiarize the student with the development of N-tier web-based application.

UNIT 1 **(12 HOURS)**

Overview of HTML, Structure of HTML document. Formatting text with HTML, adding local and remote links, adding graphics, creating lists in HTML, creating tables in HTML, Dividing the window with frames, Building interactivity with forms, Formatting site with cascading style sheets. Image maps – creating client-side and server-side image maps, Various HTML Editors JavaScript Overview, Data types, variables, scope of variables, casting, data type conversion rules,
Expressions and operators. Arrays. Built-in functions, and Built-in objects- String, Date, Math,
Types of dialog boxes-alert, prompt, confirm. Custom Functions. Working with Frames, Forms, Form elements and Form validation

UNIT 2 **(12 HOURS)**

Comparison between ADO and ADO.NET and benefits offered by ADO.NET, ADO.NET managed providers, SQL managed providers, ADO.NET, OLEDB managed providers, creating, Data binding in ADO.NET. Introduction to SQL Server, Creating tables, Views and stored procedure.
Architecture of ASP.NET web application. Understanding ASP.NET page structure. Page level events. Using standard controls, validation controls, Rich controls. Designing web sites with master pages and themes. ASP.NET folder structure, Validation process. Validation controls. Validation Groups and

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

Custom Validation, Performing data access – Using SqlDataSource control, using GridView control, FormView, Repeater, DataList and ListView Developing 3-tier application using Object Data source.

UNIT 4 **(12 HOURS)**

State management, Caching, AJAX, AJAX Extenders. Building and understanding web services, anatomy of a web service, overview of web service namespaces, building a simple web service, Introduction to CSS, Types of CSS, Applying CSS to Master pages in ASP.NET.

The laboratory course should consist of 10 to 12 programming exercises with focus on covering the hands-on aspects covered in theory course.

Books:

1. The Complete Reference HTML- Thomas A.Powell
2. The ABC's of JavaScript – Lee Purcell & May Jane Mara
3. ASP.NET Unleashed – Stephen Walther - Sams Publishing
4. The Complete Reference ASP.NET - Matthew Macdonald
5. Designing Microsoft ASP.Net Applications (Microsoft Press) – Jonathan Goodyear, Brian Peek, Brad Fox.
6. Microsoft ASP.NET – Step by Step (Microsoft Press) - G. Andrew Duthie
7. Programming ASP .NET - Jesse Liberty, Dan Hurwitz, Publisher: O'Reilly Media

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

MCA-C07: Software Engineering Course

Details:

Course Details Class	**First Year M.C.A. Sem-II**
Course Code and Course Title	**PCC- MCA-C07: Software Engineering**
Prerequisites	**Basics of software development**
Teaching scheme: Lectures + Tutorial	**3 Hrs. + 1 Hr.**
Credits	**3 + 1**
Evaluation Scheme ESE + CIE for Theory	**70 (ESE) + 30 (CIE)**

Teaching scheme	**Examination scheme**
Lectures: 3 Hrs. /Week	**Theory: 100 Marks,** 70 (ESE) +30 (CIE)
Tutorial: 1 Hr./Week	**TW: 50 Marks**

Course Outcomes:

1. Students will get foundation of software engineering, various process models and can apply the new models in development process.
2. Students will have effective communication and interaction skills for requirement engineering tasks.
3. Students can implement good coding practices and testing strategies thoroughly using testing tools.
4. Students will understand the need of lifelong learning and adapt to new software engineering concepts.

UNIT 1 **(12 HOURS)**

Introduction to Software Engineering: Software definition, characteristics, unique nature of web apps, seven principles of software engineering, software development process, Waterfall Model, prototyping, spiral model, 12 Principles of Agility, Extreme Programming (XP), Scrum process flow. Responsibilities of a Software Project Manager, Project Planning, Project Scheduling and Risk Management.

UNIT 2 **(12 HOURS)**

Requirements Engineering and Design Concepts: Seven tasks of requirement engineering, Eliciting Requirements, Types of requirement, fundamental problem in defining requirements, SRS template. Translating the requirement model into the design model, software design concepts, abstraction, architecture, pattern, separation of concerns, modularity, information hiding, functional independence-

cohesion, coupling, refinement, aspects, refactoring.

UNIT 3

Coding and Testing: Coding & Code Review, 5 Components of Coding, Good Coding Practices, Testing, Unit Testing, Black Box Testing, White Box Testing, Program Analysis Tools, Integration Testing, System Testing.

UNIT 4 **(12 HOURS)**

Software Deployment, Maintenance and Continuous Improvement:

Deployment - Key issues around deployment, Software evolution and release management.

Maintenance - Components of Software Maintenance Process.

Continuous Improvement - Benefits of continuous improvement, Implementation of continuous software development.

Text Books:

1. Software Engineering by Roger Pressman. 7th edition.
2. Software Engineering: A precise Approach – Pankaj Jalote (Wiley India)

References:

1. Software Engineering by Roger Pressman. 7th edition.
2. Software Engineering: A precise Approach – Pankaj Jalote (Wiley India)
3. Software Engineering for students: A Programming Approach by Douglas Bell, Pearson publication.
4. Software Engineering Sommerville 8th edition.
5. Software Quality Engineering by Jeff Tian.
6. Software Testing And Quality Assurance Theory And Practice By Kshirasagar Naik, Priyadarshi Tripathy.
7. The art of software testing by GJ Myers, Wiley
8. Software Testing: Principles and Practices by Srinivasan D and Gopalswamy R, PearsonEd, 2006
9. Software Testing Foundations, Andreas Spillner, Tilo Linz, Hans Schaefer, Shoff Publishers and Distributors.

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

MCA-C08: Java Programming

Course Details Class	**First Year M.C.A. Sem-II**
Course Code and Course Title	**PCC- MCA-C08: Java Programming**
Prerequisites	**Computer Programming Language C++**
Teaching scheme: Lectures + Practical	**4 Hrs. + 4 Hr.**
Credits	**4 + 2**
Evaluation Scheme ESE + CIE for Theory	**70 (ESE) + 30 (CIE)**

Teaching scheme	**Examination scheme**
Lectures: 3 Hrs. /Week	**Theory: 100 Marks,** 70 (ESE) +30 (CIE)
Practical: 4 Hr./Week	**POE: 50 TW: 50 Marks**

Course Outcomes:

1. To become familiar with the features of Java Language.
2. To become comfortable with concepts such as Classes, Objects, Inheritance, Polymorphism and Interfaces.
3. To understand Database connectivity using JDBC Drivers.
4. To design application using JSP, Servlet and RMI 5. To familiar with hibernate, struts and spring framework.

UNIT 1 **(12 HOURS)**

Features of Java: OOP in Java, Objects and classes, Inheritance, Polymorphism, Interfaces, inner classes, Constructor, Garbage collector, Method Overloading Method Overriding, Packages. Understanding Class path, Introduction to Java Utility classes and collection classes, Date,
Date Format and Gregorian calendar classes. A Simple Java Program, Object Creation, Using Java lang. Object class in program, programs using inheritance.

UNIT 2 **(12 HOURS)**

Java Database Connectivity: JDBC overview, Architecture, Steps to create JDBC Application, Drivers, database connection statements, Result sets, transaction, Metadata and Aggregate functions, callable statements. Connection pooling, Java Servlets, Servlet vs. CGI, Servlet life cycle, Servlets basics, Generic Servlets, HTTPServlet, The Servlets, Cookies, session tracking, databases and non-HTML content , request dispatching , shared attributes, resource abstraction.

UNIT 3 **(12 HOURS)**

RMI and Java Beans: Introduction & Architecture of RMI, Stubs & skeleton, Java RMI classes and interfaces ,Writing simple RMI application, Parameter passing in remote methods (marshalling and unmarshalling), Java Beans Introduction, design pattern, Beans persistence & introspection, writing simple bean. JSP(Java Server Pages: Introduction to JSP, Use of JSP, JSP Architecture, JSP tags, Implicit and Explicit objects, Request forward, Request – time include, use of Beans in JSP and their scopes.

UNIT 4 **(12 HOURS)**

Hibernate framework application, Introduction Working on Hibernate framework, Introduction Hibernate framework, its advantage and disadvantage, Introduction Using Hibernate framework in a live application. Struts framework Architecture and details, Struts frameworks Components.

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

The laboratory course should consist of 10 to 12 programming exercises with focus on covering the hands-on aspects covered in theory course.

Text Books:

1. The complete Reference Java- 5th edition – Herbert Schildt- Tata McGraw Hill
2. Java 8 Programming Black Book

References:

1. Inside Java 2 Virtual Machine by Venners Bill, Mcgraw Hill Education
2. Developing Java Servlets James Goodwill, Techmedia Pub.
3. Professional JSP Wrox press
4. JDBC, Servlet and JSP, Black Book, Santosh Kumar K. Dremtech publication 5. Java unleashed,; Micheal Morrison

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

MCA-C09: Data communication and Network

Course Details Class	**First Year M.C.A. Sem-II**
Course Code and Course Title	**PCC- MCA-C09: Data communication and Network**
Prerequisites	**Basics of Computer Network**
Teaching scheme: Lectures + Practical	**3 Hrs. + 1 Hr.**
Credits	**3 + 1**
Evaluation Scheme ESE + CIE for Theory	**70 (ESE) + 30 (CIE)**

Teaching scheme	**Examination scheme**
Lectures: 3 Hrs. /Week	**Theory: 100 Marks,** 70 (ESE) +30 (CIE)
Practical: 2 Hr./Week	**TW: 25 Marks**

Course Outcomes:

1. Understand the basic concepts of data communication and Networking.
2. Evaluate the performance of various networking models.
3. Analyze the performance of network on the basis of different services provided by it.
4. Identify security threats to network and tools to control network security.

UNIT 1 **(12 HOURS)**

Introduction to Networking and Data communication: Need of Networking, Components of Data communication - sender, receiver, message, transmission media, Network Architecture- Client-Server and Peer to peer, Categories of Networks- LAN, WAN. MAN, Network topologies Bus, Ring, Star, Mesh, Transmission Media - Guided Media -Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable, Unguided Media: Radio Waves, Microwaves, Infrared, and satellite communication,

UNIT 2 **(12 HOURS)**

Network Models and Services: OSI reference model, TCP/IP reference model, Comparison of OSI and TCP/IP reference model, Protocol Standards, Introduction to Application Layer: Domain name system (DNS), Hypertext Transfer Protocol (HTTP), Simple Mail Transfer Protocol (SMTP), Telnet, File Transfer Protocol (FTP), Introduction to Presentation Layer, Services of
Presentation Layer: Data encoding, Data encryption and data compression. Introduction to Session Layer, Services of session layer: Data Flow control, simplex, half- duplex, or full-duplex, Token Management, Synchronization.

UNIT 3

Network Performance: Transport layer - Transport Layer Primitives: listen, connect, send, receive, disconnect, Protocols: TCP, UDP, Network layer- IP Protocol and IP addressing, Connection oriented and connectionless services, Routing algorithm: Shortest path, Flooding, distance vector, Congestion control, Data link Layer- Data Link Layer protocols: Stop and Wait protocol, Sliding window protocol, Services of Data Link Layer: Framing, Error detection and correction, Flow control.

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

UNIT 4 **(12 HOURS)**

Network Vulnerabilities: Introduction to Vulnerabilities and Threats, Threats intransit, Protocol flaws, Impersonation, Active/Passive and Passive attacks: Virus, Worm. Malware, Hacking, Cracking, Sniffing, Spoofing, Dos, DDos, Masquerade, Trojan Horse. Ransomware, Logic bombs, Botnets, Keyoggers, Rootkits, Identification of Network vulnerabilities. Network security controls: Authentication, Access Controls, Basic Cryptography terminologies.

Text Books:

1. Andrew S. Tanenbaum: Computer Networks, 4th Edition, PHI.
2. Computer Networks – Protocols, Standards, and Interfaces, 2nd Edition by Uyless Black.

Reference Books:

1. Computer Networking - A Top-Down Approach Featuring the Internet, 5th Edition, J. F. Kurose and K. W. Ross, Pearson Education, 2009.
2. Computer Networks: An Open Source Approach, 1st Edition, R2. Y. D Lin, R. H Hwang, and F.Baker, McGraw- Hill, 2011.
3. Bernard Menezes, 'Network Security and Cryptography', Cengage Learning, ISBN: 978- 81-315-1349—1.

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

MCA-M02: Business Communication

Course Details Class	**First Year M.C.A. Sem-II**
Course Code and Course Title	**MNG- MCA-M02: Business Communication**
Prerequisites	**Business Management**
Teaching scheme: Lectures + Practical	**1 Hrs. + 2 Hr.**
Credits	**1 + 1**
Evaluation Scheme ESE + CIE for Theory	**NA**

Teaching scheme	**Examination scheme**
Lectures: 1 Hrs. /Week	**NA**
Practical: 2 Hr./Week	**OE: 25 TW: 25 Marks**

Course Outcomes:

To empower the students towards general and technical writing, oral communications and listening skills: letter writing, technical report writing, and business communication.

UNIT 1 **(12 HOURS)**

Expression: Practical communication skill development, business presentation with multimedia, speaking skill, prepared speech, extempore speech.

UNIT 2 **(12 HOURS)**

Writing: Technical/business letter, Resume Preparation, organization of writing material, poster presentation, writing technical document, preparing software user manual, preparing project documentation.

Text Books:

1. Business Correspondence & Report Writing, Sharma, TMH
2. Business Communication Strategies, Monipally, TMH

References:

1. English for Technical communication, Laxminarayanan, Scitech
2. Business Communication, Kaul PHI
3. Communication Skill for Effective Mgmt., Ghanekar, EPH

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

TEACHING PLAN

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

Dept. of Master of Computer Application (MCA - I Sem II 2023-24) **Lecture Plan: Design and Analysis of Algorithms**	
Lecture No	**Unit 1**
01	Introduction to algorithms
02	Analyzing and designing algorithms
03	Growth functions, asymptotic notations
04	Recursive algorithm complexity
05	Solving recurrences: Substitution method
06	Master method.
07	Binary search
08	Quick sort
09	Recursion tree method
10	Counting sort
11	Merge sort
12	Heap sort, Radix sort
13	Insertion sort and selection sort
	Unit 2
14	Linked Representation in memory
15	Traversing and searching a linked list
16	Insertion and deletion from a linked list
17	Singly
18	Stack - Definition, array and linked representation of stacks
19	Arithmetic expression
20	Polish notation
21	Application of stack
22	Queue - Definition, array and linked representation of Queue.
23	Array and linked representation of Queue.
	Unit 3
24	General tree, Binary tree
25	Binary search tree
26	Operations on binary search tree
27	AVL tree
28	Red-Black Trees
29	B-trees
30	Representations of graph
31	Traversing Graphs
32	Breadth-first search
33	Depth-First Search
34	Topological sort
	Unit 4
35	General Characteristics of greedy algorithms
36	Elements of Greedy Strategy
37	Huffman code
38	Job Scheduling Problem
39	Branch and Bound – Introduction
40	Travelling Salesman problem
41	Backtracking – Introduction
42	N Queen Problem
43	N Queen Problems1

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Dept. of Master of Computer Application (MCA Part I Semester II 2023-24) Lecture Plan: Software Engineering	
Lecture No.	**Unit 1**
01	Introduction to Software Engineering
02	Software definition & characteristics
03	unique nature of web apps
04	seven principles of software engineering
05	software development process
06	Waterfall Model, prototyping
07	spiral model
08	12 Principles of Agility
09	Extreme Programming (XP)
10	Scrum process flow
11	Responsibilities of a Software Project Manager
12	Project Planning
	Unit 2
13	Seven tasks of requirement engineering & Eliciting Requirements
14	Types of requirement
15	fundamental problem in defining requirements & SRS template
16	Translating the requirement model into the design model
17	software design concepts
18	abstraction & architecture
19	pattern & separation of concerns
20	Modularity
21	information hiding
22	functional independence-cohesion
23	coupling & refinement
24	aspects & refactoring
	Unit 3
25	Coding
26	Code Review
27	5 Components of Coding
28	Good Coding Practices
29	Testing
30	Unit Testing
31	Black Box Testing
32	White Box Testing
33	Program Analysis Tools
34	Integration Testing
35	System Testing
36	Coding
	Unit 4
37	Deployment
38	Key issues around deployment
39	Software evolution
40	release management
41	Maintenance
42	Components of Software Maintenance Process
43	Continuous Improvement
44	Benefits of continuous improvement
45	Implementation of continuous software development
46	Deployment
47	Key issues around deployment

Dept. of Master of Computer Application (MCA - I Sem II 2023-24) Lecture Plan: Data Communication and Networking	
Lecture No.	**Unit 1**
1	Introduction to Networking and Data communication
2	Need of Networking
3	Components of Data communication - sender, receiver, message, transmission media
4	Network Architecture - Client-Server and Peer to peer
5	Categories of Networks- LAN, WAN. MAN
6	Network topologies- Bus, Ring, Star, Mesh
7	Transmission Media - Guided Media, Twisted-Pair Cable
8	Coaxial Cable
9	Fiber-Optic Cable
10	Unguided Media: Radio Waves, Microwaves
11	Infrared, and satellite communication
	Unit 2
12	OSI reference model, TCP/IP reference model
13	Comparison of OSI and TCP/IP reference model, Protocol Standards
14	Introduction to Application Layer: Domain name system (DNS)
15	Hypertext Transfer Protocol (HTTP),
16	Simple Mail Transfer Protocol (SMTP)
17	Telnet, File Transfer Protocol (FTP)
18	Introduction to Presentation Layer, Services of Presentation Layer: Data encoding
19	Data encryption and data compression
20	Introduction to Session Layer
21	Services of session layer: Data Flow control, simplex, half- duplex, or full-duplex
22	Token Management, Synchronization
	Unit 3
23	Network Performance: Transport layer
24	Transport Layer Primitives: listen, connect, send, receive, disconnect
25	Protocols: TCP, UDP
26	Network layer- IP Protocol and IP addressing
27	Connection oriented and connectionless services
28	Routing algorithm: Shortest path, Flooding, distance vector
29	Congestion control
30	Data link Layer
31	Data Link Layer protocols: Stop and Wait protocol
32	Sliding window protocol
33	Services of Data Link Layer: Framing, Error detection and correction, Flow control
	Unit 4
34	Introduction to Vulnerabilities and Threats
35	Threats in transit, Protocol flaws, Impersonation
36	Active/Passive and Passive attacks: Virus, Worm. Malware
37	Hacking, Cracking, Sniffing, Spoofing
38	Dos, DDos, Masquerade, Trojan Horse. Ransomware
39	Logic bombs, Botnets, Key oggers, Rootkits
40	Identification of Network vulnerabilities
41	Network security controls: Authentication
42	Access Controls
43	Basic Cryptography terminologies

Master of Computer Application (MCA)

Department Of Master of Computer Application (MCA - II Semester II 2023-24)
Lecture Plan: Web Technology

Lecture No	Unit 1
01	Overview of HTML, Structure of HTML document.
02	Formatting text with HTML, adding local and remote links, adding graphics, creating lists in HTML.
03	Creating tables in HTML.
04	Dividing the window with frames, Building interactivity with forms.
05	Formatting site with cascading style sheets.
06	Image maps, creating client-side and server-side image maps.
07	Various HTML Editors JavaScript Overview, Data types, variables, scope of variables.
08	Casting, data type conversion rules, Expressions and operators.
09	Arrays. Built-in functions, and Built-in objects- String, Date, Math.
10	Types of dialog boxes-alert, prompt, confirm.
11	Custom Functions.
12	Working with Frames, Forms, Form elements and Form validation.
	Unit 2
13	Comparison between ADO and ADO.NET.
14	Comparison between ADO and ADO.NET.
15	Benefits offered by ADO.NET.
16	ADO.NET managed providers.
17	SQL managed providers.
18	ADO.NET, OLEDB managed providers.
19	Creating Data binding in ADO.NET.
20	Introduction to SQL Server.
21	Introduction to SQL Server.
22	Creating tables, Views.
23	Creating stored procedure.
24	Creating stored procedure.
	Unit 3
25	Architecture of ASP.NET web application.
26	Understanding ASP.NET page structure.
27	Page level events.
28	Using standard controls, validation controls, Rich controls.
29	Designing web sites with master pages and themes.
30	ASP.NET folder structure.
31	Validation process. Validation controls. Validation Groups and Custom Validation.
32	Performing data access using SqlDataSource control.
33	Performing data access using GridView control.
34	Performing data access using Repeater.
35	Performing data access using DataList and ListView.
36	Developing 3-tier application using Object Data source.
	Unit 4
37	State management.
38	Caching.
39	AJAX and AJAX Extenders.
40	AJAX and AJAX Extenders.
41	Building and understanding web services.
42	Building and understanding web services.
43	Anatomy of a web service.
44	Overview of web service namespaces.
45	Building a simple web service.
46	Introduction to CSS.
47	Types of CSS.
48	Applying CSS to Master pages in ASP.NET.

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

Dept. of Master of Computer Application (MCA –I Sem II 2023-24)	
Lecture Plan - JAVA Programming	
Lecture No	**Unit 1**
1	OOP in Java, Objects and classes, Inheritance, Polymorphism, Interfaces
2	inner classes, Constructor
3	Garbage collector
4	Method Overloading Method Overriding
5	Packages
6	Understanding Class path
7	Introduction to Java Utility classes and collection classes
8	Date, DateFormat and Gregorian calendar classes
9	A Simple Java Program
10	Object Creation, Using Java.lang
11	Object class in program
12	programs using inheritance
	Unit 2
13	JDBC overview, Architecture
14	Steps to create JDBC Application
15	Drivers, database connection statements
16	Resultsets, transaction
17	Metadata and Aggregate functions, callable statements
18	Connection pooling
19	Java Servlets, Servlet vs. CGI
20	CGI, Servlet life cycle, Servlets basics
21	Generic Servlets, HTTP Servlet, The Servlets
22	Cookies, session tracking
23	databases and non-HTML content , request dispatching
24	shared attributes, resource abstraction
	Unit 3
25	Introduction & Architecture of RMI
26	Stubs & skeleton,Java RMI classes and interfaces
27	Writing simple RMI application
28	Parameter passing in remote methods (marshalling and unmarshalling)
29	Java Beans Introduction, design pattern
30	Beans persistence & introspection
31	writing simple bean
32	JSP(Java Server Pages: Introduction to JSP, Use of JSP
33	JSP Architecture, JSP tags
34	Implicit and Explicit objects
35	Request forward
36	Request –time include, use of Beans in JSP and their scopes.
	Unit 4
37	Hibernate framework application
38	Introduction Working on Hibernate framework
39	Introduction Hibernate framework
40	Hibernate framework advantage and disadvantage
41	Introduction Using Hibernate framework in a live application
42	Struts framework Architecture and details
43	Struts frameworks Components

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

Dept. of Master of Computer Application (MCA - I Sem II 2023-24)	
Lecture Plan – Business Communication	
Lecture No	**Unit 1 Expression**
1	Practical communication Skill Development- Introduction ,nature and Importance
2	Types of Practical Communication
3	Aspects, functions of practical communication
4	Tips to improve practical communication
5	Developing Fluency for the enhancement of practical communication
6	Intra and inter personal communication
7	Business presentation skills with multimedia PPT
8	Business presentation types, techniques.
9	Dos and Don'ts of business presentation
10	Importance of presentation skills in business
11	Prepared Speech, tips and techniques
12	Extempore, impromptu
	Unit 2 Writing
13	Business Correspondence introduction
14	Importance, language, Style
15	Characteristics of business correspondence
16	Types of business correspondence
17	E-mail its importance ,techniques
18	Application letter for job
19	Business Report writing
20	Poster presentation
21	Technical communication meaning and importance
22	Writing technical document its characteristics
23	Preparing Project documentation
24	Writing software manuals

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

EXPERIMENT LIST AND ASSIGNMENT LIST

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

1. Web Technology (PCC- MCA-C06)

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.: II
Course	Web Technology

Expt. No.	Name of the Experiment	Nature of Experiment
1	Demonstrate use of tables in HTML.	Non- Performing
2	Cascading Style Sheets.	Performing
3	JavaScript.	Performing
4	Stored Procedure.	Performing
5	Using basic web controls in ASP.NET.	Performing
6	Using Grid view control.	Performing
7	Use of web. config file and creating a database connection.	Performing
8	Demonstrate use of web service.	Performing

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

2. Java Programming (PCC- MCA-C08)

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.: II
Course	Java Programming

Expt. No.	Name of the Experiment	Nature of Experiment
1	Control Statement in Java	Performing
2	Inheritance in Java	Performing
3	Abstract Class Abstract Method	Performing
4	Java Database Connectivity	Performing
5	Meta Data in Java	Performing
6	Servlet in Java	Performing
7	JDBC in Java	Performing
8	RIM in Java	Performing
9	Jsp Action Tag	Performing
10	Framework in Java	Non- Performing

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

1. Design and Analysis of Algorithms (PCC- MCA-C05)

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.: II
Course	Design and Analysis of Algorithms

Tutorial No.	Name of the Tutorial Design and Analysis of Algorithms
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	Tutorial No. 8
1	Assignment No. 1
2	Assignment No. 2
3	Assignment No. 3

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

2. Software Engineering (PCC- MCA-C07)

Lecture		Practical	Tutorial		Total Hr/Wk
3		0	1		4
Theory	CIE	T/W	OE	POE	Total Marks
70	30	50	--	0	150

Class	MCA I Sem.: II
Course	Software Engineering

Tutorial No.	Name of the Tutorial Software Engineering
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	Tutorial No. 8
1	Assignment No. 1
2	Assignment No. 2
3	Assignment No. 3

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

5. Java Programming (PCC- MCA-C09)

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.: II
Course	Java Programming

Tutorial No.	Name of the Tutorial Java Programming
1	Assignment No. 1
2	Assignment No. 2
3	Assignment No. 3
4	Assignment No. 4

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

5. Data communication and Network (PCC- MCA-C09)

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.: II
Course	Data communication and Network

Tutorial No.	Name of the Tutorial Data Communication and Network
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
1	Assignment No. 1
2	Assignment No. 2
3	Assignment No. 3

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

6. Business Communication (MNG- MCA-M02)

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

Class	MCA I Sem.: II
Course	Business Communication

Tutorial No.	**Name of the Assignment** **Business Communication**
1	Assignment No. 1
2	Assignment No. 2
3	Assignment No. 3
4	Assignment No. 4
5	Assignment No. 5
6	Assignment No. 6
7	Assignment No. 7

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

FACULTY LIST

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

DEPARTMENT FACULTY LIST

Academic Year- 2023-2024 SEM- II

Sr. No.	Faculty Name
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.

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

STAFF LIST

Master of Computer Application (MCA)

Under Faculty of Science and Technology (Engineering and Technology)

Part I Semester II

DEPARTMENT STAFF LIST

Academic Year- 2023-2024 SEM- II

Sr. No.	Staff Name
01	Mr. Patil A. G. (Tech. Assistant)
02	Mr. Suryvanshi D.S. (Peon)

2023-24 Sem – IV

Student Information Manual

MCA

Student Information Manual (SIM)

- **Covering page**
- **Index**

1. Institute Information
2. Vision of Institute
Mission of Institute
Quality Policy
3. Vision of Department
Mission of Department
Programme Educational Objectives (PEO's)
Programme Outcomes (PO's)
Programme Specific Outcomes (PSO)
4. Students role Responsibilities:
Code-of-Conduct:
5. Laboratory and Classroom Instructions
Laboratory instructions:
Classroom instructions:
6. Department Academic Planner
7. Departmental time table
8. Structure of Syllabus
9. Subject Details
Course details/syllabus
Recommended Books
Teaching Plan
List of Experiment
Assignments
10. Department Faculty
11. Department Staff

INSTITUTE INFORMATION

Dr. J. J. Magdum College of Engineering was established by Dr. J. J. Magdum Trust, Jaysingpur in 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 Governmentof Maharashtra, affiliated to Shivaji University, Kolhapur. The college offers B. Tech programs inMechanical, Civil, and Computer Science Engineering, IT and Electronics and Master of Computer Application.

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 specious 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 imbibeethical values.
- To contribute to local social and economic context, leading to satisfiedstakeholders.

PROGRAMME OUTCOMES

Graduates will be able to,

1. Understand the structure, development methodologies of software systems, possess professional skills and obtain competency with a broad range of programming languages and platforms.
2. Apply principles of analysis, design and development to provide user interactive solutions for various challenges.

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 scienceand engineering, consultancy and entrepreneurship.

PROGRAMME OUTCOMES (PO'S)

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

1. Apply knowledge and skills to solve information technology problems using advanced available tools.

2. Function effectively in multi-disciplinary teams and work as a team member and team leader to get technical solutions.

3. Understand, Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

4. Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

5. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

6. Communicate with customer, colleagues, and managers. Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

7. Maintain professional work ethic, appearance, and demonstration of personal responsibility.

8. Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

9. Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

10. Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

11. Implement cost effective and improved system.

12. Develop confidence for self-education and ability for lifelong learning.

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-IV

Dr. J. J. Magdum Trust's
Dr. J. J. Magdum College of Engineering, Jaysingpur
Department of Master of computer Application
Academic Calendar 2023 – 2024 (Sem – II & IV)

Date: 08.01.2024

Week No.	Month	Weekdays							No of working days	Events
		MON	TUE	WED	THU	FRI	SAT	SUN		
1	January	1	2	3	4	5	6	7	6	**Subject Choice – 3rd January** **Course outline by individual faculty lecture plan duly signed by HOD – 6th January**
2	January	8	9	10	11	12	13	14	5	**Department Academic Planner Submission – 8th January** **Load Distribution, Time Table – 8th January**
3	January	15	16	17	18	19	20	21	6	**FDP – 18th to 20th January**
4	January	22	23	24	25	26	27	28	4	**Project Seminar 1 – 22nd January**
5	January February	29	30	31	1	2	3	4	6	**Monthly Report – 29th January** **CMC Report submission – 30th January**
6	February	5	6	7	8	9	10	11	5	**MCASA Activity – 8th February**
7	February	12	13	14	15	16	17	18	6	**Expert Lecture – 13th February** **Augmentation Technical - 16th February**
8	February	19	20	21	22	23	24	25	4	**Syllabus Completion Status - 20th February** **Project Seminar 2 – 23rd February** **Community Service – 24th February**
9	February March	26	27	28	29	1	2	3	6	**Monthly Report – 29th February** **CMC Report submission – 29th February**
10	March	4	5	6	7	8	9	10	4	**CIE – I (FY & SY) – 5th to 6th March**
11	March	11	12	13	14	15	16	17	6	**Parents Meet – 12th March** **Expert Lecture – 16th March**
12	March	18	19	20	21	22	23	24	5	**Guest Lecture by MCASA – 20th March** **Industrial Visit – 22th March**
13	March	25	26	27	28	29	30	31	4	**Augmentation Non-Technical – 27th March** **Syllabus Completion Status - 30th March** **Monthly Report – 30th March** **CMC Report submission – 30th March**
14	April	1	2	3	4	5	6	7	6	**CIE – II (FY & SY) - 5th to 6th April**
15	April	8	9	10	11	12	13	14	3	**Project Seminar 3 – 8th April** **Major Project report submission – 12th April**

16	April	15	16	17	18	19	20	21	5	**Parents Meet – 15th April** **MCASA Activity – 18th April**
17	April	22	23	24	25	26	27	28	5	**Feedback(FY & SY) – 23rd April** **Syllabus Completion Status - 24th April** **Monthly Report - 25th April** **CMC Report submission - 26th April**
18	April	29	30						2	
No. of Working Days		16	17	16	16	14	09		88	

Note: Proctor meeting – In 1st and 3rd week of every month

Courses	Term Commencement	End of Term
F.Y- Semester II	**15.01.2024**	**08.05.2024**
S.Y – Semester IV	**12.01.2024**	**29.04.2024**

Academic Coordinator HOD Dean Academic Principal Advisor

DEPARTMENTAL TIME

TABLE

Class Room : Online Mode
Class: SY-MCA
Year: 2023 – 2024

Dr. J. J. Magdum Trust's
Dr. J. J. Magdum College of Engineering, Jaysingpur W.E.F: 15-01-2024
Department of Master of Computer Application

Date: 17/01/2024

SR	TIME	MON	TUE	WED	THU	FRI
1	09:30 am -10:30 am		S4(SR) (Prof. S. B. Patil)		S6(SR) (Prof. P. N. Patil)	S1(SR) (Prof. N. C. Desai)
2	10:30 am -11:30 am		S7(SR) (Prof. S. A. Demapure)		S8(SR) (Prof. S. A. Demapure)	S9(SR) (Prof. S. N. Wadkar)
11.30 am - 11.40 am - SHORT BREAK						
3	11:40 am -12:40 pm				S2(SR) (Prof. N. C. Desai)	S3(SR) (Prof. S. B. Patil)
4	12:40 pm -01:40 pm				S5(SR) (Prof. P. N. Patil)	S10(SR) (Prof. S. N. Wadkar)
5	03:30 pm -04:30 pm	CS (Prof. S. A. Demapure)	ERP (Prof. P. N. Patil)	ERP (Prof. P. N. Patil)	ERP (Prof. P. N. Patil)	CS (Prof. S. A. Demapure)
		IS (Prof. S. N. Wadkar)	BI (Prof. S. B. Patil)	BI (Prof. S. B. Patil)	BI (Prof. S. B. Patil)	IS (Prof. S. N. Wadkar)
6	04:30 pm -05:30 pm		IS(TUT)	ERP(TUT)	CS (Prof. S. A. Demapure)	
			CS(TUT)	BI(TUT)	IS (Prof. S. N. Wadkar)	

Prof. P. N. 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	30	100	12	-	-	50	20	
											ESE	70		28					
2	PCC-MCA-C11	4	4	4	1	1	1	-	-	-	CSE	30	100	12	-	-	50	20	
											ESE	70		28					
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	30	100	12	50	20	50	20	
											ESE	70		28					
5	PCC-MCA-C16	-	-	-	-	-	-	4	8	8	-	-			100	40	100	40	
TOTAL		**15**	**15**	**15**	**2**	**2**	**2**	**7**	**14**	**14**			**300**		**200**		**300**		
SEMESTER IV																			
1	**Elective 02** PCC-MCA-C17 OR PCC-MCA-C18 OR PCC-MCA-C19	3	3	3	1	1	1	-	-	-	CIE	30	100	12	-	-	25	10	
											ESE	70		28					
2	**Elective 03** PCC-MCA-C20 OR PCC-MCA-C21 OR PCC-MCA-C22	3	3	3	1	1	1	-	-	-	CIE	30	100	12	-	-	25	10	
											ESE	70		28					
3	PCC-MCA-C23	-	-	-	-	-	-	10	20	20	-	-	-	-	200	80	100	40	
4	PCC-MCA-C24	-	-	-	-	-	-	6	12	12	-	-	-	-	100	40	50	20	
TOTAL		**6**	**6**	**6**	**2**	**2**	**2**	**16**	**32**	**32**			**200**		**300**		**200**		
SECOND YEAR TOTAL		**21**	**21**	**21**	**4**	**4**	**4**	**23**	**46**	**46**			**500**		**500**		**500**		

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 – IV

M.C.A. Part-II Semester IV

Paper MCA-C17: Cyber Security

(Choice Based Credit System)

Course Details:

Course Details Class	**Second Year M.C.A. Semester IV**
Course Code and Course Title	**PCC- MCA-C17: Cyber Security**
Prerequisites	**Computer Fundamentals**
Teaching scheme: Lectures + Tutorial	**3 Hrs. + 1 Hr.**
Credits	**3 + 1**
Evaluation Scheme ESE + CIE for Theory	**70 (ESE) + 30 (CIE)**

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

Course Outcomes:

After completion of this course student should be able to

1. Understand the fundamentals of Cyber security vulnerabilities.
2. Demonstrate different Cyber Security techniques.
3. Apply different Internet and Cyber Security Controls.
4. Describe Information Technology Act 2000.

Unit 1: Introduction to Cyber Security Vulnerabilities **12 HOURS**

Introduction to Cyber space and security, Internet Security, Cloud Computing &Security, Social Network sites security, Cyber Security Vulnerabilities-Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak
Authentication, Authorization, Unprotected Broadband communications, Cyber Security Awareness.

Unit 2: Cyber Security Techniques **12 HOURS**

Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Applications of Cryptography . Overview of Firewalls Types of Firewalls. Intrusion detection system: Types of Intrusion Detection System, Features and limitations. Intrusion prevention system: Honeypots, Types of Honeypots, Introduction to Honey nets.

Unit 3: Internet Security Controls **12 HOURS**

Internet Security: Secure Socket Layer (SSL), Secure Hypertext Transfer Protocol(S/HTTP), IPSec, and Secure Multipurpose Internet Mail 15Periods 6 Extensions (S/MIME). Web browser security: Filtering services in web browser. E-mail Security:, Encryption for Secure E-Mail, Secure E- Mail System: PGP (Pretty Good Privacy), S/MIME (Secure Multipurpose Internet Mail Extensions); Cyber Security Standards: ISO/IEC
27032, NIST- CSF

Unit 4: Cyber Law **12 HOURS**

Introduction to Cyber Laws, Why do we need Cyber law: The Indian Context, Three Bodies of Law, Types, Levels, Computers Related Laws, Cybercrime and the Indian ITA 2000 and amendments, Honeypots, The Indian Penal Code (IPC) 1860, Mapping of Cybercrime with IT Act, Technology and Students: Indian Scenario.

Reference Books:-

1. Charlie Kaufman and Radia Perlman, Mike Speciner, “Network Security, Second Edition,
2. Private Communication in Public World”, PHI 2002.
3. Tony Bradley, “Essential Computer Security: Everyone’s Guide to Email, Internet and
4. Wireless security”, Syngress Publication 2006.
5. Behrouz A. Ferouzan, “Cryptography & Network Security”, Tata McGraw Hill, 2007.

M.C.A. Part-II Semester IV

Paper MCA-C19: Information Security

(Choice Based Credit System)

Course Details:

Course Details Class	**Second Year M.C.A. Semester IV**
Course Code and Course Title	**PCC- MCA-C19: Information Security**
Prerequisites	**Computer Fundamentals**
Teaching scheme: Lectures + Tutorial	**3 Hrs. + 1 Hr.**
Credits	**3 + 1**
Evaluation Scheme ESE + CIE for Theory	**70 (ESE) + 30 (CIE)**

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

Course Outcomes:

1. After completion of this course student should be able to
2. Understand various concepts of Cryptography and authentication.
3. Explain Digital certificates and Cryptography standards.
4. Get awareness of Internet and Web Security.
5. Get awareness of Database and OS Security.

Unit 1: Introduction to Information Security **12 HOURS**

Introduction to Information Security, principles, services and attacks, functional requirements of security, current trends in security. Need for security, Security approaches.

Unit 2: Cryptography and Authentication **12 HOURS**

Concept: Symmetric and Asymmetric Cryptography. Mathematics of cryptography: Modular Arithmetic Additive Inverse, Multiplicative Inverse, Euclidean Algorithm and Extended Euclidean Algorithm, Stream Cipher and Block Cipher, Concept of Confusion and Diffusion. Modes of Operation of Block Cipher: ECB, CBC, OFB, CFB, DES, RSA.

Authentication: Types of authentication, Biometric Authentication and Third Party Authentication using KDC and Kerberos Version 5, Mutual authentication, reflection attack.

Unit 3: Digital certificates and integrity **12 HOURS**

Concept, Compare Digital Signature with Public Key Cryptography, Digital Signature Schema, Public Key Infrastructure (PKI): Private key management, Public Key Cryptography Standards (PKCS). Digital Certificate Creation Steps, X.509 Certificate, Certificate Revocation. Message Integrity, Hash functions Properties Algorithm: MDC, MAC, HMAC, MD5, and SHA - 512

Unit 4: Internet security, web security, database security and OS Security **12 HOURS**

SSL, IPSec, Email Security- PGP, Email attacks Web services Security: web app versus web service concept, WS-Security, SOAP web service, SAML assertion, Browser attacks, web attacks targeting users, obtaining user or website data. Introduction to database, Security requirements of database, sensitive data, Database access control, inference, Security in operating systems: Operating System Structure,
Security Features of Ordinary Operating Systems, Operating System Tools to Implement Security Functions, Rootkit: Phone Rootkit, Sony XCP Rootkit, TDSS Rootkits

Reference Books:-

1. Principles of Information Security by Michael E. Whitman and Herbert J. Mattord
2. Elementary Information Security by Richard E. Smith
3. Fundamentals of Information Systems Security By David Kim and Michael G. Solomon
4. Information Security: Principles and Practice By Mark Stamp

M.C.A. Part-II Semester IV

Paper MCA-C22: Business Intelligence

(Choice Based Credit System)

Course Details:

Course Details Class	**Second Year M.C.A. Semester IV**
Course Code and Course Title	**PCC- MCA-C22: Business Intelligence**
Prerequisites	**Computer Fundamentals**
Teaching scheme: Lectures + Tutorial	**3 Hrs. + 1 Hr.**
Credits	**3 + 1**
Evaluation Scheme ESE + CIE for Theory	**70 (ESE) + 30 (CIE)**

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

Course Outcomes:

After completion of this course student should be able to

1. Use BI systems and technology to support decision making.
2. Design and build BI applications based on user's needs
3. Identify business and technical requirements for a BI solution

Unit 1: Introduction **12 HOURS**

Effective and timely decisions – Data, information and knowledge – Role of mathematical models – Business intelligence architectures: Cycle of a business intelligence analysis – Enabling factors in business intelligence projects – Development of a business intelligence system – Ethics and business intelligence.

Unit 2: Knowledge Delivery and Efficiency **12 HOURS**

The business intelligence user types, Standard reports, Interactive Analysis and Ad Hoc Querying, Parameterized Reports and Self-Service Reporting, Visualization: Charts, Graphs, Widgets, Scorecards and Dashboards, Geographic Visualization. Efficiency measures – The CCR model: Definition of target objectives- Peer groups – Identification of good operating practices; cross efficiency analysis – virtual inputs and outputs – Other models. Pattern matching – cluster analysis, outlier analysis

Unit 3: Mathematical models for decision making **12 HOURS**

Structure of mathematical models, Development of a model, Classes of models, Notes and readings. Introduction to m-commerce: Emerging applications, different players in mcommerce, m-commerce life cycle Mobile financial services, mobile entertainment services, and proactive service management

Unit 4: Business Intelligence Applications **12 HOURS**

Marketing models – Logistic and Production models – Case studies.

Reference Books:

1. David Loshin Morgan, Kaufman, "Business Intelligence: The Savvy Manager's Guide", Second Edition, 2012.
2. Cindi Howson, "Successful Business Intelligence: Secrets to Making BI a Killer App", 1st edition, McGrawHill, 2007

M.C.A. Part-

Paper MCA-C20: Enterprise Resource Planning

(Choice Based Credit System)

Course Details:

Course Details Class	**Second Year M.C.A. Semester IV**
Course Code and Course Title	**PCC- MCA-C20: Enterprise Resource Planning**
Prerequisites	**Computer Fundamentals**
Teaching scheme: Lectures + Tutorial	**3 Hrs. + 1 Hr.**
Credits	**3 + 1**
Evaluation Scheme ESE + CIE for Theory	**70 (ESE) + 30 (CIE)**

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

Course Outcomes:

After completion of this course student should be able to

1. Make basic use of Enterprise software, and its role in integrating business functions
2. Analyze the strategic options for ERP identification and adoption.
3. Design the ERP implementation strategies.
4. Create reengineered business processes for successful ERP implementation.

Unit 1: Introduction to ERP **12 HOURS**

What is ERP, Why ERP, Need for Enterprise Resource Planning, Definition of ERP, Evolution of Enterprise Resource Planning, Pre material requirement planning (MRP stage) Material requirement planning, MRP- II, ERP, Extended ERP, ERP Planning –II, ERP-A manufacturing perspective, Risks and benefits – Risk implementation, Fundamental technology of ERP Issues to be consider in planning design and, implementation of cross functional integrated ERP systems.

Unit 2: ERP Solution and Functional Modules **12 HOURS**

Overview of ERP software solutions, Small, medium and large enterprise vendor solutions, Business process Reengineering, Business process Management, Steps of BPM, Functional Modules, ERP
Production planning module, ERP purchasing module, ERP Inventory control module, ERP Sales module, ERP Marketing module, ERP Financial module, ERP HR module

Unit 3: ERP Implementation **12 HOURS**

Planning Evaluation and selection of ERP systems, ERP Implementation life cycle, Pre-evaluation Screening, Package Evaluation, Project Planning Phase, Gap-Analysis, Reengineering, Configuration Implementation Team Training, Testing, Going Live, End-user training, Post – implementation, ERP implementation, Methodology and Frame work, Training, Data Migration, People Organization in implementation, Consultants and Vendors, Employees.

Unit 4: Post Implementation **12 HOURS**

ERP Implementation, Maintenance of ERP, Organizational and Industrial impact, Success factors of ERP Implementation, Key success factors, Failure factors of ERP Implementation.

Reference Books:

1. Enterprise Resource Planning Systems, Daniel E.O'Leary, Cambridge University Press,2002
2. Concepts in Enterprise resource planning, Ellen Monk, Bret Wagner, Cengage learning, Third edition, 2009.
3. Essentials of Business Processes and Information Systems, by Simha R. Magal and Jeffrey Word ,2010,
4. ERP-A Managerial Perspective, S. Sadagopan, McGraw Hill

M.C.A. Part-II Semester IV

Paper MCA-C23: Major Project

(Choice Based Credit System)

Course Details:

Course Details Class	**Second Year M.C.A. Semester IV**
Course Code and Course Title	**PCC- MCA-C23: Major Project**
Prerequisites	**Computer Fundamentals**
Teaching scheme: Practical	**20 Hrs.**
Credits	**10**
Evaluation Scheme ESE + CIE for Theory	**NA**

Teaching scheme	**Examination scheme**
Lectures: NA	**NA**
Practical: 20 Hr./Week	**POE: 200 Marks TW: 100 Marks**

Course Outcomes:

After completion of this course student should be able to

1. Identify the problem in existing system and develop SRS.
2. Understand the industrial line of work and corporate work culture.
3. Select appropriate technology platform for problem solving
4. Develop application using appropriate technology platform.
5. Test developed application for user acceptance.
6. Write project report in professional format.

Guide Lines for Projects:

A student has to take project work at the end of third semester of MCA

1. For major project student should go for in-plant training of 90 days after completion of semester III.
2. Project report will be submitted to institute/department before university examination of 4th Semester.
3. Project work will be done individually and students should take guidance from assigned guide and prepare a Project Report on “Project Work" to be submitted to the Head of the Department.
4. Acceptance/Rejection of Project Report:
5. The student should submit progress report with draft project report to the guide.
6. Respective guide has right to suggest modifications for resubmission or accept the project.
7. Only on acceptance of draft project report, the student should make the final copy.

Following format for the submission of the Project Report.

a. Paper:

The Report shall be typed on white paper, A4 size, for the final submission. The report to be submitted must be original and subsequent copies may be photocopied on any paper.

b. Typing:

The typing shall be of standard letter size, 1.5 spaced and on both side of the paper. (Normal text should have Times New Roman, Font size 12. Headings can have bigger size)

c. Margins: The typing must be done in the following margins: Left -----1.5 inch, Right ----- 1 inch Top ----- 1 inch, Bottom ----- 1 inch

d. Front Cover: The front cover should contain the following details: TOP: The title in block capitals of 6mm to 15mm letters.

CENTRE: Full name in block capitals of 6mm to 10mm letters.

BOTTOM: Name of the University, Course, Year of submission -all in block capitals of 6mm to 10mm letters on separate lines with proper spacing with center alignment.

e. Blank Sheets: At the beginning and end of the report, two white black papers should be provided, one for the purpose of binding and other to be left blank.

Documentation Format

a) Cover Page
b) Institute/College Recommendation
c) Organization Certificate
d) Guide Certificate
e) Declaration
f) Acknowledgement
g) Index

Chapter Scheme

1)Introduction to Project

-Introduction
-Existing System
-Need and scope of Computer System
-Organization Profile (Optional & applicable for live project only)

2)Proposed System

-Objectives
-Requirement Engineering.
- Requirement Gathering
- Software Requirements

3)System Analysis

 System Diagram
- DFD
- ERD

Note: Use advanced tools and techniques as per requirement.

4)System Design

- Database Design
- Input Design & its samples
- Output Design (on screen)

5) Implementation

-System Requirement
-Hardware
-Software
-Installation process
-User Guideline

6)Reports (with validData)

(Minimum 6-10 reports)

7)Conclusion and Suggestions

- Conclusion
- Limitations
- Suggestion

Annexure

- Source code (Include Main Logic source code)
- Questioner/Schedule (if used)
- Joining Report, Progress Reports, Student Guide Meet Record

M.C.A. Part-II Semester IV

M.C.A. Part-II Semester IV

Paper MCA-C24: Seminar

(Choice Based Credit System)

Course Details:

Course Details Class	**Second Year M.C.A. Semester IV**
Course Code and Course Title	**PCC- MCA-C24: Seminar**
Prerequisites	**Computer Fundamentals**
Teaching scheme: Practical	**12 Hrs.**
Credits	**6**
Evaluation Scheme ESE + CIE for Theory	**NA**

Teaching scheme	**Examination scheme**
Lectures: NA	**NA**
Practical: 12 Hr./Week	**POE: 100 Marks TW: 50 Marks**

Course Outcomes:

After completion of this course student should be able to

1. To develop and support a relevant and informed thesis, or point of view, that is appropriate for its audience, purpose, discipline, and theme.
2. To demonstrate effective writing skills and processes by employing the rhetorical techniques of academic writing, including invention, research, critical analysis and evaluation, and revision.
3. To incorporate and document appropriate sources in accordance with the formatting style proper for the discipline and effectively utilize the conventions of standard written English.

Nature of Seminar

1. The aim of this seminar is to make the students to study regarding industrial project. They are expected to go through the latest trend pertaining to computer and allied fields, to do the literature survey and deliver the seminar on their work done in an industrial project. The other important aim of the seminar is to encourage and develop the personality, aptitude and knowledge of the students
2. Seminar work should be continually evaluated based on the contributions of an individual student, originality of the work, innovations brought in, research and developmental efforts, depth and applicability, etc.
3. Three mid-term evaluations should be done, which includes presentations and demos of the work done.

Project Report Format:

1. Page Size: Trimmed A4 **2. Top Margin:** 1.00 Inch

3. Bottom Margin: 1.32 Inches **4. Left Margin:** 1.5 Inches

5. Right Margin: 1.0 Inch **6. Para Text:** Times New Roman 12 Point Font

7. Line Spacing: 1.5 Lines

8. Page Numbers: Right Aligned at Footer. Font 12 Point. Times New Roman **9.Headings:** Times New Roman, 14 Point Bold Face **10**.**Certificate:** All students should attach standard format of Certificate as described by the department. Certificate should be awarded to batch and not to individual student. Certificate should have signatures of Guide, Head of Department and Principal/ Director.

11. Index of Report:

a. Title Sheet
b. Certificate
c. Acknowledgement
d. Table of Contents
e. List of Figures
f. List of Tables

12. References:

References should have the following format
For Books: “Title of Book”, Authors, Publisher, Edition
For Papers: “Title of Paper”, Authors, Journal/Conference Details, Year

TEACHING PLAN

Dept. Of Master of Computer Application (MCA - II Sem IV 2023-24) **Lecture Plan: Cyber Security**	
Lecture No	**Unit 1**
01	Introduction to Cyber space and security
02	Internet Security
03	Cloud Computing &Security
04	Social Network sites security
05	Social Network sites security's
06	vulnerabilities in software
07	System administration
08	Complex Network Architectures
09	Open Access to Organizational Data
10	Weak Authentication, Authorization
11	Unprotected Broadband communications
12	Cyber Security Awareness
	Unit 2
13	Introduction to Cryptography
14	Symmetric key Cryptography, Asymmetric key Cryptography
15	Message Authentication
16	Digital Signatures, Applications of Cryptography
17	Overview of Firewalls, Types of Firewalls
18	Types of Intrusion Detection System
19	Features and limitations
20	Intrusion prevention system: Honeypots
21	Introduction to Honeypots
22	Types of Honeypots
	Unit 3
23	Internet Security: Secure Socket Layer (SSL)
24	Secure Hypertext Transfer Protocol(S/HTTP)
25	IPSec
26	Secure Multipurpose Internet Mail 15Periods 6 Extensions(S/MIME)
27	Web browser security
28	Filtering services in web browser
29	E-mail Security, Encryption for Secure E-Mail
30	Secure E- Mail System- PGP (Pretty Good Privacy)
31	S/MIME (Secure Multipurpose Internet Mail Extensions)
32	Cyber Security Standards: ISO/IEC 27032
33	NIST- CSF
	Unit 4
34	Introduction to Cyber Laws, Why do we need Cyber law
35	The Indian Context, Three Bodies of Law
36	Types, Levels
37	Computers Related Laws
38	Cybercrime and the Indian ITA 2000 and amendments
39	Honeypots
40	The Indian Penal Code (IPC) 1860
41	Mapping of Cybercrime with IT Act
42	Technology and Students: Indian Scenario

Dept. of Master of Computer Application (MCA – II Sem IV 2023-24)	
Lecture Plan: Information Security	
Lecture No	**Unit 1**
1	Introduction to Information Security
2	principles
3	services and attacks
4	functional requirements of security
5	current trends in security
6	Need for security
7	Security approaches
	Unit 2
8	Concept: Symmetric and Asymmetric Cryptography
9	Mathematics of cryptography
10	Modular Arithmetic Additive Inverse
11	Multiplicative Inverse
12	Euclidean Algorithm and Extended Euclidean Algorithm
13	Stream Cipher and Block Cipher
14	Concept of Confusion and Diffusion
15	Modes of Operation of Block Cipher: ECB, CBC, OFB, CFB, DES, RSA
16	Authentication: Types of authentication
17	Biometric Authentication and Third Party Authentication using KDC and Kerberos Version 5
18	Mutual authentication
19	Reflection attack
	Unit 3
20	Concept
21	Compare Digital Signature with Public Key Cryptography
22	Digital Signature Schema
23	Public Key Infrastructure (PKI)
24	Private key management
25	Public Key Cryptography Standards (PKCS)
26	Digital Certificate Creation Steps
27	X.509 Certificate
28	Certificate Revocation
29	Message Integrity
30	Hash functions Properties Algorithm: MDC, MAC
31	HMAC, MD5, and SHA - 512
	Unit 4
32	SSL, IPSec, Email Security- PGP
33	Email attacks Web services Security
34	web app versus web service concept, WS-Security, SOAP web service
35	SAML assertion , Browser attacks
36	web attacks targeting users, obtaining user or website data
37	Introduction to database
38	Security requirements of database, sensitive data
39	Database access control, inference, Security in operating systems
40	Operating System Structure
41	Security Features of Ordinary Operating Systems
42	Operating System Tools to Implement Security Functions
43	Rootkit: Phone Rootkit, Sony XCP Rootkit, TDSS Rootkits

Dept. Of Master of Computer Application (MCA - II Sem IV 2023-24) Lecture Plan: Enterprise Resource Planning	
Lecture No.	**Unit 1**
1	What is ERP, Why ERP
2	Need for Enterprise Resource Planning
3	Definition of ERP, Evolution of Enterprise Resource Planning
4	Pre material requirement planning (MRP stage) Material requirement planning
5	MRP- II
6	ERP, Extended ERP
7	ERP-A manufacturing perspective
8	ERP Planning –II
9	Risks and benefits
10	Risk implementation
11	Fundamental technology of ERP Issues to be consider in planning design
12	Implementation of cross functional integrated ERP systems
	Unit 2
13	Overview of ERP software solutions
14	Small, medium and large enterprise vendor solutions
15	Business process Reengineering
16	Business process Management
17	Steps of BPM
18	Functional Modules
19	ERP
20	Production planning module
21	ERP purchasing module
22	ERP Inventory control module
23	ERP Sales module, ERP Marketing module
24	ERP Financial module, ERP HR module
	Unit 3
25	Planning Evaluation and selection of ERP systems
26	ERP Implementation life cycle
27	Pre-evaluation Screening
28	Project Planning Phase
29	Package Evaluation
30	Gap-Analysis, Reengineering & Configuration Implementation Team Training
31	Testing, Going Live
32	End-user training, Post – implementation
33	ERP implementation
34	Methodology and Frame work, Training & Data Migration
35	People Organization in implementation
36	Consultants and Vendors, Employees
	Unit 4
37	ERP Implementation
38	Maintenance of ERP
39	Organizational impact
40	Industrial impact
41	Success factors of ERP Implementation
42	Key success factors
43	Failure factors of ERP Implementation

Dept. Of Master of Computer Application (MCA - II Sem IV 2023-24) **Lecture Plan: Business Intelligence**	
Lecture No.	**Unit 1**
01	Effective and timely decisions.
02	Data, information and knowledge.
03	Role of mathematical models.
04	Business intelligence architectures.
05	Cycle of a business intelligence analysis.
06	Enabling factors in business intelligence projects.
07	Development of a business intelligence system.
08	Ethics and business intelligence.
	Unit 2
09	The business intelligence user types.
10	Standard reports, Interactive Analysis and Ad Hoc Querying.
11	Parameterized Reports
12	Self-Service Reporting
13	Visualization: Charts, Graphs, Widgets, Scorecards and Dashboards
14	Geographic Visualization.
15	Efficiency measures –The CCR model
16	Definition of target objectives- Peer groups
17	Identification of good operating practices
18	Cross efficiency analysis
19	Virtual inputs and outputs – other models
20	Pattern matching – cluster analysis, outlier analysis
	Unit 3
21	Structure of mathematical models
22	Development of a model
23	Classes of models
24	Notes and readings
25	Introduction to m-commerce
26	Emerging applications
27	Different players in m-commerce
28	M-commerce life cycle
29	Mobile financial services
30	Mobile entertainment services
31	Proactive service management
	Unit 4
32	Marketing models
33	Tools of Marketing models
34	Techniques of Marketing models
35	Predictive Analytics
36	Logistic and Production models
37	Optimization models for logistics planning
38	Tactical Planning
39	Case studies
40	Case studies with example
41	Case studies with solution

ASSIGNMENT LIST

M.C.A. Part-II Semester IV

1. Cyber Security (PCC- MCA-C17)

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 II Sem.: IV
Course	Cyber Security

Tutorial No.	**Name of the Tutorial CS**
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	Tutorial No. 8
1	Assignment No. 1
2	Assignment No. 2
3	Assignment No. 3

2. Information Security (PCC- MCA-C19)

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 II Sem.: IV
Course	Information Security

Tutorial No.	Name of the Tutorial IS
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 IV

3. Enterprise Resource Planning (PCC- MCA-C20)

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 II Sem.: IV
Course	Enterprise Resource Planning

Tutorial No.	**Name of the Tutorial ERP**
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	Tutorial No. 8
1	Assignment No. 1
2	Assignment No. 2
3	Assignment No. 3

M.C.A. Part-II Semester IV

4. Business Intelligence (PCC- MCA-C22)

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 II Sem.: IV
Course	Business Intelligence

Tutorial No.	Name of the Tutorial BI
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
1	Assignment No. 1
2	Assignment No. 2
3	Assignment No. 3

FACULTY LIST

DEPARTMENT FACULTY LIST

Academic Year- 2023-2024 SEM- IV

Sr. No.	Faculty Name
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.

STAFF LIST

M.C.A. Part-II Semester IV

DEPARTMENT STAFF LIST

Academic Year- 2023-2024 SEM- IV

Sr. No.	Staff Name
01	Mr. Patil A.G. (Tech. Assistant)
02	Mr. Suryvanshi D.S(Peon)