2025-26 Sem - II
Student Information Manual

MCA

Student Information Manual (SIM)

INSTITUTE INFORMATION

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

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

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

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

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

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

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

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

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

The institute is having 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

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

VISION OF DEPARTMENT

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

MISSION OF DEPARTMENT

➢ To offer high-grade, value-based Post-graduate programme in the field of Computer Applications.

➢ To provide conducive environment so as to achieve excellence in teaching-learning, and research and development activities.

➢ To bridge the gap between industry and academia by framing curricula and syllabi based on industrial and societal needs.

➢ To offer tasks for experiential technology-intensive knowledge through collaborative and interdisciplinary activities.

➢ To provide appropriate forums to develop innovative talents, practice ethical values and inculcate as enduring learners.

➢ To facilitate students to nurture skills to practice their professions competently to meet the ever-changing needs of society

PROGRAMME EDUCATIONAL OBJECTIVES (PEO'S)

1. To train students with good of knowledge in core areas of Information Technology and related engineering so as to analyze, design, and synthesize data and technical concepts.

2. To inculcate in students to maintain high professionalism and ethical standards, effective oral and written communication skills, to work as part of teams.

3. To provide our graduates with learning environment awareness of the life-long learning needed for a successful professional career and to introduce them to written ethical codes and guidelines, perform excellence, leadership and demonstrate good citizenship.

4. To provide students with academic environment that is aware of excellence, leadership, entrepreneurship, ethical responsibility and ability to work in multidisciplinary teams.

5. To train students with excellent scientific and engineering knowledge so as to understand, analyze, design and create products and solutions for Software engineering problems.

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

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

9. 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.

10. Implement cost effective and improved system.

11. 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 behavior

DEPARTMENTAL ACADEMIC CALENDER

ACADEMIC CALENDAR

SY.B.Tech, T.Y.B.Tech and Final Year B.Tech ,MCA-II

(A.Y. 2025-26,SEMESTER-II)

Week No.	Month	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Events
1	January 2026		6	7	8	9	10	11	05 – Commencement of Academic Sem-I, 0610 – Declaration of Theory and Lab ISE Components, Updating ERP and LMS 09-Community activity-woman cell,Carrier Opportunities in Civil Session
2		12	13	14	15	16	17	18	➤ 11-Road safety Day-NSS ➤ 12-National Youth Day ➤ 14-Counselloer's session-Final year
3		19	20	21	22	23	24	25	➤ 25-National Voters Day Abroad education activity
4		26	27	28	29	30	31		➤ 26 – Republic Day, ➤ 31 – AMC Meeting ➤ Academic Dean Feedback
Instruction Days: 21									➤
4	February 2026							1	➤
5		2	3	4	5	6	7	8	03-04 – Display of Attendance and Counseling of Defaulters for the Month of January, 07-Cleanliness Drive at college-NSS,Abroad education activity 12-Woman's Safety Session-Woman cell,Counsellors session of FY
6		9	10	11	12	13	14	15	➤ 15 – Mahashivratri,16-Principal Feedback ➤ MOCk test conduction for competitive exams
7		16	17	18	19	20	21	22	➤ 19 – Ch. Shivaji Maharaj Jayanti, -Cultural ➤ 20-21-Annual Social Function
8		23	24	25	26	27	28		➤ ➤ 24-25 – Formative Feedback , ➤ 28 – AMC Meeting
Instruction Days: 22									➤
8	March 2026							1	➤
9		2	3	4	5	6	7	8	03-10 – CIE-I ➤ 04 – Holi (2nd Day), ➤ 05-06 – Display of Attendance and Counseling of Defaulters for the Month of February,Abroad Education Activity ➤ 08-Woman Health Check up camp-NSS ➤ 10-woman's Day celebration
10		9	10	11	12	13	14	15	➤ 13-CIE_1 Result Declaration

									Notes
11		16	17	18	19	20	21	22	➤ ➤ 19-Counsellors session-Final year ➤ 20 – Gudhi Padwa, 21 – Id-Ul-Fitr,
									➤
12		23	24	25	26	27	28	29	➤ 27 – Ram Navami, 28 – AMC Meeting
13		30	31						➤ 31 – Mahavir Janmakalyanak
Instruction Days: 21									➤
13	**April 202**			1	2	3	4	5	➤ 01-02 – Display of Attendance and Counseling of Defaulters for the Month of September, 03 – Good Friday ➤
14		6	7	8	9	10	11	12	➤
15		13	14	15	16	17	18	19	➤ ➤ 14 – Dr. Babasaheb Ambedkar Jayanti,

Week Days

DEPARTMENTAL TIME TABLE

Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur
Autonomous Institute, NAAC 'A' & NBA Accredited
Approved by A.I.C.T.E, New Delhi, Recognized by Govt. of Maharashtra
Department of Master of Computer Application

Class: FY-MCA
Year: 2025 – 2026

Date: 06/02/2026
w.e.f. : 09/02/2026
Class Coordinator: Prof. S. N. Wadkar

SN	TIME	MON	TUE	WED	THU	FRI
1	09:30 am - 10:30 am	Web Technology (Prof. P.N. Patil)	Web Technology (Prof. P.N. Patil)	Web Technology (Prof. P.N. Patil)	Value Education (Prof. V. A. Landage)	F1-MiniProj-(Prof. VAL) F2-Java P-(Prof. PVK) F3-Prof. Com.(Prof. AMM)
2	10:30 am - 11:30 am	Internet of Things (Prof. S.N. Wadkar)	Internet of Things (Prof. S.N. Wadkar)	Internet of Things (Prof. S.N. Wadkar)	Professional Communication (Prof. A. M. More)	
	11.30 am - 11.40 am - SHORT BREAK					
3	11:40 am - 12:40 pm	Java Programming (Prof. P.V. Kothawale)	Java Programming (Prof. P.V. Kothawale)	Java Programming (Prof. P.V. Kothawale)	F1-MiniProj-(Prof. VAL) F2-MiniProj- (Prof. PNP) F3-Java P -(Prof. PVK)	F1-Java P -(Prof. PVK) F2-MiniProj-(Prof. PNP) F3-MiniProj- (Prof. SAB)
4	12:40 pm - 01:40 pm	Data Comm. and N/w (Prof. V.A. Landage)	Internet of Things - T (Prof. S.N. Wadkar)	Data Comm. and N/w (Prof. V. A .Landage)		
	01.40 pm - 02.30 pm - LUNCH BREAK					
5	02:30 pm - 03:30 pm	F1-Prof.Com.(Prof.AMM) F2-MiniProj-(Prof. PNP) F3-Java P-(Prof. PVK)	F1-Java P-(Prof. PVK) F2-Web T-(Prof. PNP) F3-MiniProj-(Prof. SAB)	F1-MiniProj-(Prof. VAL) F2-Java P -(Prof.PVK) F3-Web T-(Prof. PNP)	F1-Web T-(Prof. PNP) F2-Prof. Com.(Prof.AMM) F3-MiniProj-(Prof. SAB)	Data Comm. and N/w (Prof. V.A.Landage)
6	03:30 pm - 04:30 pm					Value Education (Prof. V. A. Landage)
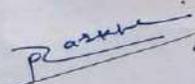
Prof. R.S. Parkhe
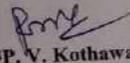
Prof. P. V. Kothawale
HOD
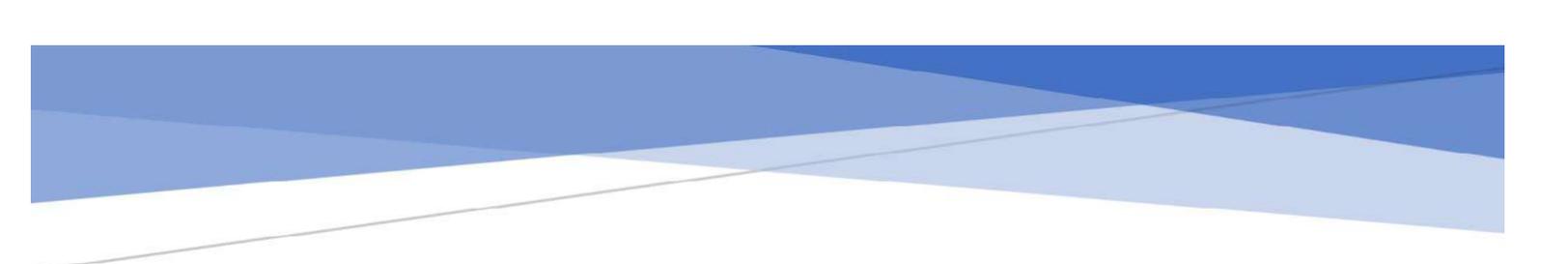
STRUCTURE OF SYLLABUS

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Teaching and Evaluation Scheme
MCA (Master of Computer Application)
First Year MCA. (Semester- II)

Sr. No.	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	Evaluation Scheme							
								Theory				Practical			
								CIE			ESE	CIE	ESE		TOTAL
								T-I	T-II	ISE					
1	01MCL111	Data Communication and Network	3	1	--	4	4	20	20	10	50	--	--		100
2	01MCL112	Web Technology	3		--	3	3	20	20	10	50	--	--		100
3	01MCL113	Java Programming	3		--	3	3	20	20	10	50	--	--		100
4		Program Elective-II	3	1	-	4	4	20	20	10	50	--	--		100
5	01MCP114	Mini Project	--	--	6	6	3	--	--	--		50	50		100
6	01MCP115	Web Technology	--	--	2	2	1	--	--	--	--	50	50		100
7	01MCP116	Java Programming	--	--	4	4	2					50	50		100
8	01MCP117	Professional Communication	1	--	2	2	2	--	--	--	--	50	50		100
9	01MCL118	Audit Course - II	2	--	--	2	Audit	--	--	--	50	--	--		50
		Total	15	02	14	30	22	80	80	40	250	200	200		850

L- Lecture , T- Tutorial , P- Practical , T-I-Test I, T-II- Test II,
ISE- In Semester Evaluation, CIE- Continuous Internal Evaluation, ESE- End Semester Examination,

Program Elective -II

Sr. No.	Course Code	Courses
01	01MCL119	Internet of Things
02	01MCL120	Cyber Security

COURSE DETAILS/SYLLABUS

Master of Computer Application Sem – II

01MCL111: Data communication and Network

Course Details:

Course Details Class	First Year M.C.A. Sem-II
Course Code and Course Title	01MCL111: Data communication and Network
Prerequisites	Basics of Computer Network
Teaching scheme: Lectures	3 Hrs. + 1Tut
Credits	3 + 1
Evaluation Scheme ESE + CIE for Theory	50 (ESE) + 50 (CIE)

Teaching scheme	Examination scheme
Lectures: 3 Hrs. /Week	Theory: 100 Marks, 50 (ESE) + 50 (CIE)
Tutorial: --NA	TW: NA

Course Outcomes:

1. Student will able to understand the basic concepts of data communication and Networking.
2. Student will able to evaluate the performance of various networking models.
3. Student will able to analyze the performance of network on the basis of different services provided by it.
4. Student will able to identify security threats to network and tools to control network security.

UNIT 1 : Introduction to Networking and Data communication   **(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 : Network Models and Services   **(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   (12 HOURS)

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

UNIT 4 : Network Vulnerabilities   (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, Key oggers, 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.

01MCL112: Web Technology

CourseDetails:

Course Details Class	First Year M.C.A. Sem-II
Course Code and Course Title	01MCL112: 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	50 (ESE) + 50 (CIE)

Teaching scheme	Examination scheme
Lectures: 3 Hrs. /Week	Theory: 100 Marks, 50 (ESE) +50 (CIE)
Practical: 2 Hr./Week	POE: 50 Marks , (CIE): 50 Marks

Course Outcomes:

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

UNIT 1 : Overview of HTML   (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

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UNIT 2 : ADO and ADO.NET   (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.

UNIT 3 : Understanding ASP.NET   **(12 HOURS)**

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 Custom Validation, Performing data access – Using Sql Data Sourcecontrol, using Grid View control, Form View, Repeater, Data List and ListView Developing 3-tier application using Object Data source.

UNIT 4 : Introduction to CSS   **(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 oncovering 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

01MCL113: Java Programming

Course Details:

Course Details Class	First Year M.C.A. Sem-II
Course Code and Course Title	01MCL113: Java Programming
Prerequisites	Basic understanding of C++ and html.
Teaching scheme: Lectures + Practical	3Hrs. + 4 Hr.
Credits	3 + 2
Evaluation Scheme ESE + CIE for Theory	50 (ESE) + 50 (CIE)

Teaching scheme	Examination scheme
Lectures: 3 Hrs. /Week	Theory: 100 Marks, 50 (ESE) +50 (CIE)
Practical: 2 Hr./Week	POE: 50 Marks , (CIE): 50 Marks

Course Outcomes :

1. Students will be able to articulate the principle of object-oriented problem solving &programming**.**

2. Students will be able to program using multithreading, networking concept & develop web applications using servlet and jsp.

3. Students will be able to applications using database concepts
4. Students will be able to understand Advanced Java Concepts like Spring Boot, Micro services, Web services

UNIT 1 **(12 HOURS)**

Introduction to Java Programming:

Java Features, JVM, JIT Compiler, Java Programing Basics, Data Types,

Control Flow, Arrays, Jagged Array.

OOPS:

Introduction, Class, Object, Static Keywords, Constructors, this keyword, Inheritance, Inner class, Anonymous Inner class, super keyword, Polymorphism   (overloading   and   overriding), Abstraction, Encapsulation, Abstract Classes, Interfaces, Packages.

UNIT 2   **(12 HOURS)**

Multithreading & Servlet, JSP:

Multithreading and Concurrency in Java Networking, Socket Programming, Exception Handling, Logging Generics and Collections Framework classes, Servlet Filters, JSP Syntax and Scripting Elements, Expression Language (EL) and JSP Standard Tag Library (JSTL), Model View Controller (MVC) architecture using Servlets and JSP

UNIT 3   **(12 HOURS)**

Java Database Connectivity (JDBC) & Hibernate:

JDBC overview, Architecture, Steps to create JDBC Application, Drivers, Database connection statements, Resultsets,

Hibernate framework application, Introduction Working on Hibernate framework and its advantage and disadvantage, Introduction to Using Hibernate framework in a live application.

UNIT 4   **(12 HOURS)**

Advanced Java Concepts

Types of software architectures, SOA and Monolith Architecture, Why Micro services. Detailed Micro Service Architecture, App Layer, Business Layer, Enteprise Layer, Infra Layer, Need of Spring Boot, Difference between Spring & Spring Boot, Advantages with Micro Services

  Web Services: Introduction to REST ful Web Services Building and Consuming REST ful APIs using JAX-RS SOAP Web Services with JAX-WS

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

Text Books:
1. Cay Horstmann and Gary Cornell - Core Java- Volume I Fundamentals, Pearson, Eight edition
2. Cay Horstmann and Gary Cornell - Core Java- Volume II - Advanced Features, Pearson, Eight edition
3. Bryan Basham, Kathy Sierra Head First Servlets and JSP, O'Reilly

<h1 style="text-align:center">01MCL119: Internet of Things</h1>

**Course
Details:**

Course Details Class	First Year M.C.A. Sem-II
Course Code and Course Title	01MCL119: Internet of Things
Prerequisites	Computer Fundamentals.
Teaching scheme: Lectures +Tutorial	3 Hrs. + 1 Hr.
Credits	3 + 1
Evaluation Scheme ESE + CIE for Theory	50 (ESE) + 50 (CIE)

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

Course Outcomes:

1. Understand the role of IoT in various application domains.
2. Illustrate different technologies of IoT.
3. Identify various communication protocols used for IoT.
4. Elaborate emerging trends in IoT.

Unit 1: Introduction to IoT   **(12 HOURS)**
Fundamentals of IoT, IoT architecture: Design principals of IoT architecture, Outline of IoT architecture,IoT architectural Reference Model (ARM), Functional view, Information View, Deployment View and OperationalView, Various platforms of IoT, Real time examples of IoT, Challenges of IoT.

Unit 2: Arduino Environment   **(12 HOURS)**
Introduction to Arduino Uno, Arduino IDE, Software and Libraries, Basics of Embedded C programming for Arduino, Interfacing basic hardware components with Arduino, Types of Sensors, Working of Sensors, Interfacing Sensors with Arduino.

Unit 3: RFID Technology and Communication Technologies: **(12 HOURS)**
RFID, IoT objects and services, principles of RFID, Components of an RFID system, RFID reader,Tags, middleware, Sensor nodes, connecting nodes, networking nodes. WPAN Technologies:Introduction to IEEE 802.15.4 standard, Bluetooth, Zigbee, IEEE 802.15.6; WBANS, NFC, IEEE 802.11 WLAN, Cellular and mobile technologies.

Unit 4: RaspberryPi and Emerging Trends in IoT   (12 HOURS)

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

Text Books:

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

Reference Books:

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

01MCL120: Cyber Security

Course Details:

Course Details Class	Second Year M.C.A. Semester II
Course Code and Course Title	01MCL120: Cyber Security
Prerequisites	Computer Fundamentals
Teaching scheme: Lectures + Tutorial	3 Hrs. + 1 Hr.
Credits	3 + 1
Evaluation Scheme ESE + CIE for Theory	50 (ESE) + 50 (CIE)

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

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, SocialNetwork 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 Honeynets.

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.
6. Information & Network Security for GTU, I. A. Dhotre V. S. Bagad, Technical publication,
7. Cyber frauds, cyber crimes and law in India, Pavan duggal.
8. Digital forensics, DSCI.Nasscom, 2012.
9. Cyber crime investigation, DSCI.Nasscom, 2013 Other resources.
10. Dr. Farooq Ahmad, Cyber Law in India, Allahbad Law Agency- Faridabad.

01MCP114: Mini Project

Course Details:

Course Details Class	Second Year M.C.A. Semester II
Course Code and Course Title	**01MCP114: Mini Project**
Prerequisites	**Computer Fundamentals**
Teaching scheme: Practical	6 Hrs.
Credits	3
Evaluation Scheme ESE + CIE for Theory	-

Teaching scheme	Examination scheme
Lectures: NA	NA
Practical: 8 Hr./Week	POE: 50 (ESE) +50 (CIE)

Course Outcomes:

After completion of this course student should be able to

1. Identify the problem in existing system.
2. Develop SRS document for proposed system.
3. Develop application using appropriate technology platform.
4. Validate the developed application

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

01MCP117: Professional Communication

Course Details:

Course Details Class	First Year M.C.A. Sem-I
Course Code and Course Title	01MCP117: Professional Communication
Prerequisites	Business Management
Teaching scheme: Practical + Theory	1Hr. +1 Hr
Credits	1 + 1
Evaluation Scheme ESE + CIE for Theory	NA

Teaching scheme	Examination scheme
Lectures: --	Practical:
Practical: 2 Hr./Week	POE: **50 (ESE)** +**50 (CIE)**

Course Outcomes:

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

UNIT 1 (**9 HOURS**)

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

UNIT 2 (**9 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

VALUE EDUCATION

Course Details:

Course Details Class	First Year M.C.A. Sem-I
Course Code and Course Title	01MCL118: Audit Course-II
Prerequisites	Value Education
Teaching scheme: Lectures	2 Hrs.
Credits	--
Evaluation Scheme CIE for Theory	50 (ESE)

Teaching scheme	Examination scheme
Lectures: 2 Hrs. /Week	Theory: 50 Marks (ESE)
Tutorial: NA	TW: NA

Course Outcomes:

1. Understand the significance of ethical human conduct and self-development
2. Adopt value-based living and holistic technologies to save nature
3. Practice Self-control. Honesty through Studying effectively all religious messages

UNIT 1. VALUES AND SELF-DEVELOPMENT   (4 HOURS)

Values and self-development. Social values and individual attitudes. Work ethics, Indian vision of humanism. Moral and non- moral valuation. Standards and principles. Value judgments.

UNIT 2. CULTIVATION OF VALUES   (4 HOURS)

Importance of cultivation of values. Sense of duty. Devotion, Self-reliance. Confidence, Concentration. Truthfulness, Cleanliness. Honesty, Humanity. Power of faith, National Unity. Patriotism. Love for nature, Discipline.

UNIT 3. PERSONALITY AND BEHAVIOR DEVELOPMENT   (4 HOURS)

Personality and Behavior Development - Soul and Scientific attitude. Positive Thinking. Integrity and discipline. Punctuality, Love and Kindness. Avoid fault Thinking. Free from anger, Dignity of labor. Universal brotherhood and religious tolerance. True friendship. Happiness vs suffering, love for truth. Aware of self-destructive habits. Association and Cooperation. Doing best for saving nature.

UNIT 4. CHARACTER AND COMPETENC   (4 HOURS)

Character and Competence –Holy books vs Blind faith. Self-management and Good health.

Science ofreincarnation. Equality, Nonviolence, Humility, Role of Women.

UNIT 5. SELF CONTROL **(4 HOURS)**

All religions and same message. Mind your Mind, Self-control. Honesty, Studying effectively.

Text Books:

1. Chakroborty, S.K. ‒Values and Ethics for organizations Theory and practice‖, Oxford University Press, New Delhi.

References:

1. R.P. Shukla, ‒Value education and human rights‖.

TEACHING PLAN

Web Technology			
Sr. NO	**TOPIC**	**Hrs**	**Teaching Pedaogoy**
Unit No: - 1. Overview of HTML:			
1.	Overview of HTML, Structure of HTML document.	12 Hrs	Lecture (ICT Tools)
2.	Formatting text with HTML, adding local and remote links, adding graphics, creating lists in HTML.		Lecture (ICT Tools)
3.	Creating tables in HTML.		Lecture (ICT Tools)
4.	Dividing the window with frames, Building interactivity with forms.		Lecture (ICT Tools)
5.	Formatting site with cascading style sheets.		Lecture (ICT Tools)
6.	Image maps, creating client-side and server-side image maps.		Lecture (ICT Tools)
7.	Various HTML Editors JavaScript Overview, Data types, variables, scope of variables.		Lecture (ICT Tools)
8.	Casting, data type conversion rules, Expressions and operators.		Lecture (ICT Tools)
9.	Arrays. Built-in functions, and Built-in objects- String, Date, Math.		Lecture (ICT Tools)
10.	Types of dialog boxes-alert, prompt, confirm.		Lecture (ICT Tools)
11.	Custom Functions.		Lecture (ICT Tools)
12.	Working with Frames, Forms, Form elements and Form validation.		Lecture (ICT Tools)
Unit No: - 2. ADO and ADO.NET:			
13.	Introduction ADO and ADO.NET.	11 Hrs	Lecture (ICT Tools)
14.	Comparison between ADO and ADO.NET.		Lecture (ICT Tools)
15.	Benefits offered by ADO.NET.		Lecture (ICT Tools)
16.	ADO.NET managed providers.		Lecture (ICT Tools)
17.	SQL managed providers.		Lecture (ICT Tools)
18.	ADO.NET, OLEDB managed providers.		Lecture (ICT Tools)
19.	Creating Data binding in ADO.NET.		Lecture (ICT Tools)
20.	Introduction to SQL Server.		Lecture (ICT Tools)
21.	Introduction to SQL Server.		Lecture (ICT Tools)
22.	Creating tables, Views.		Lecture (ICT Tools)
23.	Creating stored procedure.		Lecture (ICT Tools)
Unit No: - 3. Understanding ASP.NET:			

24.	Architecture of ASP.NET web application.		Lecture (ICT Tools)
25.	Understanding ASP.NET page structure.		Lecture (ICT Tools)
26.	Page level events.		Lecture (ICT Tools)
27.	Using standard controls, validation controls, Rich controls.		Lecture (ICT Tools)
28.	Designing web sites with master pages and themes.		Lecture (ICT Tools)
29.	ASP.NET folder structure.		Lecture (ICT Tools)
30.	Validation process. Validation controls. Validation Groups and Custom Validation.	13 Hrs	Lecture (ICT Tools)
31.	Performing data access using SqlDataSource control.		Lecture (ICT Tools)
32.	Performing data access using GridView control.		Lecture (ICT Tools)
33.	Performing data access using Repeater.		Lecture (ICT Tools)
34.	Performing data access using DataList and ListView.		Lecture (ICT Tools)
35.	Developing 3-tier application using Object Data source.		Lecture (ICT Tools)
36.	Architecture of ASP.NET web application.		Lecture (ICT Tools)
Unit No: - 4. Introduction to CSS:			
37.	State management.		Lecture (ICT Tools)
38.	Caching.		Lecture (ICT Tools)
39.	AJAX		Lecture (ICT Tools)
40.	AJAX Extenders.		Lecture (ICT Tools)
41.	Building and understanding web services.	11 Hrs	Lecture (ICT Tools)
42.	Anatomy of a web service.		Lecture (ICT Tools)
43.	Overview of web service namespaces.		Lecture (ICT Tools)
44.	Building a simple web service.		Lecture (ICT Tools)
45.	Introduction to CSS.		Lecture (ICT Tools)
46.	Types of CSS.		Lecture (ICT Tools)
47.	Applying CSS to Master pages in ASP.NET.		Lecture (ICT Tools)

Sr. NO	TOPIC	Hrs	Teaching Pedaogoy
	Chapter No: - 1. Introduction to Java Programming:		
1.	Java Features, JVM, JIT Compiler,		Chalk andboard,
2.	Java Programing Basics, Data Types,		Chalk andboard,
3.	Control Flow, Arrays, Jagged Array.		Chalk andboard,
4.	OOPS: Introduction, Class, Object,		PPTs
5.	Static Keywords, Constructors,		PPTs
6.	this keyword, Inheritance,		Chalk andboard,
7.	Inner class,Anonymous Inner class,		Chalk andboard,
8.	super keyword, Polymorphism		Chalk andboard,
9.	Abstraction, Encapsulation,	12 Hrs	PPTs
10.	Abstract Classes,		PPTs
11.	Interfaces,		Chalk andboard,
12.	Packages.		Chalk andboard,
	Chapter No: - 2. Multithreading & Servlet, JSP:		
13.	Multithreading and Concurrency in Java Networking,		PPTs
14.	Socket Programming, Exception Handling,		PPTs
15.	Logging Generics		PPTs
16.	Collections Framework classes,		PPTs
17.	Servlet Filters,		PPTs
18.	JSP Syntax		Chalk andboard,
19.	Expression Language (EL)		Chalk andboard,
20.	Scripting Elements,		Chalk andboard,
21.	JSP Standard Tag Library (JSTL),		Chalk andboard,
22.	Model View Controller (MVC) architecture	12 Hrs	Chalk andboard,
23.	MVC using Servlets		Chalk andboard,
24.	MVC using JSP		Chalk andboard,
	Chapter No: - 3. Java Database Connectivity (JDBC) & Hibernate:		
25.	Introduction to Java Database Connectivity (JDBC) & Hibernate		PPTs
26.	JDBC overview		PPTs
27.	JDBC Architecture,		PPTs
28.	Steps to create JDBC Application,		PPTs
29.	Drivers,		PPTs
30.	Database connection		PPTs
31.	Statements,		PPTs
32.	Resultsets,		
33.	Hibernate framework application,	12 Hrs	PPTs
34.	Introduction Working on Hibernate framework		PPTs
35.	Advantage and disadvantage,		PPTs
36.	Introduction to Using Hibernate framework in a live application.		PPTs
	Chapter No: - 4. Advanced Java Concepts:		
37.	Types of software architectures,		PPTs
38.	SOA and Monolith Architecture,		PPTs
39.	Why Micro services.		PPTs
40.	Detailed Micro Service Architecture,		PPTs
41.	App Layer, Business Layer,		PPTs
42.	Enteprise Layer,		PPTs
43.	Infra Layer,		PPTs
44.	Need of Spring Boot,		PPTs

45.	Difference between Spring & Spring Boot, Advantages with Micro Services	12	PPTs
46.	**b Services:** Introduction to RESTful Web Service	Hrs	PPTs
47.	Building and Consuming RESTful APIs using JAX-RS		PPTs
48.	SOAP Web Services with JAX-WS		Chalk and board,

Data Communication & Networking			
Sr. No.	**Topic**	**Hrs**	**Teaching Pedagogy**
1	Need of Networking	1	Lecture + Discussion
2	Components of Data Communication	1	Lecture
3	Transmission Media – Overview	1	Lecture
4	Network Architecture: Client–Server	1	Lecture + Examples
5	Network Architecture: Peer-to-Peer	1	Lecture
6	Categories of Networks: LAN	1	Lecture
7	Categories of Networks: MAN & WAN	1	Lecture
8	Network Topologies: Bus & Ring	1	Lecture + Diagram
9	Network Topologies: Star & Mesh	1	Lecture + Diagram
10	Guided Media: Twisted Pair & Coaxial	1	Lecture
11	Guided Media: Fiber Optic Cable	1	Lecture
12	Unguided Media & Satellite Communication	1	Lecture
13	OSI Reference Model – Overview	1	Lecture
14	OSI Model – Lower Layers	1	Lecture
15	OSI Model – Upper Layers	1	Lecture
16	TCP/IP Reference Model	1	Lecture
17	OSI vs TCP/IP Comparison	1	Comparative Study
18	Protocol Standards	1	Lecture
19	Application Layer – DNS & HTTP	1	Lecture
20	Application Layer – SMTP, FTP, Telnet	1	Lecture
21	Presentation Layer – Introduction	1	Lecture
22	Presentation Layer Services	1	Lecture
23	Session Layer – Introduction	1	Lecture
24	Session Layer Services	1	Lecture
25	Transport Layer – Overview	1	Lecture
26	Transport Layer Primitives	1	Lecture
27	Transport Layer Protocols: TCP	1	Lecture
28	Transport Layer Protocols: UDP	1	Lecture
29	Network Layer – IP Protocol	1	Lecture
30	IP Addressing	1	Lecture
31	Connection-Oriented vs Connectionless	1	Lecture
32	Routing Algorithms – Shortest Path	1	Lecture
33	Routing Algorithms – Flooding & Distance Vector	1	Lecture
34	Congestion Control	1	Lecture
35	Data Link Layer – Protocols	1	Lecture
36	DLL Services: Framing, Error & Flow Control	1	Lecture
37	Introduction to Network Vulnerabilities	1	Lecture
38	Threats in Transit & Protocol Flaws	1	Lecture
39	Impersonation Attacks	1	Lecture
40	Active & Passive Attacks	1	Lecture
41	Malware: Virus & Worm	1	Lecture
42	Malware: Trojan & Ransomware	1	Lecture
43	Hacking, Cracking & Sniffing	1	Lecture
44	Spoofing, DoS & DDoS	1	Lecture
45	Botnets, Logic Bombs & Rootkits	1	Lecture
46	Identification of Network Vulnerabilities	1	Lecture
47	Network Security Controls	1	Lecture
48	Basic Cryptography Terminologies	1	Lecture

Dept Of Master of Computer Application (MCA - I Sem II 2025-26)	
Lecture Plan: Internet of Things	
Lecture No	**Unit 1**
1	Fundamentals of IoT
2	IOT Architecture
3	Design principle of IOT architecture
4	outline of IOT architecture
5	IOT(RAM) Architecture Reference Model
6	Functional view
7	Information view
8	Deployment View
9	Operational view
10	various platform to IOT
11	Realtime examples of IOT
12	challenges of IOT
	Unit 2
13	Arduino Uno Architecture
14	Arduino IDE
15	software and libraries
16	Basic of Embedded
17	C Programming for Arduino
18	Interfacing basic hardware component with Arduino
19	types of sensors
20	working of sensors
21	interfacing sensors with sensors
22	IOT communication technologies
23	Bluetooth
24	RFID, WiFi
	Unit 3
25	RFID, IoT objects and services
26	principles of RFID
27	Components of an RFID system
28	RFID reader, Tags
29	middleware, Sensor nodes
30	connecting nodes
31	networking nodes
32	WPAN Technologies: Introduction to IEEE 802.15.4 standard
33	Bluetooth, Zigbee
34	IEEE 802.15.6; WBANS
35	NFC, IEEE 802.11 WLAN
36	Cellular and mobile technologies
	Unit 4
37	Introduction to RaspberryPi
38	Introduction to board of RaspberryPi
39	Operating system on RaspberryPi
40	configuring RaspberryPi
41	Programming RaspberryPi with python
42	Accessing RaspberryPi
43	other IOT devices
44	Role of big data
45	Machine learning
46	Cloud Computing in IOT

EXPERIMENT LIST

DR J.J.MAGDUM COLLEGE OF ENGINEERING, JAYSINGPUR.

Department of Master of Computer Application

Class: FY MCASEM- II

Subject: Web Technologies

Name of Faculty: Prof. P. N. Patil

Laboratory Name: Python lab

Lecture	Practical	Tutorial		Total Hrs/Wk.
3	6	---		09
Theory	Term work	OE	POE	Total Marks
100	50	-	50	200

Experiment List

Expt. No.	Name of Experiment	Nature of Experiment	CO
1	Exploring the Functionality of HTML Tags	Non-Performing	1
2	Design a basic web page using HTML structure and text formatting	Performing	1
3	Create web pages with links, images, lists and tables	Performing	1
4	Develop interactive web forms with validation using HTML & JavaScript	Performing	1
5	Demonstrate the use of frames and iframes in HTML	Performing	1
6	Create and Configure SQL Server Database and Tables	Performing	2
7	Perform CRUD operations using SQL queries	Performing	2
8	Create ASP.NET Web Application	Performing	3
9	Implement Standard Server Controls in ASP.NET	Performing	3
10	Apply Inline, Internal & External CSS	Performing	4
11	Apply Cascading Style Sheets (CSS) for webpage layout and styling	Performing	4

EXPERIMENT LIST

Java Programming

Academic Year 2025-26 SEM-II

Exp. No.	Name of Experiment	Performing / Non Performing	Course Outcome
01	Write a java program for Calculation of Employee salary that includes variables, Data types and Operators.	Performing	CO1
02	Write a program for Implementation of Students grade application using Class, Object and Methods	Performing	CO1
03	Write a program to Implement Inheritance in java using – a. Class (Multilevel and Hierarchical Inheritance) b. Interface (Multiple Interface)	Performing	CO2
04	Write a java program to demonstrate package (Use Any Application)	Performing	CO2
05	Write a program to implement multithreading by creating a thread and assign a task to it in two ways - A. Extending Thread class B. Implementing Runnable interface	Performing	CO3
06	Write a java programming to implement Clent/Server Programing using TCP/IP Socket	Performing	CP3
07	Write a JSP program to implement - JSP Syntax and Scripting Elements, Expression Language (EL)	Performing	CO3
08	Installation of an Apache Tomcat web server on Windows	Non Performing	CO3
09	Write a JSP program to implement and JSP Standard Tag Library (JSTL)		CO3
10	Write a program to create a student registration form and store Registration data for login into Database using JDBC and Insert query	Performing	CO4
11	Write a program to retrieve Login information from Database using JDBC and Select query and ResultSet	Performing	CO4
12	Write a program to create an executable Spring Boot Application.	Performing	CO4

FACULTY LIST

DEPARTMENT FACULTY LIST

Academic Year- 2025-2026 SEM- II

Sr. No.	Faculty Name
01	Prof. P. V. Kothawale
02	Prof. R. S. Parkhe
03	Prof. P. N. Patil
04	Prof. S. A. Bhagwat
05	Prof. S. N. Wadkar
06	Prof. V. A. Landage

STAFF LIST

DEPARTMENT STAFF LIST

Academic Year- 2025-2026 SEM- II

Sr. No.	Staff Name
01	Mr. R. S. Khandekar (Tech. Assistant)
02	Mr. D. S. Suryvanshi (Peon)

2025-26 Sem - IV
Student Information Manual

MCA

Student Information Manual (SIM)

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2. Vision of Institute
Mission of Institute
Quality Policy
3. Vision of Department
Mission of Department
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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
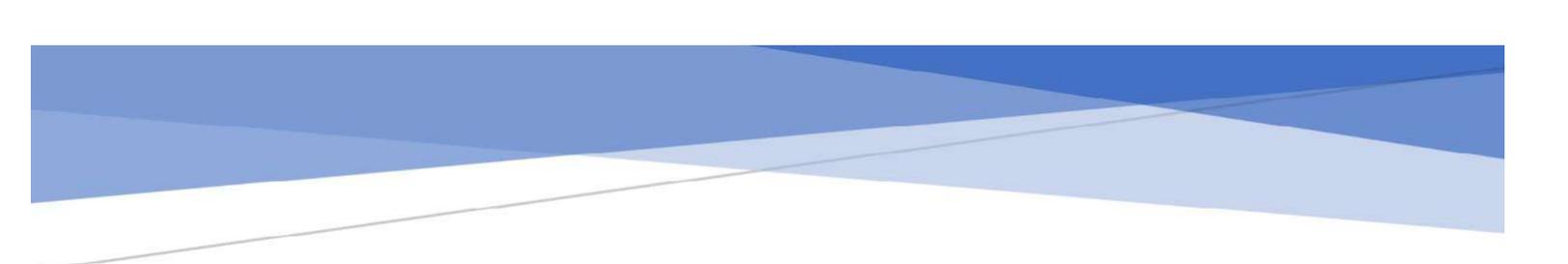Course details/syllabus
Recommended Books
Teaching Plan
List of Experiment
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10. Department Faculty
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INSTITUTE INFORMATION

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

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

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

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

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

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

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

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

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

The institute is having 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

M1: To produce competent technocrats to meet modern societal and industrial challenges.
M2: To create ethical and skilled human resources through quality education and various extension activities and outreach programs.
M3: To leverage technical expertise to solve societal issues for its sustainable development

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.
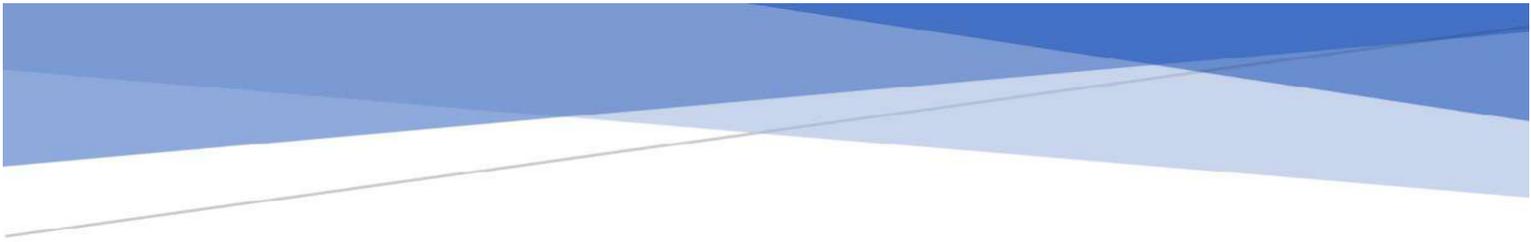
MISSION OF DEPARTMENT

M1: To offer high-grade, value-based Post-graduate programme in the field of Computer Applications.
M2: To provide conductive environment so as to achieve excellence in teaching – learning, and research and development activities.
M3: To bridge the gap between industry and academia by framing curricula and syllabi based on industrial and societal needs.

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,

PO1: Apply knowledge and skills to solve information technology problems using advanced available tools.

PO2: Function effectively in multi-disciplinary teams and work as a team member and team leader to get technical solutions.

PO3: 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.

PO4: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

PO5: 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.

PO6: 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.

PO7: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

PO8: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

PO9: 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.

PO10: Implement cost effective and improved system.

PO11: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

DEPARTMENTAL ACADEMIC PLANNER
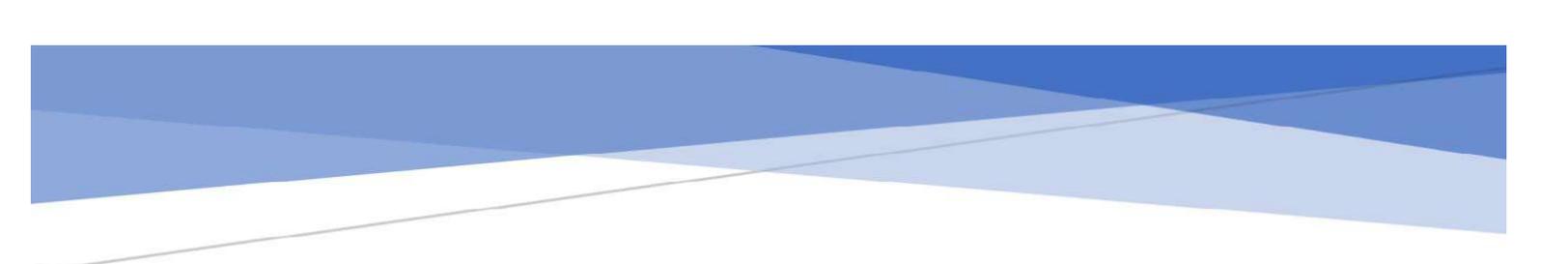
ACADEMIC CALENDAR

MCA-IV

(A.Y. 2025-26,SEMESTER-IV)

Week No.	Month	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Events
1	**January 2026**		6	7	8	9	10	11	05 – Commencement of Academic Sem-I, 0610 – Declaration of Theory and Lab ISE Components, Updating ERP and LMS ➤ 09-Community activity-woman cell,Carrier Opportunities in Civil Session
2		12	13	14	15	16	17	18	➤ 11-Road safety Day-NSS ➤ 12-National Youth Day ➤ 14-Counselloer's session-Final year
3		19	20	21	22	23	24	25	➤ 25-National Voters Day Abroad education activity
4		26	27	28	29	30	31		➤ 26 – Republic Day, ➤ 31 – AMC Meeting ➤ Academic Dean Feedback
Instruction Days: 21									➤
4	**February 2026**							1	➤
5		2	3	4	5	6	7	8	03-04 – Display of Attendance and Counseling of Defaulters for the Month of January, 07-Cleanliness Drive at college-NSS,Abroad education activity ➤ 12-Woman's Safety Session-Woman cell,Counsellors session of FY
6		9	10	11	12	13	14	15	➤ 15 – Mahashivratri,16-Principal Feedback ➤ MOCk test conduction for competitive exams
7		16	17	18	19	20	21	22	➤ 19 – Ch. Shivaji Maharaj Jayanti, -Cultural ➤ 20-21-Annual Social Function
8		23	24	25	26	27	28		➤ ➤ 24-25 – Formative Feedback , ➤ 28 – AMC Meeting
Instruction Days: 22									➤
8	**March 2026**							1	➤
9		2	3	4	5	6	7	8	03-10 – CIE-I ➤ 04 – Holi (2nd Day), ➤ 05-06 – Display of Attendance and Counseling of Defaulters for the Month of February,Abroad Education Activity ➤ 08-Woman Health Check up camp-NSS ➤ 10-woman's Day celebration
10		9	10	11	12	13	14	15	➤ 13-CIE_1 Result Declaration

11		16	17	18	19	20	21	22	➢ ➢ 19-Counsellors session-Final year ➢ 20 – Gudhi Padwa, 21 – Id-Ul-Fitr,
									➢
12		23	24	25	26	27	28	29	➢ 27 – Ram Navami, 28 – AMC Meeting
13		30	31						➢ 31 – Mahavir Janmakalyanak
Instruction Days: 21									➢
13	**April 202**			1	2	3	4	5	➢ 01-02 – Display of Attendance and Counseling of Defaulters for the Month of September, 03 – Good Friday
14		6	7	8	9	10	11	12	➢
15		13	14	15	16	17	18	19	➢ ➢ 14 – Dr. Babasaheb Ambedkar Jayanti,

Week Days

		Su	Mo	Tu	We	Th	Fr	Sa	Events
	6									➢ Counsellor's session
16		20	21	22	23	24	25	26	➢ 23-24-CIE-II ➢ 24-25 – Summative Feedback
17		27	28	29	30				➢ ➢ 30 – PEC Meeting,

Instruction Days: 25

		Su	Mo	Tu	We	Th	Fr	Sa	Events
17						1	2	3	➢ ➢ 1 – Maharashtra Din and Buddha Pournima, ➢ 02-End of Academic Activities, Result declaration of CIE-II ➢ 02-07 – Remedial Classes
18	May 2026	4	5	6	7	8	9	10	➢ 05 – Submission of ISE Marks, ➢ 06 – Display of Attendance and Defaulters in the Semester, Finalization of List of Detained Students and Submission to the Office of Dean Academics cc to Principal, ➢ 07 – Freezing of Attendance and ISE (Theory and LAB) Marks
19		11	12	13	14	15	16	17	➢ 16-22 – End Semester Examination (Lab POE/ OE)
20		18	19	20	21	22	23	24	➢
21		25	26	27	28	29	30	31	➢ 26 – Start of End Semester Examination (Theory), 27 – Bakari Id

Instruction Days: 04

		Su	Mo	Tu	We	Th	Fr	Sa	Events
22		1	2	3	4	5	6	7	➢
23	June 2026	8	9	10	11	12	13	14	➢ 21-World Yoga Day
24		15	16	17	18	19	20	21	➢ 18 – End of End Semester Examination (Theory)
25		22	23	24	25	26	27	28	➢ 26 – Muharram
26		29	30						➢

Note:	A Common Mentoring Activity Slot is to be included during the Last Slot in the Regular Time-Table.
	An In-House Training Slot is to be included in the Regular Time-Table.
	The Probable Date of Result Declaration of End Semester Examination will be 8th July, 2026.
	The Probable Date of Reopening/ Commencement of Academic Year 2026-27 Sem – I (Odd Semester) will be 13th July, 2026.

DEPARTMENTAL TIMETABLE

Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur

Autonomous Institute, NAAC 'A' & NBA Accredited

Approved by A.I.C.T.E, New Delhi, Recognized by Govt. of Maharashtra

Department of Master of Computer Application

Class: SY-MCA **Date:** 03/01/2026

Year: 2025 – 2026 **Class Coordinator**: Prof. P.N.Patil

SN	TIME	MON	TUE	WED	THU	FRI	SAT (Working)
1	09:30 am -10:30 am			Internship Program			
2	10:30 am -11:30 am						Industrial Project + Internship (Seminar) Reporting
11.30 am - 11.40 am - SHORT BREAK						
3	11:40 am -12:40 pm		Internship Program			Blockchain (Prof. R. S. Parkhe) / Agile Software Development (Prof. S.A.Bhagwat)	Prof. PVK Prof. RSP Prof. PNP
4	12:40 pm -01:40 pm						Prof. SAB
	01.40 pm - 02.30 pm - LUNCH BREAK						Prof. SNW Prof. VAL
5	02:30 pm -03:30 pm	Blockchain (Prof. R. S. Parkhe)	Digital Forensic (Prof.V.A.Landage)	Blockchain (Prof. R. S. Parkhe)	Digital Forensic (Prof.V.A.Landage)	Digital Forensic (Prof.V.A.Landage)	
6	03:30 pm -04:30 pm	Agile Software Development (Prof. S.A.Bhagwat)	Digital Forensic-T (Prof.V.A.Landage)	Agile Software Development (Prof. S.A.Bhagwat)	Audit Course –IV (Prof. R.S.Parkhe)	Audit Course –IV (Prof. R.S.Parkhe)	

Prof. R. S. Parkhe
I/C Timetable

Prof. P. V. Kothawale
HOD

STRUCTURE OF SYLLABUS

Teaching and Evaluation Scheme
MCA (Master of Computer Application)
Second Year MCA. (Semester- IV)

Second Year MCA. (Semester- IV)

Sr. No.	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Course Credits	Evaluation Scheme							TOTAL
								Theory					Practical		
								CIE			ESE	CIE	ESE		
								T-I	T-II	ISE					
1	01MCL211	Agile Software Development	3		--	3	3	20	20	10	50	--	--		100
2	01MCL212	Block chain Technologies	3		--	3	3	20	20	10	50	--	--		100
3		Program Elective -IV	3	1	--	4	4	20	20	10	50	--	--		100
4	01MCP213	Internship(Seminar)	--	--	6	6	3	--	--	--	--	50	100		150
5	01MCP214	Industrial Project		--	12	12	6	--	--	--	--	100	100		200
6	01MCP215	SWAYAM.MOOC Course	--	--	--	--	1	--	--	--	--	50	--		50
7	01MCL216	Audit Course – IV	2	--	--	2	--	--	--	--	50	--	--		50
		Total	11	01	18	30	20	60	60	30	200	200	200		750

L- Lecture , T- Tutorial , P- Practical , T-I-Test I, T-II- Test II,
ISE- In Semester Evaluation, CIE- Continuous Internal Evaluation, ESE- End Semester Examination,

Open Elective -IV

Sr.No.	Course Code	Courses
01	01MCL217	Robotics and Automation
02	01MCL218	Digital Forensics

COURSE DETAILS/SYLLABUS

Master of Computer Application (MCA)
Under Faculty of Science and Technology (Engineering and Technology)
01MCL211: Agile Software Development
Part II Semester IV

CourseDetails:

Course Details Class	Second Year M.C.A. Sem-II
Course Code and Course Title	**01MCL211**: Agile Software Development
Prerequisites	Software Engineering
Teaching scheme: Lectures+ Tutorials	3 Hrs.
Credits	3
Evaluation Scheme ESE + CIE for Theory	50 (ESE) + 50 (CIE)

Teaching scheme	Examination scheme
Lectures: 3 Hrs. /Week	Theory: 100 Marks, 50 (ESE) +50 (CIE)
Tutorial: -	TW: --NA

Course Outcomes:
After completing the course student should be able to:

1. Describe the fundamental principles and practices associated with each of the agile development methods.

2. Compare agile software development model with traditional development models and identify the benefits and pitfalls.

3. Use techniques and skills to establish and mentor Agile Teams for effective software development.

4. Apply core values and principles of Agile Methods in software development.

Unit-I: Fundamentals of Agile Process: (12 HOURS)
Introduction and background, Agile Manifesto and Principles, Stakeholders and Challenges, Overview of Agile Development Models: Scrum, Extreme Programming, Feature Driven Development, Crystal, Kanban, and Lean Software Development.

Unit-II: Introduction to Scrum: (12 HOURS) Agile Scrum Framework, Scrum Artifacts, Meetings, Activities and Roles, Scrum Team Simulation, Scrum Planning Principles, Product and Release Planning, Sprinting: Planning,
Execution, Review and Retrospective; User story definition and Characteristics, Acceptancetestsand Verifying stories, Burn down chart, Daily scrum, Scrum Case Study.

Unit-III: Introduction to Extreme Programming (XP): **(12 HOURS)**

XP Lifecycle, The XP Team, XP Concepts: Refactoring, Technical Debt, Timeboxing, Stories, Velocity; Adopting XP: Pre-requisites, Challenges; Applying XP: Thinking- Pair Programming, Collaborating, Release, Planning, Development; XP Case Study.

Unit-IV: Agile Software Design and Development: **(12 HOURS)**
Agile design practices, Role of design Principles, Need and significance of Refactoring, Refactoring Techniques, Continuous Integration, Automated build tools, Version control; Agility
and Quality Assurance: Agile Interaction Design, Agile approach to Quality Assurance, Test Driven Development, Pair programming: Issues and Challenges.

Text Books:
1. Clinton Keith Agile Game Development
2. Agile Software Development: Principles, Patterns, and Practices Author: Robert C. Martin

Reference Books:
1. Craig Larman, ―Agile and Iterative Development: A manager's Guide, Addison-Wesley, 2004.
2. Ken Schawber, Mike Beedle, Agile Software Development with Scrum, Pearson, 2001.
3. Cohn, Mike, Agile Estimating and Planning, Pearson Education, 2006.
4. Cohn, Mike, User Stories Applied: For Agile Software Development Addison Wisley, 2004.

01MCL212: Block Chain Technology

Course Details:

Course Details Class	Second Year M.C.A. Sem-IV
Course Code and Course Title	01MCL212: Block Chain Technology
Prerequisites	**Basics of Languages:** Programming Skills, Cryptography Basics
Teaching scheme: Lectures	3 Hrs
Credits	3
Evaluation Scheme ESE + CIE for Theory	50 (ESE) + 50 (CIE)

Teaching scheme	Examination scheme
Lectures: 3 Hrs. /Week	Theory: 100 Marks, 50 (ESE) +50 (CIE)
Tutorial: NA	TW: NA

Course Outcomes:

1. To understand the concepts of block chain technology
2. State the basic concepts of block chain
3. Paraphrase the list of consensus and Demonstrate and Interpret working of Hyper ledger Fabric
4. Implement SDK composer tool and explain the Digital identity for government

UNIT – 1   **(12 HOURS)**

History: Digital Money to Distributed Ledgers -Design Primitives: Protocols, Security, Consensus, Permissions, Privacy- : Block chain Architecture and Design-Basic crypto primitives: Hash, Signature-Hash chain to Block chain-Basic consensus mechanisms.
Requirements for the consensus protocols-Proof of Work (PoW)-Scalability aspects of Block chain consensus protocols**:** Permissioned Block chains-Design goals-Consensus protocols for Permissioned Block chains.

UNIT – 2   **(12 HOURS)**

Decomposing the consensus process-Hyper ledger fabric components-Chain code Design and Implementation: Hyper ledger Fabric II:-Beyond Chain code: fabric SDK and Front End-Hyper ledger composer tool.

UNIT – 3   **(12 HOURS)**

Block chain in Financial Software and Systems (FSS): -Settlements, -KYC, -Capital markets-Insurance- Block chain in trade/supply chain: Provenance of goods, visibility, trade/supply chain finance, invoice management/discounting.

UNIT - IV   **(12 HOURS)**

Block chain for Government: Digital identity, land records and other kinds of record keeping between government entities, public distribution system / social welfare systems: Block chain Cryptography: Privacy and Security on Block chain.

TEXT BOOKS:

1. Mark Gates, ―Block chain: Ultimate guide to understanding block chain, bit coin, crypto currencies, smart contracts and the future of money‖, Wise Fox Publishing and Mark Gates 2017.
2. Salman Baset, Luc Desrosiers, Nitin Gaur, Petr Novotny, Anthony O'Dowd, Venkatraman Ramakrishna, ―Hands-On Block chain with Hyper ledger: Building decentralized applications with Hyperledger Fabric and Composer‖, 2018.
3. Bahga, Vijay Madisetti, ―Block chain Applications: A Hands-On Approach‖, Arshdeep Bahga, Vijay Madisetti publishers 2017.

References:

1. Andreas Antonopoulos, ―*Mastering Bitcoin: Unlocking Digital Crypto currencies‖*, O'Reilly Media, Inc. 2014.
    Melanie Swa, ―*Block chain* ‖,O'Reilly

01MCL217: Robotics and Automation

Course Details:

Course Details Class	Second Year M.C.A. Sem-II
Course Code and Course Title	01MCL217: Robotics and Automation Course
Prerequisites	Knowledge of basic electronics and electrical engineering.
Teaching scheme: Lectures+ Tutorials	3 Hrs. + 1Hr
Credits	3 + 1
Evaluation Scheme ESE + CIE for Theory	50 (ESE) + 50 (CIE)

Teaching scheme	Examination scheme
Lectures: 3 Hrs. /Week	Theory: 100 Marks, 50 (ESE) +50 (CIE)
Tutorial: 1 Hrs. /Week	TW: --NA

Course Outcome:
After successful completion of the course, students will able to:
1. Apply automation principles and strategies
2. Identify the automation need, type and method
3. Outline the fundamentals of robotics and its components
4. Design appropriate end effectors for various applications

UNIT-I: FUNDAMENTALS OF AUTOMATION **(12 HOURS)**
Definition, Types of Automation, Advantages, Goals and Issues in Automation, Industry 4.0, Components of an automatic system, Trends in Automation – PLC, DCS, SCADA, AI based Automation. Case Studies in Industrial Automation, Home Automation, Building Automation, Agricultural Automation, Medical Automation, Smart Cities and other applications, Future of Robotics and Automation

UNIT-II: APPLICATIONS OF ROBOTICS **(12 HOURS)**
Historical development of Robotics, Definitions of Industrial Robot, Type and Classification of Robots, Asimov_s laws of robotics, Robot configurations, Robot Components, Robot Degrees of Freedom, Work volume and work envelope, Robot Joints and symbols, Robot Coordinates, Robot Reference Frames, Resolution, accuracy and precision of Robot, Work cell control

UNIT-III: ROBOT DRIVE SYSTEMS AND END EFFECTORS **(12 HOURS)**
Pneumatic Drives, Hydraulic Drives, Mechanical Drives, Electrical Drives-D.C. Servo Motors, Stepper Motors, A.C. Servo Motors, BLDC-Salient Features, Applications and Comparison of all these Drives, Micro actuators, selection of drive, Grippers, Mechanical Grippers, Pneumatic and Hydraulic- Grippers, Magnetic Grippers, Vacuum Grippers; Two Fingered and Three Fingered Grippers; Internal Grippers and External Grippers; Advance Grippers- Adaptive grippers, Soft Robotics Grippers, Tactile Sensor Grippers; Various process tools as end effectors; Robot end effectors interface, Active and passive compliance, Selection and Design Considerations

UNIT-IV: ROBOT SENSORS   **(12 HOURS)**

Transducers and sensors, Sensors in robotics, Principles and applications of the following types of sensors- Proximity Sensors, Photo Electric Sensors, Position sensors – Piezo Electric Sensor, LVDT, Resolvers, Encoders – Absolute and Incremental: - Optical, Magnetic, Capacitive, pneumaticPosition Sensors, Range Sensors- Range Finders, Laser Range Meters, Touch Sensors, Force and torque sensors, Safety Sensor: Light Curtain, Laser Area Scanner, Safety Switches, Machine vision

Text Books:

1. Groover, M.P. Weiss, M. Nagel, R.N. &Odrey, N.G., Ashish Dutta, Industrial Robotics,
2. Technology, Programming & Applications, Tata McGraw Hill Education Pvt. Ltd. New Delhi
3. S. R. Deb, Robotics Technology and Flexible Automation, Tata McGraw Hill.
4. Groover M.P.-Automation, production systems and computer integrated manufacturing-
5. Prentice Hall of India.

Reference Books:

1. S B Niku, Introduction to Robotics, Analysis, Control, Applications, 2nd Edition, Wiley Publication, 2015.
2. Mikell P. Groover, Automation, Production Systems & Computer Integrated Manufacturing, PHI Learning Pvt. Ltd., New Delhi, ISBN: 987-81-203-3418-2, 2012
3. John Craig, Introduction to Robotics, Mechanics and Control, 3rd Edition, Pearson Education, 2009
4. R K Mittal & I. J. Nagrath, Robotics and Control, McGraw Hill Publication, 2015.
5. Mike Wilson, Implementation of Robotic Systems, ISBN: 978-0-124-04733-4
6. www.roboanalyzer.com

01MCP213: Internship (Seminar)

Course Details:

Course Details Class	Second Year M.C.A. Semester IV
Course Code and Course Title	01MCP213:Interenship(Seminar)
Prerequisites	Computer Fundamentals
Teaching scheme: Practical	6 Hrs.
Credits	3
Evaluation Scheme ESE + CIE for Theory	NA

Teaching scheme	Examination scheme
Lectures: NA	NA
Practical: 6 Hr./Week	POE: 100 Marks CIE: 50 Marks

Course Outcomes:
After completion of this course student should be able to
1. to 1. To develop and support a relevant and informed thesis, or point of view, that is appropriate forits 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 forthe discipline and effectively utilize the conventions of standard written English.

Nature of Internship (Seminar)
The aim of this Internship (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 Internship (Seminar) is to encourage and develop the personality, aptitude and knowledge of the students
1. Internship (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.
2. 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

Useful Links:
- http://www.geeksforgeeks.org/
- https://in.udacity.com/
- https://graphics.stanford.edu/~seander/bithacks.html
- https://www.youtube.com/results?search_query=mycodeschool
- https://www.hackerrank.com/

TEACHING PLAN

Digital Forensics			
Sr. No.	Topic	Hrs	Teaching Pedagogy
Unit 1: Introduction to Cyber Crime and Digital Evidence (12 Lectures)			
1	Cyber Crime: Definition, Types, Trends	1	Lecture + Discussion
2	Internet and Computers as Crime Enablers	1	Lecture + Case Examples
3	Prevention of Cyber Crimes	1	Lecture + Interaction
4	Global Perspective on Cyber Crime	1	Lecture
5	Digital Forensics: History and Evolution	1	Lecture
6	Importance and Scope of Digital Forensics	1	Lecture + Discussion
7	Rules and Principles of Digital Forensics	1	Lecture
8	Digital Forensic Investigation Process	1	Flowchart Explanation
9	Digital Evidence: Types and Characteristics	1	Lecture + Examples
10	Challenges in Evidence Handling	1	Case Discussion
11	Volatile Evidence and Handling Procedures	1	Demonstration
12	Incident Response: Overview and Methodology	1	Scenario-based Learning
Unit 2: Data Collection and Forensic Duplication (12 Lectures)			
13	Introduction to Data Collection	1	Lecture
14	Roles in Data Collection Process	1	Lecture + Discussion
15	Live Data Collection Techniques	1	Demonstration
16	Data Collection from Windows Systems	1	Hands-on Lab
17	Data Collection from Unix/Linux Systems	1	Hands-on Lab
18	Forensic Duplication: Concept and Need	1	Lecture
19	Rules of Forensic Duplication	1	Lecture
20	Forensic Duplication Tools	1	Tool Demo
21	Creating Forensic Image – Steps	1	Practical Demo
22	Hard Disk Imaging Practice	1	Hands-on Lab
23	Validation of Forensic Duplicates	1	Lecture + Demo
24	Documentation of Data Collection	1	Practice Session
Unit 3: Network Forensics and Data Analysis (12 Lectures)			
25	Introduction to IDS	1	Lecture
26	Types of IDS	1	Lecture
27	Advantages and Limitations of IDS	1	Discussion
28	Network Attacks: Port Scans & Spoofing	1	Case Examples
29	Malware Attacks: Trojans, Worms, Viruses	1	Lecture
30	Network Evidence Collection	1	Tool-based Demo

31		Email Forensics	1	Demonstration
32		Mobile Phone Forensics	1	Lecture + Tool Demo
33		Cloud Forensics	1	Lecture
34		Digital Forensic Tools Overview	1	Comparative Study
35		Data Analysis Techniques	1	Hands-on Practice
36		Forensic Report Writing	1	Workshop
Unit 4: Cyber Law (12 Lectures)				
37		Introduction to Cyber Law	1	Lecture
38		Need for Cyber Law in India	1	Lecture + Discussion
39		Bodies of Cyber Law	1	Lecture
40		Types and Levels of Cyber Crime Laws	1	Lecture
41		IT Act 2000 – Overview	1	Lecture
42		IT Act Amendments	1	Lecture
43		Mapping Cyber Crimes with IT Act	1	Case Mapping
44		Indian Penal Code and Cyber Crimes	1	Lecture
45		IPC Sections Related to Cyber Crime	1	Case Discussion
46		Honeypots – Concept and Types	1	Lecture
47		Legal Aspects of Honeypots	1	Discussion
48		Technology and Students – Indian Scenario	1	Seminar

	Agile Software Development
Lecture No	**Topics**
1	**Unit 1 Fundamentals of Agile Process**
1	Introduction and background
2	Agile Manifesto and Principles
3	Stakeholders and Challenges
4	Overview of Agile Development Models:
5	Scrum
6	Extreme Programming,
7	Feature Driven Development,
8	Crystal
9	Kanban
10	Lean Software Development
2	**Unit 2 Introduction to Scrum**
1	Agile Scrum Framework
2	Meetings,
3	Activities and Roles
4	Scrum Team Simulation
5	Scrum Planning Principles
6	Product and Release Planning
7	Sprinting: Planning
8	Execution
9	Review and Retrospective
10	User story definition and Characteristics
11	Acceptance tests and Verifying stories
12	Burn down chart
13	Daily scrum
14	Scrum Case Study
3	**Unit 3** : Introduction to Extreme Programming (XP)
1	XP Lifecycle
2	The XP Team
3	XP Concepts: Refactoring
4	Technical Debt
5	Timeboxing
6	Stories
7	Velocity
8	Adopting XP: Pre-requisites, Challenges
9	Applying XP: Thinking- Pair Programming
10	Collaborating
11	Release, Planning
12	Development; XP Case Study
4	**Unit 4 - Agile Software Design and Development**
1	Agile design practices
2	Role of design Principles
3	Need and significance of Refactoring
4	Refactoring Techniques
5	Continuous Integration

6	Automated build tools	
7	Version control	
8	Agility and Quality Assurance: Agile Interaction Design	
9	Agile approach to Quality Assurance	
10	Test Driven Development	
11	Pair programming: Issues and Challenges	

SYMCA – IV Semester : Blockchain Technologies 01MCL212

Lecture No.	Topic	HRs.	Teaching Pedagogy
Unit 1 : Introduction to Blockchain and Consensus Mechanisms			
1	Introduction to Blockchain & History: Digital Money	1	Lecture + PPT
2	Distributed Ledgers & Evolution of Blockchain	1	Lecture + Discussion
3	Design Primitives: Protocols & Security	1	Lecture
4	Consensus, Permissions & Privacy Concepts	1	Lecture + Examples
5	Blockchain Architecture & Design	1	Lecture + Diagram explanation
6	Cryptographic Primitives: Hash Functions	1	Lecture + Demo
7	Digital Signatures & Applications	1	Lecture
8	Hash Chain to Blockchain	1	Lecture + Illustration
9	Basic Consensus Mechanisms	1	Lecture + Case study
10	Consensus Protocol Requirements	1	Lecture
11	Proof of Work (PoW)	1	Lecture + Comparison
12	Scalability & Permissioned Blockchains	1	Lecture + Discussion
Unit 2 : Hyperledger Fabric: Architecture, Chaincode, and Tools			
13	Consensus Process Decomposition	1	Lecture
14	Overview of Hyperledger Fabric	1	Lecture + PPT
15	Hyperledger Fabric Architecture	1	Lecture + Diagram
16	Fabric Components: Peers, Orderers, CA	1	Lecture
17	Chaincode Concepts & Lifecycle	1	Lecture
18	Chaincode Design Principles	1	Lecture + Example
19	Chaincode Implementation	1	Demo
20	Hyperledger Fabric II – Advanced Features	1	Lecture
21	Beyond Chaincode: Fabric SDK	1	Lecture + Demo
22	Front-end Integration with Fabric	1	Demonstration
23	Hyperledger Composer Overview	1	Lecture
24	Composer Tool Demonstration	1	Hands-on
Unit 3 : Blockchain Applications in Finance and Supply Chain			
25	Blockchain in Financial Software Systems	1	Lecture
26	Blockchain for Settlements	1	Case study
27	KYC using Blockchain	1	Lecture + Discussion
28	Capital Markets Applications	1	Lecture
29	Blockchain in Insurance	1	Case study
30	Blockchain in Trade & Supply Chain	1	Lecture
31	Provenance of Goods	1	Case study
32	Supply Chain Visibility	1	Lecture
33	Trade & Supply Chain Finance	1	Lecture
34	Invoice Management using Blockchain	1	Lecture
35	Invoice Discounting Systems	1	Lecture
36	Industry Use Case Discussion	1	Seminar
Unit 4 : Blockchain for Government, Privacy, and Security			
37	Blockchain for Government – Overview	1	Lecture
38	Digital Identity using Blockchain	1	Lecture + Case study
39	Blockchain for Land Records	1	Lecture
40	Government Record Keeping Systems	1	Lecture
41	Public Distribution Systems	1	Lecture
42	Social Welfare Systems using Blockchain	1	Lecture
43	Blockchain Cryptography	1	Lecture
44	Privacy in Blockchain	1	Lecture
45	Security Issues in Blockchain	1	Lecture
46	Privacy-Preserving Techniques	1	Lecture
47	Emerging Trends in Blockchain Security	1	Seminar
48	Course Review & Discussion	1	Interactive session

SYMCA – IV Semester : Stress Management by Yoga - 01MCL216 (Audit Course-IV)

Lecture No.	Topic	HRs.	Teaching Pedagogy
Unit 1: Introduction to Yoga (Ashtanga Yoga)		
1	Introduction to Yoga: meaning, definition, history and importance	1	Lecture, PPT, discussion
2	Concept of Ashtanga Yoga according to Patanjali	1	Lecture, board explanation
3	Eight limbs: Yama, Niyama, Asana, Pranayama	1	Lecture, charts/diagrams
4	Eight limbs: Pratyahara, Dharana, Dhyana, Samadhi	1	Lecture, discussion
	Unit 2: Yama and Niyama (Do's and Don'ts)		
5	Introduction to Yama and its importance	1	Lecture, discussion
6	Yamas: Ahimsa, Satya, Asteya	1	Lecture, examples
7	Yamas: Brahmacharya and Aparigraha	1	Lecture, discussion
8	Application of Yama in daily life (Do's and Don'ts)	1	Discussion, participation
	Unit 3: Niyama		
9	Introduction to Niyama and personal discipline	1	Lecture, PPT
10	Shaucha and Santosha	1	Lecture, examples
11	Tapas and Swadhyaya	1	Lecture, discussion
12	Ishwar Pranidhan and role of Niyama	1	Lecture, reflection
	Unit 4: Asana and Pranayama		
13	Introduction to Asana: meaning, importance, precautions	1	Lecture + demo
14	Demonstration of Asanas: Tadasana, Vajrasana, Padmasana	1	Practical demonstration
15	Introduction to Pranayama and benefits	1	Lecture, breathing demo
16	Practice of basic Pranayama techniques	1	Guided practice
	Unit 5: Breathing Techniques		
17	Concept of breathing regulation	1	Lecture, discussion
18	Pranayama: Anulom Vilom, Kapalbhati	1	Demonstration, practice
19	Pranayama: Bhastrika, Ujjayi	1	Demonstration, practice
20	Effects of regular breathing techniques	1	Lecture, recap

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02	Mr. D. S. Suryvanshi (Peon)