LNCT UNIVERSITY, BHOPAL

Programme:- MCA (AI/ML)   **Semester - IV**   **wef: July 2022**

Name of Paper	Paper Code	Theory					
		Credit			Marks		
Artificial Intelligence and its Applications	**MAI-401**	**L**	**T**	**J**	**EST**	**CAT**	**Total**
		3	1	0	80	20	100

Course Objective	The primary objective of this course is to introduce the basic principles, techniques, and applications of Artificial Intelligence. And basic exposition to the goals and methods of Artificial Intelligence

Units	Contents (*Theory*)	Hours /week
I	General Issues and Overview of AI the AI problems, what is an AI technique, Characteristics of AI applications. Introduction to LISP programming: Syntax and numeric functions, Basic list manipulation functions, predicates and conditionals, input output and local variables, iteration and recursion, property lists and array	8
II	Problem Solving, Search and Control Strategies General problem solving, production systems, control strategies forward and backward chaining, exhaustive searches depth first breadth first search. Heuristic Search Techniques Hill climbing, branch and bound technique, best first search & A* algorithm, AND / OR graphs, problem reduction & AO* algorithm, constraint satisfaction problems.	8
III	Knowledge Representations First order predicate calculus, skolemization, resolution principle & unification, interface mechanisms, horn's clauses, semantic networks, frame systems and value inheritance, scripts, conceptual dependency.	8
IV	Natural Language processing Parsing techniques, context free grammar, recursive transitions nets (RNT), augmented transition nets (ATN). Game playing: Minimax search procedure, alpha-beta cutoffs, additional refinements. Planning: Overview, an example domain the block word,	8

	component of planning systems, goal stack planning, non linear planning.	
V	Probabilistic Reasoning and Uncertainty Probability theory, bayes theorem and bayesian networks, certainty factor. Expert Systems Introduction to expert system and application of expert systems, various expert system shells, knowledge acquisition, case studies, MYCIN. Learning: Rote learning, learning by induction, explanation based learning	8

Text Books/ References Book:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Dan W. Patterson	Introduction to Artificial Intelligence and Expert Systems		Prentice India
Nils J. Nilson	Principles of Artificial Intelligence		Narosa Publishing House
Clocksin&C.S.Melish	Programming in PROLOG		NarosaPublishing House
M. Sasikumar, S. Ramani etc.	Rule based Expert System		Narosa Publishing House
Elaine Rich and Kevin Knight	Artificial Intelligence		Tata McGraw Hill

COURSE OUTCOMES: Students will be able to

CO1	Demonstrate fundamental understanding of artificial intelligence (AI) and its foundations.
CO2	Apply basic principles of AI in solutions that require toward problem solving and searching.
CO3	Explain the concept of Knowledge Representation
CO4	Illustrate the NLP and game playing.
CO5	Explain Bayesian Network, Causality, Uncertain Reasoning and Expert Systems with its application

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Name of Paper	Paper Code	Theory					
		Credit			Marks		
Software Testing and Quality Assurance	MAI-402 (E-III(1))	L	T	J	EST	CAT	Total
		3	1	0	80	20	100

Course Objective	Learn to apply the testing strategies and methodologies in projects and understand test management strategies and tools for testing and detail about various quality assurance models.

Units	Contents (*Theory*)	Hours /week
I	**Software Testing Fundamentals:** Introduction, Testing objectives, Test information flow, Testing life-cycle, Test Cases, Designing test cases, Testing as an engineering activity, Role of process in software quality, Testing as a process, Basic definitions, Software testing principles, The tester's role in a software development organization, Origins of defects, Defect classes, The defect repository and test design, Defect examples, Developer / Tester support for developing a defect repository	8
II	**Testing techniques and levels of testing :**Using White Box Approach to Test design - Static Testing Vs. Structural Testing, Code Functional Testing, Coverage and Control Flow Graphs, Using Black Box Approaches to Test Case Design, Random Testing, Requirements based testing, Decision tables, State-based testing, Cause-effect graphing, Error guessing, Compatibility testing, Levels of Testing -Unit Testing, Integration Testing, Defect Bash Elimination. System Testing - Usability and Accessibility Testing, Configuration Testing, Compatibility Testing	8
III	**Software test automation andquality metrics:** Software Test Automation, Skills needed for Automation, Scope of Automation, Design and Architecture for Automation, Requirements for a Test Tool, Challenges in Automation Tracking the Bug, Debugging. Testing Software System Security - Six-Sigma, TQM - Complexity Metrics and Models, Quality Management Metrics, Availability Metrics, Defect Removal Effectiveness, FMEA, Quality Function Deployment, Taguchi Quality Loss Function, Cost	8

	of Quality	
IV	**Fundamentals of software quality assurance**: SQA basics, Components of the Software Quality Assurance System, software quality in business context, planning for software quality assurance, product quality and process quality, software process models, 7 QC Tools and Modern Tools	8
V	**Quality assurance models:** Models for Quality Assurance, ISO-9000 series, CMM, CMMI, Test Maturity Models, SPICE, Malcolm Baldrige Model- P-CMM. **Software quality assurance trends:** Software Process- PSP and TSP, OO Methodology, Clean-room software engineering, Defect Injection and prevention, Internal Auditing and Assessments, Inspections & Walkthroughs, Case Tools and their Affect on Software Quality	8

Text Books/ References Book:-			
Name of Authors	**Titles of the Book**	**Edition**	**Name of the Publisher**
Srinivasan Desikan, Gopalaswamy Ramesh	Software Testing: Principles and Practices		Pearson
Aditya P. Mathur	Foundations of Software Testing		Pearson
S.A.Kelkar	Software quality and Testing		PHI
William Perry	Effective Methods of Software Testing	III	Wiley Publishing

COURSE OUTCOMES: Students will be able to	
CO1	understand the basics of testing, test planning &design and test team organization
CO2	Investigate the scenario and to select the proper testing technique
CO3	Understand the test automation techniques & tools and estimation of cost, schedule based on standard metrics
CO4	Understand Software Quality Assurance basics, components and tools.
CO5	Explain Quality assurance models and trends

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Name of Paper	Paper Code	Theory					
		Credit			Marks		
		L	T	J	EST	CAT	Total
JAVA Technologies	**MAI-402 (E-III(2))**	3	0	1	80	20	100

Course Objective	To teach programming in the Java language, give knowledge of object-oriented paradigm in the Java programming language to teach the use of Java in a variety of technologies and on different platforms.

Units	Contents (*Theory*)	Hours /week
I	**OOP concepts** – Data abstraction, encapsulation, inheritance, benefits of inheritance, polymorphism, **The Java Environment:** Setting Class path; Data types; Operators - precedence and associativity; Type conversion; Control and Iterative statements; Modular programming methods;. **Object Oriented Programming in Java:** Class; Objects; Packages; Scope and lifetime; Access Modifiers; Constructors; Copy constructor; this pointer; finalize () method; Arrays; Memory allocation and garbage collection **Inheritance:** Inheritance basics, method overriding, dynamics method dispatch, abstract classes. **Interfaces:** Defining an interface, implementing & applying interfaces, variables in interfaces, extending interfaces.	8
II	**Multithreading and Exception Handling:** Basic idea of multithreaded programming; The life cycle of a thread; Creating thread with the thread class and runnable interface; Thread synchronization; Thread scheduling; Producer-consumer relationship; Daemon thread, Selfish threads; The try, catch and throw; throws Constructor and finalizers in exception handling; Applets: Applet security restrictions; the class hierarchy for applets; Life cycle of applet; HTML Tags for applet.	8
III	**Input/Output:** Exploring Java I/O, Directories, stream classes The Byte stream : Input stream, output stream, file input stream, file output stream, print stream, Random access file, the character streams, Buffered reader, buffered writer, print writer, serialization. JDBC: JDBC-ODBC bridge; The connectivity model; The driver manager; Navigating the result set object contents; java.sql Package; The JDBC exception classes; Connecting to Remote database. **Collections:** The collections framework, collection interfaces, collection	8

	classes.	
IV	**AWT Fundamentals:** The class hierarchy of window fundamentals; The basic user interface components, Frame, Layout managers, flow layout etc. **The Java Event Handling Model:** Java's event delegation model , Event class hierarchy; Adapterclasses; Event classes action and different Events **SWINGS:** Introduction, Hierarchy of swing components. Containers, Top level containers -JFrame, JWindow, JDialog, JPanel, JButton, JToggleButton, JCheckBox, JRadioButton, JLabel, JTextField, JTextArea, JList, JComboBox, JScrollPane.	8
V	**Introduction of Web Designing:** HTML basics Servlets Overview, Servlet Lifecycle: init(), service(),destroy(), Generic Servlet, Servlet Request, and Servlet Response, http Servlet Request, http Servlet Response and http Servlet, Request response, headers, GET, POSTJSP: JSP architecture, JSP tags and JSP expressions, Fixed Template Data ,Lifecycle of a JSP,Model View Controller (MVC), Files and applets in jsp Pages, using java beanscomponents in JSP documents. **Struts Framework:** Struts Architecture, Struts classes Action Forward, ActionForm, ActionServlet, Action classes, Understanding struts config. Xml, Understanding Action Mappings, Struts flow with an example application.	8

Text Books/ References Book:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Naughton&Schildt	The Complete Reference Java 2		Tata McGrawHill
Deitel	Java- How to Program	Vol. I &II	Pearson Education
Horstmann& Cornell	Core Java 2	Vol. I &II	SunMicrosystems
E.R. Harold, SPD	Java Network Programming	III edition	O'Reilly Media, Inc.

COURSE OUTCOMES: Students will be able to	
CO1	Understand the basic concepts of object oriented programming in java.
CO2	Demonstrate understanding and use of different exception handling mechanism and concept of multi threading for robust faster and efficient application development.
CO3	Demonstrate understanding and use of I/O stream and Database connectivity model
CO4	Understand AWT and Java Swings for designing GUI applications
CO5	Understand the basics of Web Designing and Struct framework**.**

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Name of Paper	Paper Code	Theory					
		Credit			Marks		
		L	**T**	**J**	**EST**	**CAT**	**Total**
Computer Ethics	**MAI-402 (E-III (3))**	3	1	0	80	20	100

Course Objective	To create awareness on Engineering Ethics and Human Values and To study the moral issues and decisions confronting individuals and organizations engaged in engineering profession.

Units	Contents (*Theory*)	Hours /week
I	An Overview of Ethics: Ethics: Definition of Ethics, The Importance of Integrity, The Difference between Morals, Ethics, and Laws. Ethics in the Business World: Why Fostering Good Business Ethics Is Important, Improving Corporate Ethics, Creating an Ethical Work Environment, Including Ethical Considerations in Decision Making. Ethics in Information Technology Ethics for IT Workers and IT Users: IT Technicians, IT Professionals: Are IT Workers Professionals, Professional Relationships, Professional Codes of Ethics, Certification, Government Licensing, IT Professional Malpractice. IT Users, Common Ethical Issues for IT Users	8
II	Computer and Internet Crime, IT Security Incidents: A Major Concern, Why Computer Incidents Are So Prevalent, Types of Exploits, Types of Perpetrators, Federal Laws for Prosecuting Computer Attacks, Implementing Trustworthy Computing: Risk Assessment, Establishing a Security Policy, Educating Employees, Prevention, Detection, Response. Privacy: Privacy Concerns abound with New IRS Systems, Privacy Protection and the Law: Privacy Laws, Applications, and Court Rulings. Key Privacy and Anonymity Issues, Treating Consumer Data Responsibly.	8
III	Freedom of Expression: First Amendment Rights, Obscene Speech, Defamation, Freedom of Expression: Key Issues, Controlling Access to Information on the Internet, Anonymity on the Internet, Defamation and Hate Speech, Corporate Blogging, Pornography. Intellectual Property: What Is Intellectual Property? Copyrights: Copyright Term, Eligible Works, Fair Use Doctrine, The Prioritizing Resources and Organization for Intellectual Property (PRO-IP) Act of 2008, General Agreement on Tariffs and Trade (GATT), The WTO and the WTO TRIPS Agreement (1994), The World Intellectual Property Organization (WIPO) Copyright Treaty (1996), The Digital Millennium Copyright Act (1998), Patents. Open Source Code, Competitive Intelligence, Cyber squatting.	8
IV	Software Development: Strategies for Engineering Quality Software,:The	8

	Importance of Software Quality, Software Product Liability, Software Development Process, Capability Maturity Model Integration. Key Issues in Software Development, Development of Safety - Critical Systems, Quality Management Standards The Impact of Information Technology on Productivity and Quality of Life: The Impact of IT on the Standard of Living and Worker Productivity, IT Investment and Productivity, The Digital Divide, The Impact of IT on Healthcare Costs, Electronic Health Records, Use of Mobile and Wireless Technology in the Healthcare Industry, Telemedicine, Medical Information Web Sites for Laypeople	
V	Social Networking, the Use of Social Networks in the Hiring Process, Social Shopping Web Sites, Social Networking Ethical Issues, Cyberbullying, Cyberstalking, Encounters with Sexual Predators, Uploading of Inappropriate Material, Online Virtual Worlds, Crime in Virtual Worlds, Educational and Business Uses of Virtual Worlds. Ethics of IT Organizations: Key Ethical Issues for Organizations, The Need for Nontraditional Workers, Contingent Workers, Advantages of Using Contingent Workers, Disadvantages of Using Contingent Workers, Deciding When to Use Contingent, Outsourcing, Offshore Outsourcing, Pros and Cons of Offshore Outsourcing.	8

Text Books/ References Book:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
George W. Reynolds	Ethics in information technology	Third Edition	
Deborah Johnson	Computer Ethics		Computer Ethics
Richard Spinello and Herman Tavani	CyberEthics	2nd Edition	

COURSE OUTCOMES: Students will be able to

CO1	Identify ethical issues in computing work, applications, and/or use cases, and distinguish them from technical, legal, commercial, or PR issues/challenges
CO2	Learn the need for professional ethics, codes of ethics and roles, concept of security, risk assessment
CO3	Explain fundamental ethical concerns in computing (eg. privacy, security, fairness, transparency, accountability, safety, control, manipulation/deception, trust, etc.
CO4	Explain key issues in Software Development
CO5	Explain ethical issues related with Social Networking and IT organization

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Name of Paper	Paper Code	Theory					
		Credit			Marks		
		L	T	J	EST	CAT	Total
Blockchain and Crypto Currency	**MAI-402 (E-III(4))**	3	1	0	80	20	100

Course Objective	The main objective to provide conceptual understanding of how blockchain technology can be used to innovate and improve business processes.

Units	Contents (*Theory*)	Hours /week
I	**Overview of blockchain**:Why Blockchain - The Structure of Blockchain - Data Structure of Blockchain - Data Distributionin Blockchain - Block Validation. Block Validators: Proof of Work – Proof of Stake - Proof ofActivity - Proof of Elapsed Time - Proof of Burn.	8
II	**Cryptocurrency:** Overview. Bitcoin: Bitcoin Working - Bitcoin Transactions - Bitcoin Mining - Value of Bitcoin -Community, Politics and Regulations – Advantages – Disadvantages. Ethereum: Overview –Decentralized Application. Components of Ethereum: Smart contracts – Ether –Ethereum Clients - Ethereum Virtual Machine – Ether scripter.	8
III	**Hyperledger:** Introduction. Digital Tokens: Overview - Initial Coin Offering – OmiseGO – EOS – Tether. MetaMask: Wallet Seed - MetaMask Transactions. Mist: Overview - Mist wallet. Truffle: Features of Truffle – Development Truffle boxes - Community truffle box.	8
IV	**Solidity :** Smart Contracts - Contract and Interfaces - Hyperledger Fabric: Introduction - Fabric v/s Ethereum – Hyper ledger Iroha - Features of Iroha. Hyper ledger Sawtooth: Components of sawtooth - Proof of Elapsed time.	8
V	**Blockchain platforms:** Multichain – Hydra Chain. Future Blockchain: IOTA – Corda - Chain Core. Blockchain Framework: CoCo Framework – Tierion – Bigchain DB	8

Text Books/ References Book:-			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
Josh Thompson	'Blockchain: The Blockchain for Beginnings, Guild to Blockchain Technology and Blockchain Programming		Create Space Independent Publishing Platform, 2017
Arvind Narayanan, Joseph Bonneau,	Bitcoin and cryptocurrency technologies: a comprehensive		Princeton University Press,

Edward Felten, Andrew Miller, and Steven Goldfeder	introduction		2016

COURSE OUTCOMES: Students will be able to	
CO1	Understand the concept of Blockchain technologies
CO2	Explain Bitcoin and Cryptocurrency technologies
CO3	Understand the concept of hyper ledger in block chain
CO4	Understand Solidity concept in blockchain
CO5	Explain Blockchain framework

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Name of Paper	Paper Code	Theory					
		Credit			Marks		
Dot Net Technology	**MAI-403 (E-IV (1))**	**L**	**T**	**J**	**EST**	**CAT**	**Total**
		3	1	0	80	20	100

Course Objective	The objective this course is study web development technology and tools provided by Microsoft .NET platform. Students are expected to learn how to design and develop web application along with database connectivity using Microsoft .NET Technology

Units	Contents (*Theory*)	Hours /week
I	**The .Net framework:** Introduction, The Origin of .Net Technology, Common Language Runtime (CLR), Common Type System (CTS), Common Language Specification (CLS), Microsoft Intermediate Language (MSIL), Just-In –Time Compilation, Framework Base Classes. **Assemblies and Attribute:** .Net Assemblies features and structure, private and share assemblies, Built-In attribute and custom attribute. Introduction about generic. **C -Sharp Language (C#):**Introduction, Data Types, Identifiers, Variables, Constants, Literals, Array and Strings, Object and Classes, Inheritance and Polymorphism, Operator Overloading, Interfaces, Delegates and Events. Type conversion.	8
II	**OOP C# :**Classes and Objects Instance Variables, Methods, Constructors, Properties, Access Specifiers, Static members and methods Inheritance Levels of Inheritance, Constructor and Inheritance, Polymorphism, Interfaces, Abstract classes, Delegates ,Indexers, Sealed Classes, Exception handling Collections and Generics Bounded and Unbounded Collections, Generic classes, Functions, Constraints on Generic Programming	8
III	**Databases and C#:**File Handling Text Files, Binary Files, String Processing, Serialization and Deserialization ADO.Net Connected and Disconnected, Architecture of ADO, Datasets ,Data Readers, Data Adapters, Working with Stored Procedures LINQ and the ADO.NET Entity Framework LINQ Introduction, Mapping Your Data Model to an Object Model, Introducing	8

	Query Syntax	
IV	**Asp.Net Web Applications:** Life cycle of Asp.Net web pages, Role of client side scripting, postback posting and cross page posting, asp.net compilation model, asp. Controls, Server Controls(basic controls, Calendar, AdRotator, File Upload, Validation Controls	8
V	**Data and State Management in ASP.NET:**ASP.NET Websites with Themes and Master Pages, Data Source Controls, Data Bound Controls, ASP.NET State Management-Client Side and Server Side. ASP.NET and AJAX	8

Text Books/ References Book:-			
Name of Authors	**Titles of the Book**	**Edition**	**Name of the Publisher**
Schildt, Herbert	C# 4.0: the complete reference		McGraw-Hill Education
ChiragPatel	Advance .NET Technology	II	DreamTech Press
Andrew Trolsen,	Pro C# 5.0 and the .NET 4.5 Framework		APress
ImarSpaanjaars	Beginning ASP.NET 4.5: in C# and VB		Wrox Publication

COURSE OUTCOMES: Students will be able to	
CO1	Create UI applications using C#
CO2	Develop Web applications using various controls and programming techniques.
CO3	Solve identity management problems in web Applications application using session management and AJAX concepts
CO4	Design and develop secure web applications using asp.net according to industry standards
CO5	Data and State Management inasp.net Web application

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Name of Paper	Paper Code	Theory					
		Credit			Marks		
Mobile Computing	**MAI-403 (E-IV (2))**	**L**	**T**	**J**	**EST**	**CAT**	**Total**
		3	1	0	80	20	100

Course Objective	The objective of this course is to explain the principles and theories of mobile Computing technologies. Also to describe infrastructures and technologies of mobile computing technologies.

Units	Contents (*Theory*)	Hours /week
I	WIRELESS COMMUNICATION FUNDAMENTALS: Introduction to Mobile Computing- Mobile Computing V/S Wireless Computing –Mobile Computing Applications- Characteristics of Mobile Computing- Structure of Mobile Computing Applications. Generations of Mobile Communication Technologies- Multiplexing – Spread spectrum- MAC Protocols –SDMA - TDMA - FDMA - CDMA	8
II	TELECOMMUNICATION SYSTEMS : Introduction to Cellular Systems- GSM – System Architecture – Protocols – Connection Establishment – Frequency Allocation Routing – Mobility Management – Security – GPRS- Architecture - Handover	8
III	MOBILE NETWORK LAYER: Mobile IP – DHCP – Proactive protocol- DSDV, Reactive Routing Protocols – DSR, AODV Hybrid routing –ZRP, Wireless LAN – IEEE 802.11 Standards – Architecture – services – HIPERLAN – Ad- Hoc Network – Blue Tooth.	8
IV	Mobile AD-HOC Networks AD - HOC Basics Basic Concepts – Characteristics – Applications – Design Issues – Routing – Essential of Traditional Routing Protocols –Popular Routing Protocols – Vehicular Ad Hoc networks (VANET) – MANET Vs VANET – Security.	8

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V	MOBILE PLATFORMS AND APPLICAT IONS 9 Mobile Device Operating Systems – Special Constrains & Requirements – Commercial Mobile Operating Systems – Software Development Kit: Ios, Android, BlackBerry, Windows Phone – M Commerce – Structure – Pros & Cons – Mobile Payment System – Security Issues.	8

Text Books/ References Book:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Jochen Schiller	Mobile Communications	Second Edition	Prentice Hall of India Pearson Education, 2003
William Stallings	Wireless Communications and Networks	Second Edition	Prentice Hall of India Pearson Education, 2004

COURSE OUTCOMES: Students will be able to

CO1	Understand fundamentals of wireless communications.
CO2	Analyze security, energy efficiency, mobility, scalability, and their unique characteristics in wireless networks.
CO3	Demonstrate basic skills for cellular networks design.
CO4	Understand Mobile AD-HOC Networks
CO5	Understand different mobile platforms and their applications

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Name of Paper	Paper Code	Theory					
		Credit			Marks		
		L	**T**	**J**	**EST**	**CAT**	**Total**
Advance Web Technologies	**MAI-403 (E-IV(3))**	3	1	0	80	20	100

Course Objective	The objective of this course is to develop an ability to design and implement static and dynamic website.

Units	Contents (*Theory*)	Hours /week
I	Responsive web design and introduction to Bootstrap : Bootstrap grid, bootstrap components and plugins	8
II	XML- Introduction to XML, Comparing XML with HTML, Describing the Structure of XML - Declaration, Elements, Attributes, Comments, CDATA, XML Entity References, Parsers ,Describing Document Type Definitions, Using XSLT with XML :xsl:template Element, xsl:apply-templates Element, xsl:import , xsl:include Element, Element, xsl:element Element, xsl:attribute Element, xsl:value-of Element, using Conditional Statements, Sorting Elements, XSLT functions, Creating Well-formed and Valid Documents.	8
III	Introduction to Ajax – AJAX Web Application Model, Working of AJAX, Asynchronous Data Transfer with XMLHttpRequest - Creating the XML Http Request Object, XML Http Request Properties, XML Http Request Methods, Using the XMLHttpRequest Object in Different Browsers, Reading a File Synchronously, Reading a File Asynchronously, Performing Tasks Using the XML Http Request Object, Integrating PHP and AJAX-Sending Data from a Web Application to a Server, Validating a Field Using AJAX and PHP	8
IV	Handling XML Data using PHP and AJAX-JavaScript, properties for Extracting with nodeValue, Accessing XML, Elements by Name, Accessing Attribute Values in XML Elements. Validating XML Documents in Ajax	8

	Applications Retrieving Data from a Database Using PHP and AJAX Consuming Web Services Using AJAX-Exploring Web Service Protocols-SOAP, Web Service Description Language, UDDI, REST, Consuming Web Services Using AJAX	
V	JQuery-JavaScript DOM objects their methods and properties-Window, History, Location Document, Form etc. Fundamentals of jQuery, Loading and using jQuery, using jQuery Library files, Callback functions, jQuery Selectors , jQuery Methods to Access HTML Attributes, jQuery Methods of traversing, jQuery Manipulators, jQuery Events, jQuery Effects, jQuery with AJAX	8

Text Books/ References Book:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Steven Holzner	XML: A Beginner's Guide		
Ivan Bayross and Sharanam Shah	AJAX For Beginners		
Richard York	Web Development with jQuery (WROX)		
Robin Nixon ,SPD	Learning PHP, MySQL & JavaScript with j Query, CSS & HTML5		
Steve Holzner,PhD,	Ajax for Dummies		Wiley Publishing Inc.

COURSE OUTCOMES: Students will be able to	
CO1	Understand basics of web design and Bootstrap
CO2	Create XML documents and Schemas.
CO3	Build interactive web applications using AJAX.
CO4	Understand XML data handling using PHP and AJAX.
CO5	Design and implement jQuery

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Name of Paper	Paper Code	Theory					
		Credit			Marks		
		L	T	J	EST	CAT	Total
E- Commerce & ERP	MAI-403 (E-IV(4))	3	1	0	80	20	100

Course Objective	The objective of this course is to provide adequate knowledge and understanding about E-Commerce practices to the students.

Units	Contents (*Theory*)	Hours /week
I	**Introduction to E-commerce:** Introduction, E-commerce or Electronic Commerce- An Overview, Electronic Commerce – Cutting edge, Electronic Commerce Framework Evolution of E-commerce: Introduction, History of Electronic Commerce, Advantages and Disadvantage of E-commerce, Roadmap of e-commerce in India	8
II	**Network Infrastructure:** Introduction, Network Infrastructure- an Overview, The Internet Hierarchy, Basic Blocks of e-commerce, Networks layers & TCP/IP protocols, The Advantages of Internet, World Wide Web **E-commerce Infrastructure:** Introduction, Ecommerce Infrastructure-An Overview, Hardware, Server Operating System, Software, Network Website	8
III	**Business Models of E – commerce :** Model Based On Transaction Type, Model Based On Transaction Party - B2B, B2C, C2B, C2C, E – Governance. **E – Payment Mechanism :** Payment through card system, E – Cheque, E – Cash, E – Payment Threats & Protections. **E – Marketing :** Home –shopping, E-Marketing, Tele-marketing	8
IV	**Electronic Data Interchange(EDI):** The Meaning of EDI, History of EDI, EDI Working Concept, Implementation difficulties of EDI, Financial EDI, EDI and Internet E-Marketing: The scope of E-Marketing, Internet Marketing Techniques Website Design Issues: Factors that Make People Return to Your Site, Strategies for Website Development	8
V	Enterprise Resource Planning (ERP) : Features, capabilities and Overview of Commercial Software, re-engineering work processes for IT applications, Business Process Redesign, Knowledge engineering and data warehouse . Business Modules: Finance, Manufacturing (Production), Human Resources,	8

| | Plant Maintenance, Materials Management, Quality Management, Sales & Distribution ERP Package, ERP Market: ERP Market Place, SAP AG, PeopleSoft, BAAN, JD Edwards, Oracle Corporation ERP-Present and Future: Enterprise Application Integration (EAI), ERP and E-Commerce, ERP and Internet, Future Directions in ERP | |

Text Books/ References Book:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Murthy	E – Commerce		Himalaya Publishing
Reynolds	Beginning E-Commerce		SPD
Elsenpete	E-Business: A beginners Guide		Tata McGraw-Hill
Ravi Kalakota& Andrew B Whinston	Frontiers of Electronic Commerce		Pearson Education.

COURSE OUTCOMES: Students will be able to	
CO1	Analyze the impact of E-commerce on business models and strategy
CO2	Describe the Network and E commerce infrastructure.
CO3	Explain Business Models of E – commerce, E – Payment Mechanism and E marketing concepts.
CO4	Explain Electronic Data Interchange(EDI)
CO5	Understand the basics of Enterprise Resource Planning (ERP)

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Name of Paper	Paper Code	Practical				
		Credit		Marks		
Major Project-I (Based on Computer Application)	**MAI-404**	**P**	**J**	**ESP**	**CAP**	**Total**
		0	12	200	100	300

Design a project to fulfill all the requirements of any firm/company/society etc. and automate its functioning. Suitable reports should be generated periodically.

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Name of Paper	Paper Code	Practical				
		Credit		Marks		
		P	J	ESP	CAP	Total
Major Project-II (Based on AI Application)	**MAI-405**	0	12	200	100	300

Design a project to fulfill all the requirements of any firm/company/society etc. and automate its functioning using the concepts of Artificial Intelligence.