



Eklavya University

SESSION

2023-24

M.C.A. III SEMESTER

SYLLABUS

OF

**Computer Application And Information
Technology Department**

School of Basic and Applied Sciences

EKLAVYA UNIVERSITY, DAMOH (M.P.)

Scheme of Examination MCA III SEM

/For batch admitted in Academic Session 2023-24/

Subject wise distribution of marks and corresponding credits

S.No.	Subject Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Periods Per week			Total Credits
			Theory Slot			Practical Slot			L	T	P	
			End Sem.	Tests	Quiz/ Assignment/ Attendance	End Sem	Lab Work/ sessional					
1	MCAPL20S301	Data Mining	60	30	10	-	-	100	3	1	0	4
2	MCAPL20S302	Artificial Intelligence	60	30	10	-	-	100	3	1	-	4
3	MCAPL20S303	Elective – I	60	30	10	-	-	100	3	1	-	4
4	MCAPL20S304	Elective – II	60	30	10	-	-	100	3	1	-	4
5	MCAPL20S305	Elective – III	60	30	10	-	-	100	3	1	-	4
6	MCAPL20S306	Minor Project	-	-	-	100	50	150	-	-	6	6
7	MCAPL20S307	Elective -1 Lab	-	-	-	60	40	100	-	-	4	4
Total			300	150	50	160	90	750	15	5	10	30

Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations.

Elective – I

- A. Python
- B. Web Technology
- C. Introduction to data Science and big data

Elective-II

- A. Machine Learning
- B. Soft Computing
- C. Internet of Things

Elective-III

- A. Computer Ethics
- B. Advanced Databases
- C. Distributed Systems

[Handwritten signatures and dates]
 01/06/23
 01.06.23

[Handwritten signatures and dates]
 01/06/23
 01/06/23
 01/06/23
 Neidh

Class		Master of Computer Application (MCA) II YEAR	
Semester/Year		III Semester	
Subject & Subject Code		Data Mining - MCAPL20S301	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	4
3	1	0	

Course Objectives:

1. Introduce the Basic Concepts of Data Base, Data Warehouse and Data Mining.
2. Understand the Concept of Knowledge Discovery.
3. Understand the process of deriving Information from data with Different Perspectives.
4. Understand and apply Preprocessing Methods on Raw Data.
5. Discover Interesting and Useful Patterns and associations, Analyze Supervised and Unsupervised Models.

Course Outcome:

1. Demonstrate an Understanding and knowledge of the Data Warehousing and Data Mining
2. Explain the Data Analysis and Knowledge Delivery Stages.
3. Organize and Prepare the Data Needed for Data Mining Using Pre Preprocessing Techniques.
4. Implement the Appropriate Data Mining Methods Like Association, Classification, Clustering

Student Learning Outcomes (SLO):

1. Understand what Is Data Mining, what kinds of data can be mined, what kinds of patterns can be mined, and what kinds of applications are targeted.
2. Explain major Issues in data mining.
3. Identify what kinds of technologies are used for different application.

Unit	Syllabus	Periods
UNIT - I	Motivation, importance, Data type for Data Mining : relation Databases, Data Warehouses, Transactional databases, advanced database system and its applications, Data mining Functionalities: Concept/Class description, Association Analysis classification & Prediction, Cluster Analysis, Outlier Analysis, Evolution Analysis, Classification of Data Mining Systems, Major Issues in Data Mining.	8
UNIT - II	Data Warehouse and OLAP Technology for Data Mining: Differences between Operational Database Systems and Data Warehouses, a multidimensional Data Model, Data Warehouse Architecture, Data arehouse Architecture, Data Warehouse Implementation, Data Cube Technology.	8
UNIT - III	Data Preprocessing: Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Data Mining Primitives, Languages, and System Architectures, Concept Description: Characterization and Comparison, Analytical Characterization.	8

ad
01/06/23

[Signature]
01.06.23

[Signature]

[Signature]
01/06/23

①

[Signature]
01/06/23

[Signature]
01/06/23

[Signature]

UNIT - IV	Mining Association Rules in Large Databases: Association Rule Mining: Market Basket Analysis, Basic Concepts, Mining Single-Dimensional Boolean Association Rules from Transactional Databases: the Apriori algorithm, Generating Association rules from Frequent items, Improving the efficiency of Apriori, Mining Multilevel Association Rules, Multidimensional Association Rules, Constraint-Based Association Mining.	8
UNIT - V	Classification & Prediction and Cluster Analysis: Issues regarding classification & prediction, Different Classification Methods, Prediction, Cluster Analysis, Major Clustering Methods, Applications & Trends in Data Mining: Data Mining Applications, currently available tools.	8

References Books:

- 1 J. Han and M. Kamber, "Data Mining: Concepts and Techniques", Morgan Kaufmann Pub.
- 2 Berson "Dataware housing, Data Mining & DLAP, @004, TMH.
- 3 W.H. Inmon " Building the Datawarehouse, 3ed, Wiley India.
- 4 Anahory, "Data Warehousing in Real World", Pearson Education.
- 5 Adriaans, "Data Mining", Pearson Education.
- 6 S.K. Pujari, "Data Mining Techniques", University Press, Hyderabad

[Signature]
01/06/23

[Signature]
01-08-23

[Signature]
01/06/23

[Signature]
05/11/23

[Signature]
01/06/23

[Signature]
Mishra

[Signature]
1/6/23

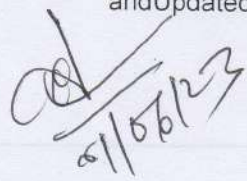
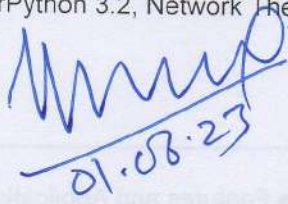
②



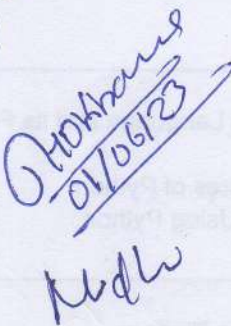
[Faint handwritten signatures and dates at the bottom of the page, including "01/06/23" and "01/08/23"]



UNIT - V	Files and exception: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages; Illustrative programs: word count, copy file.	8
----------	---	---

References Books:

- 1 ReemaThareja, "Python Programming using Problem Solving Approach", Oxford University Press, 2017
- 2 Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", SecondEdition, Shroff O'Reilly Publishers, 2016
- 3 Guido van Rossum, Fred L. Drake Jr., "An Introduction to Python – Revised andUpdated forPython 3.2, Network Theory Ltd., Edition2011

Unit	Topics	Objectives
UNIT - I	Python overview and installation, variables and types, arithmetic operators, control flow, strings, lists, tuples, dictionaries, sets, files, modules, packages, error handling, exception handling, command line arguments, format operator, modules, packages, illustrative programs: word count, copy file.	Understand the basic concepts of Python programming, install and use Python, explain the features of Python language, handle basic language features of Python, understand the concept of modules and packages, design and develop Python applications, write programs for reading and writing files.
UNIT - II	Lists, tuples, dictionaries, sets, files, modules, packages, error handling, exception handling, command line arguments, format operator, modules, packages, illustrative programs: word count, copy file.	Understand the concept of lists, tuples, dictionaries, sets, files, modules, packages, error handling, exception handling, command line arguments, format operator, modules, packages, illustrative programs: word count, copy file.
UNIT - III	Classes and objects, class methods, static methods, class variables, inheritance, polymorphism, abstract classes, decorators, lambda functions, generators, iterators, context managers, files, modules, packages, error handling, exception handling, command line arguments, format operator, modules, packages, illustrative programs: word count, copy file.	Understand the concept of classes and objects, class methods, static methods, class variables, inheritance, polymorphism, abstract classes, decorators, lambda functions, generators, iterators, context managers, files, modules, packages, error handling, exception handling, command line arguments, format operator, modules, packages, illustrative programs: word count, copy file.
UNIT - IV	Files and exception: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages; Illustrative programs: word count, copy file.	Understand the concept of files and exception handling, read and write text files, use format operator, command line arguments, errors and exceptions, handling exceptions, modules, packages, illustrative programs: word count, copy file.

Class			Master of Computer Application (MCA) II YEAR		
Semester/Year			III Semester		
Elective Paper			Elective - I		
Subject & Subject Code			Web Technology - MCAPL20S304		
Max. Marks			60 (ETE) + 40 (IA) = 100		
Credit		Total Credits			
L	T	P	4		
3	1	0			

Course Objectives:

1. Learn to Design and Develop a Web Page.
2. Design and Develop a Web Site Using Text, Images, Links, Lists, and Tables for Navigation and Layout.
3. Style Your Page Using CSS, Internal Style Sheets, and External Style Sheets.
4. Learn to use JavaScript & XML in Web Design.
5. Learn How to use Database in Web Design.

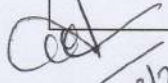
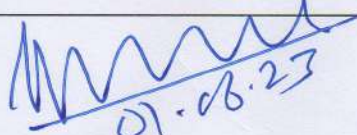

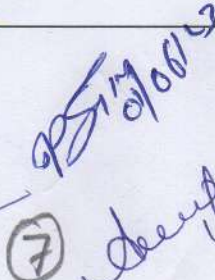
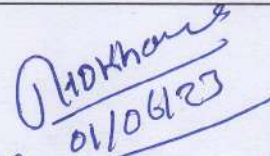
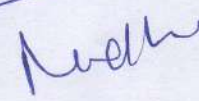
Course Outcome:

1. Describe the Concepts of WWW Including Browser and HTTP Protocol.
2. List the Various HTML Tags and use them to develop the user friendly web Pages.
3. Define the CSS with its Types and use them to provide the Styles to the web pages at Various Levels.
4. Use the JavaScript to Develop the Dynamic Web Pages.
5. Develop the Modern Web Pages Using the HTML and CSS Features with Different Layouts as per Need of Applications.

Student Learning Outcomes (SLO):

1. Create an Information Architecture document for a web site.
2. Construct a web site that conforms to the web standards of today and includes e-commerce and web marketing
3. Publish the website to a remote server using FTP.
4. Perform regular web site maintenance (test, repair and change).

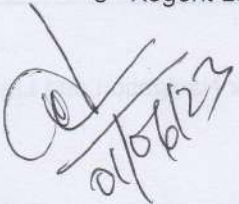
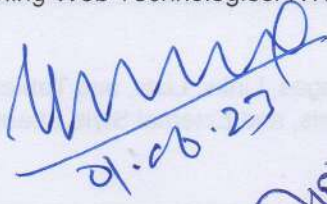
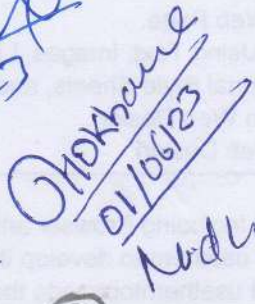
Unit	Syllabus	Periods
UNIT - I	Concept of Internet : Client/Server model, Internet and WWW, IP, URL, ISP, DNS; Web Design : Principles of effective Web Design, Page layout and linking, designing effective navigation for your website, planning and publishing websites, Responsive web design : Responsive vs adaptive web design	8
UNIT - II	HTML and Style Sheets : Working with HTML - Formatting and Fonts, Basic Tags, Hyperlinks, Tables, Images, Forms, XHTML, Meta tags. Style Sheets (CSS): Introduction, Need, basic syntax and structure, class, id, background Images, Colors and Properties, Manipulating Texts, Margins, Positioning.	8
UNIT - III	Javascript : Client side scripting with JavaScript, Data Types and Variables, Expressions, Operators and Statements, Objects and Arrays, Functions, loops, Classes, Modules, DOM, Forms and Validations.	8
UNIT - IV	XML : Introduction, Features, Anatomy, Declaration, Uses, Key Components, DTD and Schema, Markup Elements and Attributes, XML Objects, XML Scripting, Using XML with application, Transforming XML using XSL and XSLT, XPATH - Template Based Transformations.	8

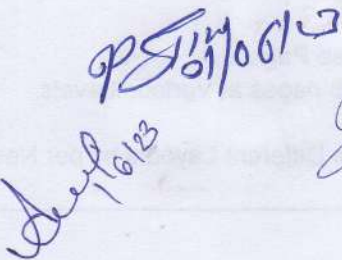



 01/06/23

 01.06.23

 01/06/23

 01/06/23

 01/06/23

 01/06/23

UNIT - V	Introduction to AJAX: AJAX Components, The XMLHttpRequest Object, Using XSLT with AJAX; Webservices : Web Service architecture, introduction to webservices, Web Services VS other technologies, Web Services Benefits	8
----------	--	---

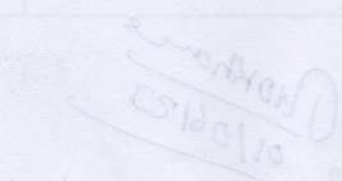

References Books:

- 1 Web Design, Joel Sklar, Cengage Learning
- 2 Jeffrey C. Jackson, "Web Technologies--A Computer Science Perspective", Pearson Education, 2006.
- 3 Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India
- 4 Web Technologies, Black Book, dreamtech Press
- 5 Internet and World Wide Web How to program, P.J. Deitel & H.M. Deitel Pearson.
- 6 Kogent Learning Web Technologies: HTML, Javascript Wiley India

Unit	System	Unit
UNIT - I	Concept of Internet, Client/Server architecture and WWW, IP, URL, ISP, DNS, Web Design: Principles of effective Web Design, Page layout and linking, designing effective navigation for your website, planning and publishing website, Responsive web design, Progressive vs adaptive web design.	
UNIT - II	HTML and CSS: Working with HTML - Document and Font, Basic tags, Multimedia: Tables, Images, Forms, XHTML, What are CSS, Selectors, CSS, Introduction to Cascading Style Sheets, Syntax and structure class, a background image, Colors and Properties, Manipulating Text, Margins, Positioning.	
UNIT - III	Javascript: Global variables, scope, with Javascript, Core Types and Variables, Operators, Operators and Precedence, Objects and Arrays, Functions, Nodes, Classes, Modules, DOM, Forms and Validation.	
UNIT - IV	XML: Introduction, Features, Anatomy, Declaration, Used, Key Components, DTD and Schema, Markup Elements and Attributes, XML Objects, XML Document, Using XML with application, Transforming XML using XSL and XSLT, XPath, Transformations.	



Class		Master of Computer Application (MCA) II YEAR	
Semester/Year		III Semester	
Elective Paper		Elective - I	
Subject & Subject Code		Introduction to Data Science and Big Data (3C) - MCAPL20S305	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	4
3	1	0	

Course Objectives:

1. Familiarize the students with most important information technologies used in manipulating, storing, and analyzing big data
2. This course gives students all around learning of the big data framework using Hadoop and spark, including yarn, HDFS and MapReduce
3. It provide an overview of approaches facilitating data analytics on huge datasets.

Course Outcome:

1. Ability to identify the characteristics of datasets and compare the trivial data and big data for various applications
2. Demonstrate an ability to use Hadoop framework to efficiently store retrieve and process Big Data for Analytics.
3. Implement several Data Intensive tasks using the MapReduce Paradigm.

Student Learning Outcomes (SLO):

1. Understand what Big Data is and why we want to look at it.
2. BE able to describe the testing and validation process.
3. Understand how bias and variance can effect your result.
4. Be able to describe the cross-validation process.

Unit	Syllabus	Periods
UNIT - I	Introduction to Data Science – Data Science Process – Exploratory Data analysis – Big data: Definition, Risks of Big Data, Structure of Big Data – Web Data: The Original Big Data – Evolution Of Analytic Scalability – Analytic Processes and Tools – Analysis versus Reporting – Core Analytics versus Advanced Analytics – Modern Data Analytic Tools – Statistical Concepts: Sampling Distributions – Re-Sampling – Statistical Inference – Introduction to Data Visualization.	8
UNIT - II	Univariate Analysis: Frequency, Mean, Median, Mode, Variance, Standard Deviation, Skewness and Kurtosis – Bivariate Analysis: Correlation – Regression Modeling: Linear and Logistic Regression – Multivariate Analysis – Graphical representation of Univariate, Bivariate and Multivariate Analysis in R: Bar Plot, Histogram, Box Plot, Line Plot, Scatter Plot, Lattice Plot, Regression Line, Two-Way cross Tabulation.	8
UNIT - III	Bayesian Modeling – Support Vector and Kernel Methods – Neuro – Fuzzy Modeling Principal Component Analysis – Introduction to NoSQL: CAP Theorem, MongoDB: RDBMS Vs MongoDB, Mongo DB Database Model, Data Types and Sharding – Data Modeling in HBase: Defining Schema – CRUD Operations. Introduction to Kernel and its types	8

Handwritten signature and date: 01/06/23

Handwritten signature and date: 01.08.23

Handwritten signature and date: 01/06/23

Handwritten signature and date: 01/06/23

Handwritten signature: Nidhi

UNIT - IV	Introduction to Hadoop: Hadoop Overview – RDBMS versus Hadoop – HDFS (Hadoop Distributed File System): Components and Block Replication – Introduction to MapReduce Running Algorithms Using MapReduce – Introduction to HBase: HBase Architecture, HLog and HFile, Data Replication – Introduction to Hive, Spark and Apache Sqoop.	8
UNIT - V	Introduction To Streams Concepts – Stream Data Model and Architecture Stream Computing – Sampling Data in a Stream – Filtering Streams Counting Distinct Elements in a Stream Estimating Moments – Counting Oneness in a Window – Decaying Window.	8

References Books:

1 Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", John Wiley & sons

2 Rachel Schutt, Cathy O'Neil, "Doing Data Science", O'Reilly

Deep 01/06/23
PS 01/06/23
Shah 01/06/23
Mridu 01.06.23
Chokhrem 01/06/23
 (10) Mridu

01/06/23
01/06/23
01/06/23
01/06/23
01/06/23
01/06/23

Class		Master of Computer Application (MCA) II YEAR	
Semester/Year		III Semester	
Elective Paper		Elective - II	
Subject & Subject Code		SOFT COMPUTING (4B) - MCAPL20S307	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	4
3	1	0	

Course Objectives:

1. Develop the skills to gain a basic understanding of neural network theory and fuzzy logic theory
2. Introduce students to artificial neural networks and fuzzy theory from an engineering perspective
3. Provide the mathematical background for carrying out the optimization associated with neural network learning.
4. Provide the mathematical background for carrying out the optimization associated with neural network learning

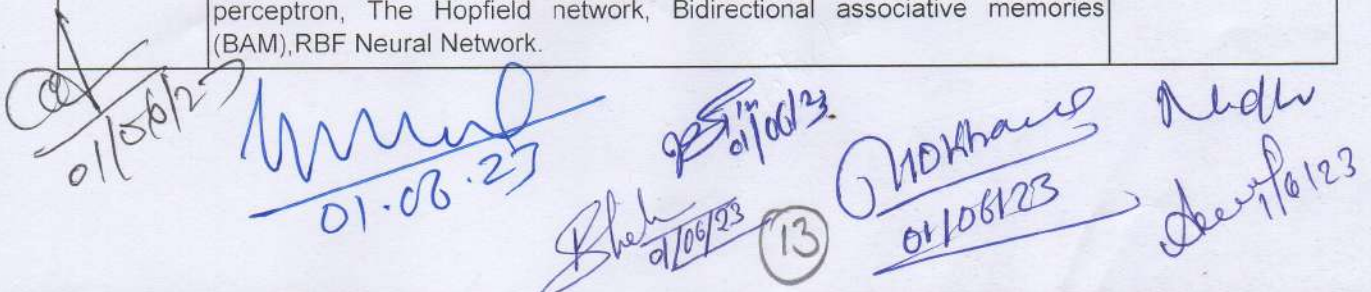
Course Outcome:

1. Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory.
2. Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic
3. To understand the fundamental theory and concepts of neural networks, Identify different neural network architectures, algorithms, applications and their limitations
4. Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications
5. Reveal different applications of these models to solve engineering and other problems

Student Learning Outcomes (SLO):

1. Describe human intelligence and AI
2. Explain how intelligent system works.
3. Apply basics of Fuzzy logic and neural networks.
4. Discuss the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience.
5. Relate with neural networks that can learn from available examples and generalize to form appropriate rules for inference systems

Unit	Syllabus	Periods
UNIT - I	Overview of Soft Computing, Difference between Soft and Hard computing, Brief descriptions of different components of soft computing including Artificial intelligence systems Neural networks, fuzzy logic, genetic algorithms. Artificial neural networks Vs Biological neural networks, ANN architecture, Basic building block of an artificial neuron, Activation functions, Introduction to Early ANN architectures (basics only)-McCulloch & Pitts model, Perceptron, ADALINE, MADALINE. Architecture of CyberSpace.	8
UNIT - II	Artificial Neural Networks: Supervised Learning: Introduction and how brain works, Neuron as a simple computing element, The perceptron, Backpropagation networks: architecture, multilayer perceptron, backpropagation learning-input layer, accelerated learning in multilayer perceptron, The Hopfield network, Bidirectional associative memories (BAM), RBF Neural Network.	8



 01/06/23
 01.06.23
 01/06/23
 01/06/23
 01/06/23
 13
 01/06/23

UNIT - III	Artificial Neural Networks: Unsupervised Learning: Hebbian Learning, Generalized Hebbian learning algorithm, Competitive learning, Self-Organizing Computational Maps: Kohonen Network.	8
UNIT - IV	Fuzzy Logic Crisp & fuzzy sets fuzzy relations fuzzy conditional statements fuzzy rules fuzzy algorithm. Fuzzy logic controller.	8
UNIT - V	Genetic algorithms basic concepts, encoding, fitness function, reproduction- Roulette wheel, Boltzmann, tournament, rank, and steady state selections, Convergence of GA, Applications of GA case studies. Introduction to genetic programming- basic concepts.	8

References Books:

- 1 R. Rajasekaran and G. A and Vijayalakshmi Pa, Neural Networks, Fuzzy Logic, and Genetic Algorithms: Synthesis and Applications, Prentice Hall of India
- 2 D. E. Goldberg, Genetic Algorithms in Search, Optimisation, and Machine Learning, Addison-Wesley
- 3 L. Fausett, Fundamentals of Neural Networks, Prentice Hall
- 4 T. Ross, Fuzzy Logic with Engineering Applications, Tata McGraw Hill

[Signature]
01/06/23

[Signature]
01/06/23

[Signature]
01.06.23

[Signature]
01/06/23

[Signature]
01/06/23

[Signature]
16/6/23

Nidhi

(14)

[Faint signatures and dates]
01/06/23

[Faint signatures and dates]
01/06/23

[Faint signatures and dates]
01/06/23

Class		Master of Computer Application (MCA) II YEAR	
Semester/Year		III Semester	
Elective Paper		Elective - II	
Subject & Subject Code		Internet of Things (4C) - MCAPL20S308	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	4
3	1	0	

Course Objectives:

1. To impart necessary and practical knowledge of components of Internet of Things
2. To introduce the latest microcontrollers with application development, product design and prototyping.
3. Learn and Understand Various Protocols used in Wireless Sensor Network.
4. Develop skills required to build real-life IoT based projects.

Course Outcome:

1. Understand the Concepts of Internet of Things and the Application Areas of IoT
2. Understand IOT's hardware and software components .
3. Interface I/O devices, sensors & communication modules.
4. Remotely monitor data and control devices.
5. Develop real life IoT based projects.

Student Learning Outcomes (SLO):

1. Describe what IoT is and how it works today.
2. Recognise the factors that contributed to the emergence of IoT.
3. Design and program IoT devices.
4. Use real IoT protocols for communication.
5. Secure the elements of an IoT device.
6. Design an IoT device to work with a Cloud Computing infrastructure.

Unit	Syllabus	Periods
UNIT - I	Introduction: Definition, Characteristics of IOT, IOT Conceptual framework, IOT Architectural view, Physical design of IOT, Logical design of IOT, Application of IOT.	8
UNIT - II	Machine-to-machine (M2M), SDN (software defined networking) and NFV (network function virtualization) for IOT, data storage in IOT, IOT Cloud Based Services.	8
UNIT - III	Design Principles for Web Connectivity: Web Communication Protocols for connected devices, Message Communication Protocols for connected devices, SOAP, REST, HTTP Restful and Web Sockets. Internet Connectivity Principles: Internet Connectivity, Internet based communication, IP addressing in IOT, Media Accesscontrol.	8
UNIT - IV	Sensor Technology , Participatory Sensing, Industrial IOT and Automotive IOT , Actuator, Sensor data Communication Protocols ,Radio Frequency Identification Technology, Wireless Sensor Network Technology.	8

Handwritten signature and date: 01/06/23

Handwritten signature and date: 01.06.23

Handwritten signature and date: 01/06/23

Handwritten signature and date: 01/06/23

(15)

Handwritten signature and date: 1/6/23

Handwritten signature and date: 01/06/23
Handwritten signature: Nidhi

UNIT - V	IOT Design methodology: Specification -Requirement, process, model, service, functional & operational view.IOT Privacy and security solutions, Raspberry Pi & arduino devices.IOT Case studies: smart city streetlights control & monitoring.	8
----------	---	---

References Books:

- 1 Rajkamal,"Internet of Things", Tata McGraw Hill publication
- 2 Vijay Madiseti and ArshdeepBahga, "Internet of things(AHand- on-Approach)" 1st Edition ,UniversalPress
- 3 HakimaChaouchi "The Internet of Things: Connecting Objects", Wiley publication.
- 4 Charless Bell "MySQL for the Internet of things", Apresspublications.
- 5 Donald Norris"The Internet of Things: Do-It-Yourself at Home Projects for Arduino, Raspberry Pi and BeagleBone Black", McGraw Hillpublication.

[Signature]
01/06/23

[Signature]
01-06-23

[Signature]
01/06/23

[Signature]
01/06/23

[Signature]
1/6/23

[Signature]
01/06/23

(16)

[Signature]

Unit	Topic	Periods
UNIT - I	Introduction, Definition, Characteristics of IOT, IOT Architectural Framework, IOT Applications	
UNIT - II	Network-to-network (N2N), SDN, Software defined networking, and IOT network function architecture for IOT, Data storage in IOT Cloud based services	
UNIT - III	Design patterns for Web Connectivity, Web Communication Patterns for connected devices, Message Communication Patterns for connected devices, HTTP, REST, HTTP Basic and Websocket, Binary Connectivity, Protocols, Internet Gateway, Internet based communication, IP addressing in IOT, Mobile applications	
UNIT - IV	Sensor Technology, Technology behind Industrial IOT and Automotive IOT, Actor, Sensor and Communication Protocols, Radio Protocols, Application Technology, Wireless Sensor network Technology	

[Faint handwritten signatures and dates at the bottom of the page]

Class		Master of Computer Application (MCA) II YEAR	
Semester/Year		III Semester	
Elective Paper		Elective - III	
Subject & Subject Code		Computer Ethics (5A) - MCAPL20S309	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	4
3	1	0	

Course Objectives:

1. Students should acquire a broad perspective on the social and ethical impacts and implications of information technology.
2. Students should acquire specific knowledge about major issues in several different areas of the field of Computer Ethics.
3. Students should acquire in-depth knowledge of at least one significant ethical issue generated by information technology.
4. Students should develop skills in clarifying and ethically analyzing realistic cases that involve information technology.
5. Students should exercise and improve their skills in critical and analytical writing.

Course Outcome:

1. Discuss what ethics is and what constitutes an ethical issue
2. Identify and discuss ethical issues that arise in the media, in routine conversations and, in particular, in personal everyday professional practice
3. Discuss the role of emotions in ethical deliberations
4. Discuss how negotiation might resolve apparent ethical differences
5. Identify and discuss the ethical issues presented and rhetorical styles used in play and dialogue excerpts, with focus on explaining how language is used to alter other people's ethical perceptions and convince them of specific points.

Student Learning Outcomes (SLO):

1. Identify ethical issues in different enterprise computing settings.
2. Review real-life ethical cases and be able to develop ethical resolutions and policies.
3. Understand laws and regulations related to ethics.
4. Understand the consequences of ignoring and non-compliance with ethical imperatives.
5. Learn about the best ethical practices and models.
6. Develop a sound methodology in resolving ethical conflicts and crisis

Unit	Syllabus	Periods
UNIT - 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, The Changing Professional Services Industry, Professional Relationships That Must Be Managed, Professional Codes of Ethics, Professional Organizations, Certification, Government Licensing, IT Professional Malpractice. IT Users, Common Ethical Issues for IT Users, Supporting the Ethical Practices of IT Users.	8

[Signature]
01/06/23

[Signature]
01.06.23

[Signature]
17/06/23

[Signature]
01/06/23

[Signature]
01/06/23

UNIT - 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, Contractors, and Part-Time Workers, Prevention, Detection, Response. Privacy: Privacy Concerns Around with New IRS Systems, Privacy Protection and the Law: Information Privacy, Privacy Laws, Applications, and Court Rulings. Key Privacy and Anonymity Issues: Identity Theft, Consumer Profiling, Treating Consumer Data Responsibly, Workplace Monitoring, Advanced Surveillance Technology.	8
UNIT - 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, Software Copyright Protection, 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: Software Patents, Software Cross-Licensing Agreements, Defensive Publishing and Patent Trolls, Submarine Patents and Patent Farming. Trade Secrets: Trade Secret Laws, Employees and Trade Secrets, Key Intellectual Property Issues: Plagiarism, Reverse Engineering, Open Source Code, Competitive Intelligence, Cybersquatting	8
UNIT - IV	Software Development: Strategies for Engineering Quality Software, The 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	8
UNIT - V	Social Networking: What Is a Social Networking Web Site? Business Applications of Online Social Networking, Social Network Advertising, 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, Strategies for Successful Offshore Outsourcing, Whistle-Blowing, Protection for Whistle-Blowers, Whistle-Blowing Protection for Private-Sector Workers, Dealing with a Whistle-Blowing Situation, Green Computing, ICT Industry Code of Conduct.	8

Abdul
01/06/23
01.06.23
01/06/23
01/06/23
01/06/23
01/06/23
18

Class		Master of Computer Application (MCA) II YEAR	
Semester/Year		III Semester	
Elective Paper		Elective - III	
Subject & Subject Code		Advanced DBMS (5B) - MCAPL20S310	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	4
3	1	0	

Course Objectives:

1. To provide a strong foundation in advanced database concepts from an industry perspective.
2. To covers advanced data modeling concepts like OOD Modeling and ORD Modeling
3. To learn query processing and transaction management concepts for object-relational database and distributed database.

Course Outcome:

1. Students get practical knowledge on designing and creating relational database systems.
2. Understand various advanced queries execution such as relational constraints, joins, set operations, aggregate functions, trigger, views and embedded SQL.
3. Use of various software to design and build ER Diagrams, UML, Flow chart for related database systems.
4. Students will be able to design and implement database applications on their ow.

Student Learning Outcomes (SLO):

1. Identify advance database concepts and database models.
2. Apply and analyze various terms related to transaction management in centralized and distributed database.
3. Produce data modeling and database development process for object –oriented DBMS.
4. Analyze and Implement the concept of object- relational database in development of various real time software.
5. Examine the issues related to multimedia and mobile database performance.

Unit	Syllabus	Periods
UNIT - I	Objected Oriented and Object Relational Databases Modeling Complex Data Semantics, Specialization, Generalization, Aggregation and Association, Objects, Object Identity and its implementation, Clustering, Equality and Object Reference, Architecture of Object Oriented and Object Relational databases, Persistent Programming Languages, Cache Coherence. Case Studies: Gemstone, O2, Object Store, SQL3, Oracle xxi, DB2.	8
UNIT - II	Deductive Databases Data log and Recursion, Evaluation of Data log program, Recursive queries with negation. Parallel and Distributed Databases Parallel architectures, shared nothing/shared disk/shared memory based architectures, Data partitioning, Intraoperator parallelism, pipelining. Distributed Data Storage – Fragmentation & Replication, Location and Fragment Transparency Distributed Query Processing and Optimization, Distributed Transaction Modeling and concurrency Control, Distributed Deadlock, Commit Protocols, Design of Parallel Databases, and Parallel Query Evaluation.	8

[Signature]
01/06/23

[Signature]
01.08.23

[Signature]
01/06/23

(19)

[Signature]
01/06/23

[Signature]
01/06/23

[Signature]
01/06/23

[Signature]

Class		Master of Computer Application (MCA) II YEAR	
Semester/Year		III Semester	
Elective Paper		Elective - III	
Subject & Subject Code		Distributed Systems (5C) - MCAPL20S311	
Max. Marks		60 (ETE) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	4
3	1	0	

Course Objectives:

1. To provide hardware and software issues in modern distributed systems.
2. To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault tolerance, security, and distributed file systems.
3. To analyze the current popular distributed systems such as peer-to-peer (P2P) systems will also be analyzed.

Course Outcome:

1. To provide hardware and software issues in modern distributed systems.
2. To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault tolerance, security, and distributed file systems.
3. To know about Shared Memory Techniques.
4. Have Sufficient knowledge about file access.
5. Have knowledge of Synchronization and Deadlock.

Student Learning Outcomes (SLO):

1. Apply knowledge of distributed systems techniques and methodologies.
2. Explain the design and development of distributed systems and distributed systems applications.
3. Use the application of fundamental Computer Science methods and algorithms in the development of distributed systems and distributed systems applications.
4. Discuss the design and testing of a large software system, and to be able to communicate that design to others.

Unit	Syllabus	Periods
UNIT - I	Introduction to Distributed Systems : Goals of Distributed Systems, Hardware and Software concepts, the client server model,, Remote procedure call, remote object invocation, message and stream oriented communications.	8
UNIT - II	Process and synchronization in Distributed Systems : Threads, clients, servers, code migration, clock synchronization, mutual exclusion, Bully and Ring Algorithm, Distributed transactions.	8
UNIT - III	Consistency, Replication, fault tolerance and security: Object replication, Data centric consistency model, client-centric consistency models, Introduction to fault tolerance, process resilience, recovery, distributed security architecture, security management, KERBEROS, secure socket layer, cryptography.	8
UNIT - IV	Distributed Object Based and File Systems : CORBA, Distributed COM, Goals and Design Issues of Distributed file system, types of distributed file system, sun network file system,.	8

Ad
01/06/23

Murugan
01.06.23

Shel
01/06/23

21

PS
01/06/23

Prakash
01/06/23

Nielu

UNIT - V	Distributed shared memory, DSM servers, shared memory consistency model, distributed document based systems : the world wide web, distributed co-ordination based systems: JINI Implementation: JAVA RMI, OLE, ActiveX, Orbix, Visbokes, Object oriented programming with SOM	8
----------	---	---

References Books:

- 1 Lui "Distributed Computing Principles and Applications".
 - 2 Harry Singh "Progressing to Distributed Multiprocessing" Prentice-Hall Inc.
 - 3 B.W. Lampson "Distributed Systems Architecture Design & Implementation", 1985 Springer Verlag.
 - 4 Andrew S. Tanenbaum, Maarten Van Steen "Distributed Systems Principles and Paradigms" Pearson Education Inc. 2002.
 - 5 Parker Y. Verjies J. P. "Distributed computing Systems, Synchronization, control & Communications" PHI.
- Robert J. & Thieranf "Distributed Processing Systems" 1978, Prentice Hall.

Handwritten signature and date: 6/10/06/23

Handwritten signature and date: 01-06-23

Handwritten signature and date: 6/10/06/23

Handwritten signature and date: 01/06/23

Handwritten signature and date: 01/06/23

Handwritten text: Redu

Handwritten circled number: 22

Multiple handwritten signatures and dates at the bottom of the page, including 01/06/23 and 01/06/23.

School of Basic & Applied Sciences

Class		MASTER OF COMPUTER APPLICATION (MCA)	
Semester/Year		Semester - III	
Subject & Subject Code		Computer- Lab – MCAPL20S313	
Max. Marks		60 (ETA) + 40 (IA) = 100	
Credit		Total Credits	
L	T	P	5
0	0	5	

LIST OF PRACTICAL (PYTHON PROGRAMMING)

1. Program to demonstrate basic data type in python
2. A cashier has currency notes of denominations 10, 50, and 100.If the amount to be withdrawn isinput through the keyboard using input() function in hundreds, find the total number of currency notes of each denomination the cashier will have to give to the withdrawer
3. Program to demonstrate list and tuple in python .
4. Write a program in Python, A library charges a fine for every book returned late. For first 5 days the fine is 50 paisa, for 6-10 days fine is one rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine or the appropriate message
5. Write a program to calculate overtime pay of 10 employees. Overtime is paid at the rate ofRs.12.00 per hour for every hour worked above 40 hours. Assume that employee do not work forfractional part of an hour.
6. Two numbers are entered through the keyboard, write a program to find the value of one numberraised to the power of another
7. Write a function that receives marks received by a student in 3 subjects and returns the averageand percentage of these marks. Call this function from main() and print the result in main
8. Write a program to read a file and display its contents
9. Write a program to demonstrate database connectivity in python

LIST OF PRACTICAL (Web Technology)

1. Write an HTML page with Javascript that takes a number from one text field in the range 0999 and display it in other text field in words.If the number is out of range, it should show "out of range" and if it is not a number, it should show "not a number" message in the result box.
2. Develop static pages (using only HTML) of an online Book store.

The pages should resemble: www.amazon.com. The website should consist the following pages.

- Home page
 - Registration and user Login
 - User profile page
 - Books catalog
 - Shopping cart
 - Payment by credit card Order Conformation
3. Write an HTML page that has one input, which can take multi-line text and a submit button. Once the user clicks the submit button, it should show the number of characters, lines and words in the text

[Signature]
01/06/23

[Signature]
01/06/23

[Signature]
01/06/23

[Signature]
01/06/23

[Signature]
01/06/23

(23)

School of Basic & Applied Sciences

entered using an alert message. Words are separated with white space and lines are separated with new line character.

4. Create an XML document that contains 10 users information. Write a script which takes user id as input and returns the user details by taking the user information from XML document.
5. A simple calculator web application that takes 2 numbers and an operator (+, -, *, /, %) from an HTML page and returns the result page with the operation performed on the operands.
6. A web application shows a start time at the right top corner of the page and takes a name as input and provides the logout button at bottom. On clicking logout button it should show a logout page with thank you message with the duration of Usage.
7. A web application that takes name and age from an HTML page. If the age is less than 18, it should send a page with "hello, and You are not authorized to visit this site" otherwise it should send "You are welcome to this site" message.
8. Write a web application in which the user is first served a login page which takes users name and password. After submitting the details the server checks these values against the data from a database and takes the following decisions if name and password matches, serves a welcome page with user's full name. If name matches and password doesn't match then serves password mismatch page. If name not found in database, serves a registration page where users full name is asked and on submitting the name, it stores the login name, password and full name in the database.

LIST OF PRACTICAL (Internet of Things)

- Familiarization with Arduino/Raspberry Pi and perform necessary software installation.
- To interface LED/Buzzer with Arduino/Raspberry Pi and write a program to turn ON LED for 1 sec after every 2 seconds.
- To interface Push button/Digital sensor (IR/LDR) with Arduino/Raspberry Pi and write a program to turn ON LED when push button is pressed or at sensor detection.
- To interface DHT11 sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings.
- To interface motor using relay with Arduino/Raspberry Pi and write a program to turn ON motor when push button is pressed.
- To interface OLED with Arduino/Raspberry Pi and write a program to print temperature and humidity readings on it.
- To interface Bluetooth with Arduino/Raspberry Pi and write a program to send sensor data to smart phone using Bluetooth.
- To install MySQL database on Raspberry Pi and perform basic SQL queries.
- Write a program on Arduino/Raspberry Pi to publish temperature data to MQTT broker.
- Write a program to create UDP server on Arduino/Raspberry Pi and respond with humidity data to UDP client when requested.

[Signature]
01/06/23

[Signature]
01-06-23

[Signature]
01/06/23

[Signature]
01/06/23

(24)

[Signature]
01/06/23