POOMPUHAR COLLEGE (AUTONOMOUS)

OF THE TAMIL NADU HR & CE DEPARTMENT
MELAIYUR - 609 107

COURSE STRUCTURE FOR M.SC-COMPUTER SCIENCE

(Applicable to the candidates admitted from the academic year 2022 – 2023 onwards)

Semester	Course	Hours	Credit	Exam Hours	Marks		Total
					Int	Ext	
I	Core Course – I (CC) **DESIGN AND ANALYSIS OF ALGORITHMS**	6	5	3	25	75	100
	Core Course – II (CC) **ADVANCED JAVA PROGRAMMING**	6	4	3	25	75	100
	Core Course – III (CC) **ADVANCED DATABASE MANAGEMENT SYSTEMS**	6	4	3	25	75	100
	Core Course - IV (CC) **DISTRIBUTED OPERATING SYSTEM**	5	4	3	25	75	100
	Core Course – V (CC) **ADVANCED JAVA-LAB**	5	4	3	25	75	100
	Human Rights	2	2	3	25	75	100
	Total	**30**	**23**				

							600
II	Core Course – VI (CC) **DATA MINING AND DATA WAREHOUSING**	6	5	3	25	75	100
	Core Course – VII (CC) **INTERNET OF THINGS**	6	4	3	25	75	100
	Core Course – VIII (CC) **PROGRAMMING IN PYTHONs**	5	4	3	25	75	100
	Core Course – IX (CC) **PYTHON PROGRAMMING LAB**	5	4	3	25	75	100
	Elective Course – I (EC) (One out of Three) **1. WAP and XML** **2. SOFT COMPUTING** **3. THEORY OF COMPUTATION**	5	4	3	25	75	100
	Open Elective – I **SHELL PROGRAMMING**	3	3	3	25	75	100
	Total	**30**	**24**				**600**

Semester	Course	Hours	Credit	Exam Hours	Marks		Total
					Int	Ext	
III	Core Course X - (CC) **COMPILER DESIGN**	6	4	3	25	75	100
	Core Course XI - (CC) **ADVANCED WEB TECHNOLOGY**	6	4	3	25	75	100
	Core Course XII - (CC) **ADVANCED WEB TECHNOLOGY LAB**	5	4	3	25	75	100
	Core Course XIII – Research Methodology	5	4	3	25	75	100
	Elective Course - II (EC) (One out of Three) 1. **Software Project management** 2. **OPTIMIZATION TECHNIQUES** 3. **OBJECT ORIENTED SYSTEMS DEVELOPMENT**	5	4	3	25	75	100
	Open Elective - II **Operating System Lab**	3	3	3	25	75	100

		30	**23**				**600**
IV	Core Course - XIV (CC) **ADVANCED COMPUTER NETWORKS**	6	4	3	25	75	100
	Core Course - XV (CC) **PHP PROGRAMMING**	6	4	3	25	75	100
	Core Course - XVI (CC) **PHP PROGRAMMING LAB**	6	4	3	25	75	100
	Elective Course - III (EC) (One out of Three) 1. **EMBEDDED SYSTEMS** 2. **MOBILE COMPUTING** **3.DATA SCIENCE AND BIG DATA ANALYTICS**	6	4	3	25	75	100
	Project Work	6	4				100
	Total	**30**	**20**				**500**
	Grand Total	**120**	**90**				**2300**

Head of the Department **Principal**

Note:

Core Courses (include Theory & Project)

Number of Courses	16
Credit per Course	4 – 5
Total Credits	70

Elective Courses

Number of Courses	3
Credit per Course	4

Open Elective Courses

Number of Courses	2
Credit per Course	3
Human Rights Paper	1
Credit for Human Rights Paper	2
Total Credits	20

	Internal	**External**	
Theory	25	75	
Project			
Dissertation	80 Marks	[2 reviews – 20+20	= 40 marks
		Report Valuation]	= 40 marks
Viva	20 Marks		20 marks

Passing Minimum in a Subject

CIA	50%	(13 marks)
UE	50%	(37 Marks)
	Total - 50 Marks	

OUTCOME BASED EDUCATION

Post Graduate – Science

Programme Outcomes:

PO1: Disciplinary Knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of a postgraduate programme of study.

PO2: Ethical Value

Ability to incorporate quality, ethical and legal value-based perspectives to all organizational activities.

PO3: Individual and Team Leadership Skill

Capability to lead themselves and the team to achieve organizational goals.

PO4: Employability & Entrepreneurial Skill

Inculcate contemporary business practices to enhance employability skills in the competitive environment. Equip with skills and competencies to become an entrepreneur.

PO5: Contribution to Society

Succeed in career endeavors and contribute significantly to society.

Program specific Outcomes for M.SC

PSO1: Write program in advance programming concepts in java, text processing, scripting etc,

PSO2: Learn new technology, graphing the concepts and issues behind its use and the use of computers.

PSO3: Understand the concepts of core subjects like Artificial Intelligence, Data Structure, DBMS and Operating system etc.,

PSO4: Study, understand the concepts of Natural Language Processing and its applications

PSO5: Do a project work of six months duration in the last semester, applying the concepts learned.

COURSE STRUCTURE FOR M.SC-COMPUTER SCIENCE

CC-I

1. DESIGN AND ANALYSIS OF ALGORITHMS

Objective: To learn effective problem solving in Computing applications and analyze the algorithmic procedure to determine the computational complexity of algorithms.

Unit I

Introduction: Algorithm Definition – Algorithm Specification – Performance Analysis-Asymptotic Notations. Elementary Data Structures: Stacks and Queues – Trees – Dictionaries – Priority Queues – Sets and Disjoint Set Union – Graphs

Unit II

Divide and Conquer: The General Method – Defective Chessboard – Binary Search – Finding The Maximum And Minimum – Merge Sort – Quick Sort – Selection sort

Unit III

The Greedy Method: General Method - Knapsack Problem - Job Sequencing With Deadlines - Minimum Cost Spanning Trees - Optimal Storage On Tapes – Optimal Merge Patterns - Single Source Shortest Paths.

Unit IV

Dynamic Programming: The General Method – Multistage Graphs – All-Pairs Shortest Paths – Single-Source Shortest Paths - Optimal Binary Search Trees - - 0/1 Knapsack - Reliability Design - The Traveling Salesperson Problem. Basic Traversal and Search Techniques: Techniques for Binary Trees – Techniques for Graphs – Connected Components and Spanning Trees.

Unit V

Backtracking: The General Method – The 8-Queens Problem – Sum of Subsets – Graph Coloring – Hamiltonian Cycles – Knapsack Problem Branch and Bound: Least Cost method- 0/1 Knapsack Problem.

Text Book

1. Ellis Horowitz, Satraj Sahni and Sanguthevar Rajasekaran, Fundamentals of Computer Algorithms, Universities Press, Second Edition, Reprint 2009.

References

1. Data Structures Using C - Langsam, Augenstien, Tenenbaum, PHI

2. Data structures and Algorithms, V.Aho, Hopcropft, Ullman , LPE
3. Introduction to design and Analysis of Algorithms - S.E. Goodman, ST. Hedetniem- TMH.
4. Carlos A.Coello Coello, Gary B.Lamont, David A.Van Veldhuizen, "Evolutionary Algorithms for Solving Multi-Objective Problems", Springer 2nd Edition, 2007.

Outcomes

- It gives stepwise procedure to solve problems.
- The Problems can be broken down into small pieces for program development.
- Efficient approach of solving problems by a model of computations

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	0	2	3	3	3
CO2	3	0	2	2	2
CO3	2	3	2	2	3
CO4	3	2	3	3	2
CO5	2	0	3	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC-II

ADVANCED JAVA PROGRAMMING

Objectives

 To deepen student's programming skills by analyzing the real world problem in a programmer's point of view and implement the concepts in real time projects

UNIT-I

Design Patterns: Introduction to Design patterns - Catalogue for Design Pattern - Factory Method Pattern, Prototype Pattern, Proxy Pattern-Decorator Pattern-Command Pattern- Collection Framework – Array List class – Linked List class – Array List vs. Linked List - List Iterator interface - Hash Set class- Linked Hash Set class-Tree Set class Priority Queue class - Map interface-Hash Map class-Linked Hash Map class .

UNIT-II

Applet Fundamentals- Applet Class - Applet lifecycle- Steps for Developing Applet Programs- Passing Values through Parameters- Graphics in Applets-GUI Application **-** Dialog Boxes - Creating Windows - Layout Managers – AWT Component classes – Swing component classes- Borders –

UNIT-III

JDBC **-**Introduction - JDBC Architecture - JDBC Classes and Interfaces –- Creating a New Database and Table with JDBC - Working with Database Metadata; Java Networking Basics of Networking - Networking in Java- Socket Program using TCP/IP.

UNIT–IV

Servlet: Advantages over Applets - Servlet Alternatives - Servlet Strengths - Servlet Architecture - Servlet Life Cycle – Generic Servlet, Http ServletSide Include – Cookies- JSP Engines - Working with JSP - JSP and Servlet - Anatomy of a JSP Page- Database Connectivity using Servlets and JSP.

UNIT-V Lambda Expressions- Method Reference- Functional Interface- Streams API, Filters- Optional Class- - Collection Factory Methods- Private Interface Methods- Inner Class Diamond Operator- Multiresolution Image API.

Textbooks

1. Bert Bates, Karthy Sierra , Eric Freeman, Elisabeth Robson, "Head First Design Patterns", O'REILLY Media Publishers.(1st-Unit).

2. Herbert Schildt, "Java: A Beginner Guide", Oracle Pres-Seventh Edition. (2nd and 3rd Unit).

3. Murach's, "Java Servlets and JSP", 2nd Edition, Mike Murach & Associates Publishers; 3rd Edition. (4th Unit).

4. Warburton Richard, "Java 8 Lambdas", Shroff Publishers & Distributors Pvt Ltd. (5th Unit).

References

1. Paul Deitel and Harvey Deitel, "Java: How to Program", Prentice Hall Publishers; 9th Edition.

2. Jan Graba, "An Introduction to Network Programming with Java-Java 7 Compatible", 3rd Edition, Springer.

Outcomes

- Able to develop a Graphical User Interface (GUI) with Applet and Swing.
- Develop a Client-Server Application with Database Maintenance.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	0	2	2	3	3
CO2	3	0	2	2	2
CO3	2	3	2	2	3
CO4	2	2	3	2	2
CO5	2	0	3	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC-III

ADVANCED DATABASE MANAGEMENT SYSTEMS

Objective

Acquire Knowledge of Database Models, Applications of Database Models and Emerging Trends

Unit-I

Relational and parallel Database Design: Basics, Entity Types, Relationship Types, ER Model, ER-to-Relational Mapping algorithm. Normalization: Functional Dependency, 1NF, 2NF, 3NF, BCNF,4NF and 5NF.

Unit-II

Distributed and Object based Databases: Architecture, Distributed data storage, Distributed transactions, Commit protocols, Concurrency control, Query Processing. Complex Data Types, Structured Types and Inheritance, Table Inheritance.

Unit-III

Spatial Database: Spatial Database Characteristics, Spatial Data Model, Spatial Database Queries, Techniques of Spatial Database Query, Logic based Databases: Introduction.

Unit-IV

XML Databases: XML Hierarchical data model, XML Documents, DTD, XML Schema.

Unit-V

Temporal Databases: Introduction, Intervals, Packing and Unpacking Relations, Generalizing the relational Operators, Database Design, Integrity Constraints, Multimedia Databases Application.

Text Book

1. Abraham Silberschatz, Henry F Korth , S Sudarshan, “Database System Comcepts”, 6th edition , McGraw-Hill International Edition , 2011

2. C.J.Date, A.Kannan, S.Swamynathan, “An Introduction to Database Systems”, 8th Edition, Pearson Education Reprint 2016.

Reference Books

1. Ramez Elmasri, Shamkant B Navathe, “Fundamental of Database Systems”, Pearson, 7th edition 2016.

Outcome

On completion of the course, students will able to

- Know about the Various Datamodels and Works on Database Architecture
- Knowledge patterns, Object Oriented Databases are well equipped.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	0	2	2	3	3
CO2	3	0	2	2	2
CO3	3	3	2	2	3
CO4	2	2	2	2	2
CO5	2	2	3	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC-IV

DISTRIBUTED OPERATING SYSTEM

Objectives

1. To study Distributed operating system concepts
2. To understand hardware, software and communication in distributed OS
3. To learn the distributed resource management components.
4. Practices to learn concepts of OS and Program the principles of Operating Systems

UNIT I

Introduction – Operating System Definition – Functions of Operating System – Types of Advanced Operating System – concepts of a Process – Critical Section Problem – Process Deadlock – Models of Deadlock – Conditions for Deadlock .

UNIT II

Distributed Operating Systems: Introduction- Issues – Communication Primitives – Inherent Limitations –Lamport's Logical Clock , Vector Clock, Global State , Cuts – Termination Detection – Distributed Mutual Exclusion – Distributed Deadlock Detection – Distributed Deadlock Detection Algorithms .

UNIT III

Distributed Resource Management – Distributed File Systems – Architecture – Mechanisms – Design Issues – Distributed shared Memory – Architecture – Algorithm – Protocols – Design Issues – Distributed Scheduling – Issues – Components – Algorithms.

UNIT IV

Failure Recovery and Fault Tolerance – Concepts – Failure Classifications – Approaches to Recovery – Recovery in Concurrent Systems – Synchronous and Asynchronous Check pointing and Recovery – Fault Tolerance Issues – Two-Phase and Non blocking Commit Protocols – Voting Protocols – Dynamic Voting Protocols.

UNIT V

Multiprocessor and Database Operating Systems –Structures – Design Issues – Threads – Process Synchronization – Processor Scheduling – Memory management – Reliability/Fault Tolerance – Database Operating Systems – concepts – Features of Android OS,

Text Books

1. MukeshSinghalN.G.Shivaratri, "Advanced Concepts in Operating Systems", McGraw Hill 2000.
2. Distributed Operating System – Andrew S. Tanenbaum, PHI.

Reference Books

1. Abraham Silberschatz, Peter B.Galvin, G.Gagne, "Operating Concepts", 6th Edition Addison Wesley publications 2003.

2. Andrew S.Tanenbaum, "Modern Operating Systems", 2nd Edition Addison Wesley 2001

Outcomes

 Clear understanding on several resource management techniques like distributed shared memory and other resources

 Knowledge on mutual exclusion and Deadlock detection of Distributed operating system.

 Able to design and implement algorithms of distributed shared memory and commit protocols

 Able to design and implement fault tolerant distributed systems.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	0	2	3	3	3
CO2	3	2	2	2	2
CO3	2	3	2	2	3
CO4	2	2	3	2	3
CO5	2	0	2	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC-V

ADVANCED JAVA-LAB

List of Practical's

1. Implementing Package, inheritances and interfaces
2. Implementing Flow, Border and Grid Layouts
3. Implementing Dialogs , Menu and Frame
4. Implementing User defined Exception Handling
5. Implementing Multithreading
6. Implementing I/O Stream File handling
7. Implementing a Calculator using Swing
8. CRUD operation Using JDBC
9. Client Server using TCP and UDP Socket
10. GUI application with JDBC

COURSE OUTCOMES

After completing the Course successfully, the student will be able to

1. Explain basic principles of Java programming language
2. Define and demonstrate the use of built-in data structures "lists" and
3. "dictionary".
4. Design and implement a program to solve a real world problem.
5. Design and implement GUI application and how to handle exceptions and files.

Make database connectivity in Java programming language.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	0	2	3	3	3
CO2	3	2	2	2	2
CO3	2	3	2	2	3
CO4	2	2	3	2	3
CO5	2	0	2	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC-VI

DATA MINING AND DATA WAREHOUSING

Objective

To introduce the fundamental concepts of Data Mining Techniques and various Algorithms used for Information Retrieval from Datasets.

Unit I

Data Mining And Data Preprocessing: Data Mining – Motivation – Definition – Data Mining on Kind of Data –Functionalities – Classification – Data Mining Task Primitives – Major Issues in Data Mining – Data Preprocessing – Definition – Data Clearing – Integration and Transformation – Data Reduction.

Unit II

Data Warehousing: Multidimensional Data Model –Data Warehouse Architecture – Data Warehouse Implementation –From data Warehousing to Data Mining – On Line Analytical Processing - On Line Analytical Mining.

Unit III

Frequent Patterns, Associations And Classification: The Apriori Algorithm – Definition of Classification and Prediction – Classification by Decision Tree Induction - Bayesian Classification – Rule Based Classification – Classification by Back Propagation

Unit IV

Cluster Analysis: Definition – Types of data in Cluster Analysis – Categorization of major Clustering Techniques – Partitioning Methods – Hierarchical Clustering – BIRCH - ROCK – Grid Based Methods – Model Based Clustering Methods – Outlier Analysis.

Unit V

Spatial, Multimedia, Text And Web Data: Spatial Data Mining – Multimedia Data Mining – Text Mining – Mining the World Wide Web – Data Mining Applications – Trends in Data Mining.

Text Books

1. Jiawei Han and Micheline Kamber, “Data Mining: Concepts and Techniques (The Morgan Kaufmann Series in Data Management Systems) 3rd Edition, July 6, 2011.

2. Ian H. Witten, Eibe Frank, Mark A. Hall, “Data Mining: Practical Machine Learning Tools and Techniques”, Elsevier; Third edition, 2014.

References

1. Margret H. Dunham, “Data Mining: Introductory and Advanced Topics”, Pearson Education, 2003.

2. M. Awad, Latifur Khan, Bhavani Thuraisingham, Lei Wang, “Design and Implementation of Data Mining Tools”, CRC Press-Taylor & Francis Group, 2015.

3. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, “Introduction to Data Mining-Instructor’s Solution Manual”, Pearson Education, First Edition, 2016.

4. Mohammed J.Zaki, Wagner Meira JR, “Data Mining and Analysis: Fundamental Concepts and Algorithms”, Cambridge India, 2016.

Outcome

After completing this course, students will be familiar with basic data mining concepts for solving real world problems.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	0	2	3	3	3
CO2	3	2	2	2	2
CO3	2	3	2	2	2
CO4	2	2	3	2	3
CO5	2	2	2	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC-VII

INTERNET OF THINGS

Objective

In order to gain knowledge on bases of Internet of Things (IoT), IoT Architecture, and the Protocols related to IoT; and understand the concept of the Web of Thing and the relationship between the IoT and WoT.

UNIT I

INTRODUCTION To IoT: Internet of Things - Physical Design- Logical Design- IoT Enabling Technologies - IoT Levels and Deployment Templates - Domain Specific IoTs - IoT and M2M - IoT System Management with NETCONF-YANG- IoT Platforms Design Methodology.

UNIT II

IoT ARCHITECTURE: M2M high-level ETSI architecture - IETF architecture for IoT - OGC architecture - IoT reference model - Domain model - information model - functional model - communication model - IoT reference architecture

UNIT III

IoT PROTOCOLS: Protocol Standardization for IoT – Efforts – M2M and WSN Protocols – SCADA and RFID Protocols – Unified Data Standards – Protocols – IEEE 802.15.4 – BACNet Protocol – Modbus– Zigbee Architecture – Network layer .

UNIT IV

WEB OF THINGS: Web of Things versus Internet of Things – Two Pillars of the Web – Architecture Standardization for WoT– Platform Middleware for WoT – Unified Multitier WoT Architecture – WoT Portals and Business Intelligence. Cloud of Things: Grid/SOA and Cloud Computing – Cloud Middleware – Cloud Standards – Cloud Providers and Systems – Mobile Cloud Computing – The Cloud of Things Architecture.

UNIT V

APPLICATIONS: The Role of the Internet of Things for Increased Autonomy and Agility in Collaborative Production Environments - Resource Management in the Internet of Things: Clustering, Synchronisation and Software Agents. Applications - Smart Grid – Electrical Vehicle Charging.

Text Books

1. Arshdeep Bahga, Vijay Madisetti, “Internet of Things – A hands-on approach”, Universities Press, 2015.

2. Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), “Architecting the Internet of Things”, Springer, 2011.

3. Jan Ho¨ ller, Vlasios Tsiatsis , Catherine Mulligan, Stamatis , Karnouskos, Stefan Avesand. David Boyle, "From Machine-to-Machine to the Internet of Things - Introduction to a New Age of Intelligence", Elsevier, 2014.

4. Networks, Crowds, and Markets: Reasoning About a Highly Connected World - David Easley and Jon Kleinberg, Cambridge University Press - 2010.

5. Olivier Hersent, David Boswarthick, Omar Elloumi , “The Internet of Things – Key applications and Protocols”, Wiley, 2012.

Outcomes

At the end of this course, students should be able to

 Gain the basic knowledge about IoT and they will be able to use IoT related products in real life. It helps to rely less on physical resources and started to do their work smarter.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	0	2	3	3	3
CO2	3	2	2	2	2
CO3	2	3	2	2	3
CO4	3	2	3	3	3
CO5	2	0	2	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC-VIII

CC-VIII-PROGRAMMING IN PYTHON
COURSE OBJECTIVES

 To understand the basic components of computer programming using the Python language

 To demonstrate significant experience with the Python program development environment

UNIT-I

Introduction to Python - Why Python - Installing in various Operating Systems - Executing Python Programs - Basic Programming concepts - Variables, expressions and statements - Input/ Output – Operators.

UNIT-II

Conditions - Functions - Arguments - Return values - Iteration - Loops - Strings -Data Structures - Lists - Dictionaries - Tuples - Sequences - Exception Handling.

UNIT-III

File Handling - Modules - Regular Expressions - Text handling - **O**bject Oriented Programming - Classes - Objects - Inheritance - Overloading - Polymorphism Interacting with Databases - Introduction to MySQL - interacting with MySQL - Building a address book with add/edit/delete/search features.

UNIT-IV

Introduction to Graphics programming - Introduction to GTK - PyGTK - Developing GUI applications using pyGTK - Scientific Programming using NumPy / SciPy - Image Processing - Processing multimedia files -Network Programming, Web services using SOAP, Introduction to Graphics programming - PyGame

UNIT-V

Introduction to Version Control Systems - Subversion/Git, Writing Unit Tests, Creating Documentation, Contributing to Open Source Projects

TEXT BOOK

1. Allen B. Downey, ”Think Python: How to Think Like a Computer Scientist“,1st Edition 2012, O’Reilly.

REFERENCE BOOKS

1. Jeff McNeil ,”Python 2.6 Text Processing: Beginners Guide”, 2010 ,Packet Publications
2. Mark Pilgrim ,”Dive Into Python “ , 2nd edition 2009, Apress

COURSE OUTCOMES

After completing the Course successfully, the student will be able to

1. Explain basic principles of Python programming language
2. Define and demonstrate the use of built-in data structures “lists” and “dictionary”.
3. Design and implement a program to solve a real world problem.
4. Design and implement GUI application and how to handle exceptions and files.
5. Make database connectivity in python programming language.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	3	2	2
CO3	3	3	2	3	3
CO4	3	2	3	2	2
CO5	2	3	3	3	3

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC-IX

PRACTICAL : PYTHON PROGRAMMING LAB

COURSE OBJECTIVES

 To understand the programming basics in Python Programming

 To understand the object-oriented program design and development in Python Programming

1. Create a simple calculator to do all the arithmetic operations
2. Write a program to use control flow tools like if.
3. Write a program to use for loop
4. Data structures

   use list as stack

   use list as queue

   tuple, sequence
5. Create new module for mathematical operations and use in your program
6. Write a program to read and write files, create and delete directories
7. Write a program with exception handling
8. Write a program using classes
9. Connect with MySQL and create address book
10. Write a program using string handling and regular expressions
11. Program to parse apache log file
12. Create a GUI program using pygtk

COURSE OUTCOMES

After completing the Course successfully, the student will be able to

1. Explain basic principles of Python programming language
2. Define and demonstrate the use of built-in data structures “lists” and “dictionary”.
3. Design and implement a program to solve a real world problem.
4. Design and implement GUI application and how to handle exceptions and files.
5. Make database connectivity in python programming language.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	2	2	2
CO3	3	3	2	3	3
CO4	3	2	3	2	2
CO5	2	3	3	3	3

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

Elective course -I

EC- CHOICE-2

2. SOFT COMPUTING

Objectives

 Develop the skills to gain a basic understanding of neural network theory and fuzzy logic theory.

 Introduce students to artificial neural networks and fuzzy theory from an engineering perspective.

UNIT I

Introduction: Soft Computing Constituents – Soft Computing Vs Hard Computing – Characteristics - Applications - Artificial Neural Network (ANN): Fundamental Concept – Application Scope - Basic Terminologies – Neural Network Architecture – Learning Process.

UNIT II

Supervised Learning Networks: Perceptron Networks – Adaline and Madaline Networks – Back Propagation Network – Radial Basis Function Network. Associative Memory Networks – BAM - Hopfield Network - Boltzmann Machine. Unsupervised Learning Networks: Kohonen Self Organizing Network

UNIT III

Fuzzy Sets: Basic Concept – Crisp Set Vs Fuzzy Set - Operations on Fuzzy Set – Properties of Fuzzy Sets – Fuzzy Relations: Concept – Fuzzy Composition – Fuzzy Equivalence and Tolerance Relation - Membership Functions: Features – Fuzzification – Methods of Membership value assignments.

UNIT IV

Fuzzy Arithmetic – Extension Principle – Fuzzy Measures – Fuzzy Rules and Fuzzy Reasoning: Fuzzy Propositions – Formation of Rules – Decomposition of Rules – Aggregation of Rules – Approximate Reasoning –Fuzzy Decision Making – Fuzzy Logic Control Systems.

UNIT V

Genetic Algorithm: Fundamental Concept – Basic Terminologies – Traditional Vs Genetic Algorithm - Elements of GA - Encoding - Fitness Function – Genetic Operators: Selection – Cross Over - Inversion and Deletion - Mutation – Simple and General GA.

Text Book

1. S.N. Sivanandam, S.N. Deepa, “Principles of Soft Computing”, Wiley India, 2007.

Reference Book

1. S. Rajasekaran, G.A.V. Pai, “Neural Networks, Fuzzy Logic, Genetic Algorithms”, Prentice Hall India, 2004.

Outcomes

Upon completion of the course, the student are expected to

 Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory.
 Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic
 To understand the fundamental theory and concepts of neural networks, Identify different neural network architectures, algorithms, applications and their limitations.

COURSE OUTCOMES

After completing the Course successfully, the student will be able to

1. Explain basic principles of Python programming language
2. Define and demonstrate the use of built-in data structures “lists” and “dictionary”.
3. Design and implement a program to solve a real world problem.
4. Design and implement GUI application and how to handle exceptions and files.
5. Make database connectivity in python programming language.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	2	3	2
CO3	2	3	2	3	3
CO4	3	2	3	2	2
CO5	2	3	2	3	3

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

OPEN ELECTIVE – I

SHELL PROGRAMMING LAB

COURSE OBJECTIVES

- Simulate the file commands
- Write simple shell programming

1. Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split, diff.
2. Write a shell script to show the following system configuration:
a. currently logged user and his log name.
b. current shell, home directory, Operating System type, current Path setting, current working directory.
c. show currently logged number of users, show all available shells
d. show CPU information like processor type, speed
e. show memory information.
3. Write a Shell Script to implement the following: pipes, Redirection and tee commands.
4. Write a shell script for displaying current date, user name, file listing and directories by getting user choice.
5. Write a shell script to implement the filter commands.
6. Write a shell script to remove the files which has file size as zero bytes.
7. Write a shell script to find the sum of the individual digits of a given number.
8. Write a shell script to find the greatest among the given set of numbers using command line arguments.
9. Write a shell script for palindrome checking.
10. Write a shell script to print the multiplication table of the given argument using for-loop.

COURSE OUTCOMES

After completing the Course successfully, the student will be able to

1. Explain basic principles of shell programming language
2. Define and demonstrate the shell script
3. Design and implement a program to solve a display a current date and time.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	2	3	2
CO3	2	3	2	3	3
CO4	3	2	2	2	3

CO5	2	3	2	3	3

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC X - COMPILER DESIGN

Objectives

 Discover principles, algorithms and techniques that can be used to construct various phases of compiler.

 Acquire knowledge about finite automata and regular expressions

 Learn context free grammars, compiler parsing techniques.

 Explore knowledge about Syntax Directed definitions and translation scheme

 Understand intermediate machine representations and actual code generation

Unit – I

Lexical analysis - Language Processors, The Structure of a Compiler, Parameter passing mechanism – Symbol table - The role of the lexical analyzer - Input buffering - Specification of tokens - Recognition of tokens – Finite automata - Regular expression to automata.

Unit – II

Syntax Analysis - The role of the parser - Context-free grammars - Writing a grammar - Top down Parsing - Bottom-up Parsing - LR parsers- LALR parsers.

Unit – III

Semantic Analysis - Inherited and Synthesized attributes – Dependency graphs – Ordering the evaluation of attributes – S-attributed definitions – L-attributed definitions – Applications of Syntax Directed translation – Syntax Directed translations schemes - Storage organization – Stack allocation of space.

Unit – IV

Intermediate Code Generation - Variants of Syntax trees – Three Address code – Types and Declarations - Translation of Expressions – Type checking - Control flow - Back patching - Switch Statements - Procedure calls.

Unit – V

Code Generation and Code Optimization - Issues in the design of a code generator - The target language – Address in the Target Code – Basic Block and Flow graphs – Optimization of Basic Blocks - A simple code generator – Peephole Optimization.

Text Book

1. Alfred V. Aho, Monica S.Lam, Ravi Sethi and Jeffrey D. Ullman, “Compilers-Principles, Techniques and Tools”, Second Edition, Pearson Education Asia, 2009.

References

1. A.V. Aho, Ravi Sethi, J.D. Ullman, Compilers - Principles, Techniques and Tools, Addison- Wesley, 2003.

2. Fischer Leblanc, Crafting Compiler, Benjamin Cummings, Menlo Park, 1988.

3. Kennath C.Louden, Compiler Construction Principles and Practice, Vikas publishing House, 2004.

4. Allen I. Holub, Compiler Design in C, Prentice Hall of India, 2001.
5. S.Godfrey Winster, S.Aruna Devi, R.Sujatha, “Compiler Design”, yesdee Publishers, Third Reprint 2019.

Outcome

On the successful completion of this course, Students will be able to:

 Use the knowledge of patterns, tokens & regular expressions for solving a problem in the field of data mining.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	2	3	2
CO3	2	3	2	2	3
CO4	3	2	2	2	3
CO5	3	3	2	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC XI ADVANCED WEB TECHNOLOGY

Objectives

- Explore the backbone of web page creation by developing .NET skill.
- Enrich knowledge about HTML control and web control classes
- Provide depth knowledge about ADO.NET
- Understand the need of usability, evaluation methods for web services

Unit - I

OVERVIEW OF ASP.NET - The .NET framework – Learning the .NET languages Data types – Declaring variables- Scope and Accessibility- Variable operations- Object Based manipulation- Conditional Structures- Loop Structures- Functions and Subroutines. Types, Objects and Namespaces .

Unit – II

Developing ASP.NET Applications - ASP.NET Applications: ASP.NET applications– Code behind- The Global.asax application file- Understanding ASP.NET Classes- ASP.NET Configuration. Web Form fundamentals: A simple page applet- Improving the currency converter- HTML control classes- The page class- Accessing HTML server controls. Using Visual Studio.NET: Starting a Visual Studio.NET Project- Web form Designer- Writing code- Visual studio.NET debugging.

Unit – III

Working with Data - Overview of ADO.NET - ADO.NET and data management- Characteristics of ADO.NET-ADO.NET object model. ADO.NET data access : SQL basics– Select , Update, Insert, Delete statements- Accessing data- Creating a connection- Using a command with a DataReader - Accessing Disconnected data - Selecting multiple tables – Updating Disconnected data.

Unit - IV

Web Services - Web services Architecture : Internet programming then and now- WSDL–SOAP- Communicating with a web service-Web service discovery and UDDI. Creating Web services : Web service. The StockQuote web service – Documenting the web service- Testing the web service- Web service Data types- ASP.NET intrinsic objects.

Unit – V

Advanced ASP.NET - Component Based Programming: Creating a simple component – Properties and state- Database components- Using COM components. Custom controls: User Controls- Deriving Custom controls. Implementing security: Determining security requirements- The ASP.NET security model- Forms authentication- Windows authentication.

Text Book

1. 1 Mathew Mac Donald, “ASP.NET Complete Reference”, TMH 2005.

References

1. Crouch Matt J, “ASP.NET and VB.NET Web Programming”, Addison Wesley 2002.
2. J.Liberty, D.Hurwitz, “Programming ASP.NET”, Third Edition, O’REILLY, 2006.

Outcomes

On the successful completion of this course, Students will be able to:

 Design a web page with Web form fundamentals and web control classes

 Recognize the importance of validation control, cookies and session

 Apply the knowledge of ASP.NET object, ADO.NET data access and SQL to develop a client server model.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	2	3	2
CO3	2	3	2	2	3
CO4	2	2	2	3	3
CO5	3	3	2	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

XII- CC Lab-ADVANCED WEB THECHNOLOGY LAB

1. Write a XML program for job listing in HTML

2. Write a JavaScript code block, which checks the contents entered in a form's text element. If the text entered is in the lower case, convert to upper case.

3.Write a JavaScript code block, which validates a username and password.

a) If either the name or password field is not entered display an error message.

b) The fields are entered do not match with default values display an error message.

c) If the fields entered match, display the welcome message.

4. Write a JavaScript code to browser

5. Write a JSP Program for user authentication.

6. Write a JSP Program for a simple shopping cart.

7. Write a JSP Program to prepare a bio data and store it in database.

8. Write an ASP Program using Response and Request Object.

9. Write an ASP Program using Ad Rotator Component.

10. Write an ASP program using database connectivity for student's record.

Outcomes

On the successful completion of this course, Students will be able to:

 Design a web page with Web form fundamentals and web control classes

 Recognize the importance of validation control, cookies and session

 Apply the knowledge of ASP.NET object, ADO.NET data access and SQL to develop a client server model.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	2	3	2
CO3	3	3	2	2	2
CO4	2	2	2	3	3
CO5	3	3	3	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

EC-II Choice I . Software Project management

Objectives

This course will enable students to:

- Understand the framework of project management
- Learn to monitor and control the project
- Know the sound knowledge in Agile method

Unit I

Project Management Framework: Introduction: Project - Project management - Relationship among Project, Program and Portfolio management - Project and operations management- Role of project manager - Project management body of knowledge - Enterprise Environmental factors. Project life cycle - Overview of project life cycle - **The Standard for Project Management of a Project**: Project management processes for a project: Common project management process interactions .

Unit II

Choosing Methodologies and Technologies – Software Processes and Process Models – Choice of Process Models – The Waterfall Model– Prototyping – other ways of categorizing prototype - **Agile Methods** – Extreme Programming Selecting the Most Appropriate Process Model- Need of Agile - Iterative vs Incremental-Agile Manifesto and Mindset .

Unit III

The Project Management Knowledge Areas: Project integration management: Develop project charter - Develop project management plan - Direct and manage project execution - Monitor and control project work - Perform integrated change control - Close project or phase. Project scope management: Collect requirements - Define Scope - Create WBS - Verify Scope - Control Scope.

Unit IV

Project cost management: Estimate costs - Determine budget - Control costs. Project Quality Management: Plan quality - perform quality assurance - Perform

quality control. Project Human Resource Management: Develop human resource plan - Acquire project team - Develop project team - Manage project team.

Unit V

Project Risk Management: Plan risk management - Identify risks - Perform qualitative risk analysis - Perform quantitative risk analysis - plan risk responses - Monitor and control risks.

Text Book

1. "A guide to the Project management Body of Knowledge (PMBOK Guide)" Fouth Edition, Project Management Institute, Pennsylvania, 2008

2. BOB Huges, Mike Cotterell, Rajib Mall “Software Project Management”, McGraw Hill, Fifth Edition,2011.

3. Emerson, "Agile Handbook," Philosophie

Reference books

1. Futrell, “Quality Software Project Management”, Pearson Education India.

2. Royce, “Software Project Management”, Pearson Education India.

3. C.Ravindranath Pandian, “Applied Software Risk Management-A Guide for Software Project Managers”, Auerbach Publications, 2015.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	2	3	2
CO3	3	3	2	2	2
CO4	2	2	2	3	3
CO5	3	3	3	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

OPEN ELECTIVE-II

SHELL PROGRAMMING
COURSE OBJECTIVES
 Simulate the file commands
 Write simple shell programming

1. Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split, diff.
2. Write a shell script to show the following system configuration:
a. currently logged user and his log name.
b. current shell, home directory, Operating System type, current Path setting, current working directory.
c. show currently logged number of users, show all available shells
d. show CPU information like processor type, speed
e. show memory information.
3. Write a Shell Script to implement the following: pipes, Redirection and tee commands.
4. Write a shell script for displaying current date, user name, file listing and directories by getting user choice.
5. Write a shell script to implement the filter commands.
6. Write a shell script to remove the files which has file size as zero bytes.
7. Write a shell script to find the sum of the individual digits of a given number.
8. Write a shell script to find the greatest among the given set of numbers using command line arguments.
9. Write a shell script for palindrome checking.

10. Write a shell script to print the multiplication table of the given argument using for-loop.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	2	3	2
CO3	3	3	2	2	2
CO4	2	2	2	3	3
CO5	3	3	3	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC XIV- ADVANCED COMPUTER NETWORKS

Objectives

 To study communication network protocols, different communication layer structure

 To learn security mechanism for data communication

Unit 1

Introduction – Network Hardware – Software – Reference Models – OSI and TCP/IP models – Example networks: Internet, 3G Mobile phone networks, Wireless LANs –RFID and sensor networks - Physical layer – Theoretical basis for data communication - guided transmission media

Unit-2

Wireless transmission - Communication Satellites – Digital modulation and multiplexing - Telephones network structure – local loop, trunks and multiplexing, switching. Data link layer: Design issues – error detection and correction.

Unit 3

Elementary data link protocols - sliding window protocols – Example Data Link protocols – Packet over SONET, ADSL - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols.

Unit 4

Network layer - design issues - Routing algorithms - Congestion control algorithms – Quality of Service – Network layer of Internet- IP protocol – IP Address – Internet Control Protocol.

Unit 5

Transport layer – transport service- Elements of transport protocol - Addressing, Establishing & Releasing a connection – Error control, flow control,

multiplexing and crash recovery - Internet Transport Protocol – TCP - Network Security: Cryptography.

Text Book

1. S. Tanenbaum, 2011, Computer Networks, Fifth Edition, Pearson Education, Inc.

Reference Books

1) B. Forouzan, 1998, Introduction to Data Communications in Networking, Tata McGraw Hill, New Delhi.

2) F. Halsall, 1995, Data Communications, Computer Networks and Open Systems, Addison Wessley.

3) D. Bertsekas and R. Gallagher, 1992, Data Networks, Prentice hall of India, New Delhi.

4) Lamarca, 2002, Communication Networks, Tata McGraw Hill, New Delhi.

5) Teresa C.Piliouras, "Network Design Management and Technical Perspectives, Second Edition", Auerbach Publishers, 2015.

Outcomes

After the completion of this course students will be able to

 To master the terminology and concepts of the OSI reference model and the TCP-IP reference model.

 To master the concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	2	3	2
CO3	3	3	2	2	2
CO4	3	2	2	2	3
CO5	3	3	3	3	2

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CC-XV

PHP PROGRAMMING

COURSE OBJECTIVES

• To learn and use open source database management system MySQL
• To create dynamic web pages and websites.
• To connect web pages with database.

UNIT I

Basic development Concepts – Creating first PHP Scripts – Using Variable and Operators – Storing Data in variable – Understanding Data types – Setting and Checking variables Data types – Using Constants – Manipulating Variables with Operators.

UNIT II

Writing Simple Conditional Statements - Writing More Complex Conditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.

UNIT III

Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms - Working with Array Functions – Working with Dates and Times.

UNIT IV

Creating User-Defined Functions - Creating Classes – Using Advanced OOP Concepts. Working with Files and Directories: Reading Files- Writing Files- Processing Directories.

UNIT V

Introducing Database and SQL- Using MySQL-Adding and modifying Data-Handling Errors – sing SQLite Extension and PDO Extension.

Introduction XML - Simple XML and DOM Extension.

TEXT BOOK

1. VIKRAM VASWANI- PHP A Beginner's Guide, Tata McGraw-Hill

REFERENCE BOOKS

1. The PHP Complete Reference – Steven Holzner – Tata McGraw-Hill Edition.

COURSE OUTCOMES

After completing the Course successfully, the student will be able to

1.Explain basic principles of Python programming language

2.Define and demonstrate the use of built-in data structures "lists" and "dictionary".

3.Design and implement a program to solve a real world problem.

4.Design and implement GUI application and how to handle exceptions and files.

5.Make database connectivity in python programming language.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	1	2	1
CO3	3	3	1	3	3
CO4	3	1	3	2	2
CO5	2	3	3	3	3

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

***CC-XVI*–PHP PROGRAMMING LAB**

1.Write a program to find the factorial of a number.

2.Write a program using Conditional Statements.

3. Write a program to find the maximum value in a given multi dimensional array

4. Write a program to find the GCD of two numbers using user-defined functions.

5. Design a simple web page to generate multiplication table for a given number.

6. Design a web page that should compute one's age on a given date.

7. Write a program to download a file from the server.

8. Write a program to store the current date and time in a COOKIE and display the

Last Visited' date and time on the web page.

9. Write a program to store page views count in SESSION, to increment the count

on each refresh and to show the count on web page.

10. Write a program to draw the human face.

11. Write a program to design a simple calculator.

12. Design an authentication web page in PHP with MySQL to check username

COURSE OUTCOMES

After completing the Course successfully, the student will be able to

1. Explain basic principles of Python programming language
2. Define and demonstrate the use of built-in data structures “lists” and “dictionary”.
3. Design and implement a program to solve a real world problem.
4. Design and implement GUI application and how to handle exceptions and files.
5. Make database connectivity in python programming language.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	1	2	1
CO3	3	3	1	3	3
CO4	3	2	3	2	2
CO5	2	3	3	2	3

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

EC-III-CHOICE : **1.EMBEDDED SYSTEMS**

Objective

This course will enable students to:

 Understand the basic hardware components and their selection method based on the characteristics and attributes of an embedded system.

 Describe the hardware software co-design and firmware design approaches

 Know the RTOS internals, multitasking, task scheduling, task communication and synchronisation

 Learn the development life cycle of embedded system

Unit I

Introduction to Embedded system - Embedded system vs General computing systems - History - Classification - Major Application Areas - Purpose of Embedded systems - Smart running shoes: The innovative bonding of lifestyle with embedded technology. Characteristics and Quality Attributes of Embedded systems

Unit II

Elements of an Embedded system - core of the embedded system: General purpose and domain specific processors, ASICs, PLDs, COTS - Memory - Sensors and Actuators - Communication Interface: Onboard and External Communication Interfaces - Embedded Firmware - Reset circuit - PCB and Passive Components

Unit III

Embedded Systems - Washing machine: Application-specific Hardware Software Co-Design - Computational Models - Embedded Firmware Design Approaches - Embedded Firmware Development Languages.

Unit IV

RTOS based Embedded System Design: Operating System Basics - Types of operating Systems - Tasks, process and Threads - Multiprocessing and Multitasking - Task Scheduling- Task .

Unit V

Components in embedded system development environment, Files generated during compilation, simulators, emulators and debugging - Objectives of Embedded product Development Life Cycle.

Text Book

1. K. V. Shibu, "Introduction to embedded systems", TMH education Pvt. Ltd. 2009.

Reference Books

1. Raj Kamal, “Embedded Systems: Architecture, Programming and Design”, TMH. Second Edition 2009

2. Frank Vahid, Tony Givargis, “Embedded System Design”, John Wiley. Third Edition 2006

3. Cliff Young, Faraboschi Paolo, and Joseph A. Fisher, "Embedded Computing: A VLIW Approach to Architecture, Compilers and Tools", Morgan Kaufmann Publishers, An imprint of Elsevier, 2005.

4. David E. Simon, “An Embedded Software Primer” Pearson Education, 1999

Outcomes

Students are able to

 Describe the differences between the general computing system and the embedded system, also recognize the classification of embedded systems.

 Become aware of interrupts, hyper threading and software optimization.

 Design real time embedded systems using the concepts of RTOS.

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	1	2	1
CO3	3	3	1	3	3

CO4	**3**	**2**	**3**	**2**	**2**
CO5	**2**	**3**	**3**	**2**	**3**

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)

CHOICE-2 MOBILE COMPUTING

Objectives

- Understand the basic concepts of mobile
- Be familiar with GPRS Technology

 system Be exposed to Ad-Hoc networks
 Gain knowledge about different mobile platforms and application development

Unit 1

Basics of mobile - Mobile device profiles - Middleware and gateways - Wireless Internet - Smart clients - Three-tier Architecture- Design considerations for mobile computing–– Mobility and Location based services.

Unit -2

Mobile computing through Internet - Mobile-enabled Applications - Developing Mobile GUIs – VUIs and Mobile Applications – Characteristics and benefits -Multichannel and Multi modal user interfaces – Synchronization and replication of Mobile Data - SMS architecture – GPRS – Mobile Computing through Telephony.

Unit -3

Mobile Application Development - Android- wi-fi –GPS – Camera – Movement – orientation - event based programming – iOS/ windows CE - Blackberry – windows phone – M-Commerce- structure – pros & cons – Mobile payment system - J2ME

Unit -4

ADHOC Wireless Network - Ad Hoc Wireless Network –MAC protocol – Routing protocols - Transport Layer Protocol - QoS – Energy Management – application design – work flow – composing applications – Dynamic linking – Intents and Services – Communication via the web.

Unit -5

Security and Hacking - Password security – Network security – web security – Database security **-** Wireless Sensor Network - Architecture and Design – Medium Access Control – Routing – Transport Layer – Energy model.

Text Books

1. Jochen Schiller, Mobile Communications, Second Edition,2012.

2. William Stallings,"Wireless Communications & Networks", Pearson Education, 2009.

References

1. C.Siva Ram Murthy, B.S. Manoj, "Ad Hoc Wireless Networks – Architectures and Protocols", 2nd Edition, Pearson Education. 2004

2. Ashok K Talukder, Roopa R Yavagal, "Mobile Computing", Tata McGraw Hill, 2005.

3. Jochen Burkhardt Dr.Horst Henn, Klaus Rintdoff,Thomas Schack, "Pervasive Computing", Pearson, 2009.

4. Fei Hu , Xiaojun Cao, " Wireless Sensor Networks Principles and Practice " CRC Press, 2010.

Outcomes

 Able to explain the basics of mobile system
 Able to develop mobile application
 Understand the Mobile Ad hoc networks and its routing
 Understand the different types of security features

OUTCOME MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	2	3	2
CO2	3	3	1	2	1
CO3	3	3	1	3	3
CO4	3	2	3	2	2
CO5	2	3	3	2	3

1 – Low, 2 – Moderate, 3 – High (Preferably use 2 or 3 levels)