

SRI DHARMASTHALA MANJUNATHESHWARA COLLEGE, UJIRE-574240

(Autonomous)

(Re-Accredited by NAAC at 'A' Grade with CGPA 3.61 out of 4)



DEPARTMENT OF COMPUTER SCIENCE

Syllabus of
**Bachelor's Degree in
B.Sc, Computer Application**

**(CREDIT BASED SEMESTER SCHEME)
2016 – 2017 onwards.**

**Approved by the : BOS meeting held on 04-09-2015
Approved by the Academic Council meeting, held on 05.03.2016**



B.Sc AS A DISCIPLINE

Course Objectives

- To provide sound academic base from which an advanced career in Computer Applications can be developed.
- Conceptual grounding in computer usage as well as its practical business application
- To making candidates suitable for IT sector entry level jobs..

PAPER DESCRIPTION

Sl.No	Semester	Paper	Title
	I	Paper I	Introduction to Computers and C programming
	I		LAB – MS office and C
	II	Paper II	Programming in C++
	II		LAB - Programming in C++
	III	Paper III	Database Management System
	III		Lab – Database Management System
	IV	Paper IV	Programming in Java
	IV		Lab: Programming in Java
	V	Paper V	Programming in VB.Net
	V	Paper VI	HTML and JSP
	V		Lab: Programming in VB.Net
	V		Lab: HTML and JSP
	VI	Paper VII	Software Engineering
	VI	Paper VIII	Operating System and Unix Concepts
	VI		Project



SCHEME OF EXAMINATION

Sl.No	Semester	Paper	Credits	Marks		
				IA	Sem End	Total
	I	Paper I		20	80	100
	I	Lab		10	40	50
	II	Paper II		20	80	100
	II	Lab		10	40	50
	III	Paper III		20	80	100
	III	Lab		10	40	50
	IV	Paper IV		20	80	100
	IV	Lab		10	40	50
	V	Paper V		20	80	100
	V	Paper VI		20	80	100
	V	Lab		10	40	50
	V	Lab		10	40	50
	VI	Paper VII		20	80	100
	VI	Paper VIII		20	80	100
	VI	Project		20	80	100



I SEMESTER - Paper I
Introduction to Computers and C programming
Teaching Hours : 3 per week

Rationale /Learning Objectives:

- This course is designed to provide a comprehensive study of the C programming language.
- It stresses the strengths of C, which provide students with the means of writing efficient, maintainable, and portable code.
- The nature of C language is emphasized in the wide variety of examples and applications.
- To learn and acquire art of computer programming.To know about some popular programming languages and how to choose
- Programming language for solving a problem.

Unit I

Introduction to computers: Introduction to computers, characteristics of computers, Classification of Digital Computer Systems, Functions & Components of a Computer, Central Processing Unit, Types of Memory, Storage Devices. Input and output Devices, Types of software, Operating System.

(9 Hours)

Unit II

Introduction to C : History and features of C, Character set, C token, Keywords & identifiers, Constants, Variables, data types, Declaration of variables, assigning values to variables, defining symbolic constants.

(4 Hours)

Operators and Expression: Arithmetic, Relational, logical, assignment, increment & decrement, conditional, bit wise & special operators, evaluation of expressions, Precedence of arithmetic operators, type conversions in expressions, operator precedence & associativity, mathematical functions.

(4 Hours)

Managing Input and Output operations: Reading & writing a character, Formatted input and output



(1 Hours)

Unit III

Decision making and branching: Decision making with if statement, simple if statement, the if else statement, nesting of if ... else statements, the else if ladder, the switch statement, the ?: operator, the go to statement

(3 Hours)

Decision making and looping: The while statement, the do statement, for statement, exit, break, jumps in loops

(3 Hours)

Arrays: Declaration, initialization & access of one dimensional & two dimensional arrays

(3

Hours)

Unit IV

Handling of character strings: Declaring & initializing string variables, reading strings from terminal, writing strings to screen, Arithmetic operations on characters, putting strings together, comparison of two strings, string handling functions, table of strings

(3 Hours)

User defined functions: Need for user defined functions, multi functions program, The form of C functions, return values & their types, calling a function, category of functions, handling of non integer functions, nesting of functions, recursion, functions with arrays, the scope & lifetime of variables in functions.

(6 Hours)

Student Activities:

Class seminars

Group discussions

Quiz



Books for Reference- Basic Reading List

1. Rajiv Khanna, Computer concepts and c programming, new age international (P) ltd publishers.
2. E. Balagurusamy, Programming in ANSI C

Additional Reading List

1. Peter Norton's Introduction to Computers –Second Edition
2. Vikas Gupta, Comdex Computer Course Kit



II SEMESTER - Paper II
Object Oriented Programming using C++
Teaching Hours : 3 per week

Rationale /Learning Objectives:

- C\C++ is the base of today's most preferred programming languages. Even the most popular Operating Systems like Linux, Unix, Solaris & Windows are all designed in C\C++ or in their higher versions.
- Companies demand the same from the candidates at the time of interview.
- C\C++ is taken as the basic eligibility criteria not only for the jobs but also for further technical studies.
- Both of these languages have their scope not only in computers studies but also in Electronics, Mechanical, Instrumentations, Accounts and even in management.
- This training module is an effort to cover the basic to advance features of C\C++.
- The main focus is that the budding software developers can be friendly with this Software package and can explore it up to the maximum possible depth.

Unit I

Principles of Object Oriented programming: basic Concepts, benefits, application.

(1 hours)

Beginning with C++: Program features, comments, cin, cout, return statement, Structure of a C++ program.

(2 hours)

Tokens, expressions and control structures: Tokens, keywords, identifiers, basic and derived data types, symbolic constants, declaration of variables, dynamic initialization of variables, reference variables, the operators::, ::*, .*, delete, endl, new, setw. Typecast operator, expression and implicit conversions, operator precedence, control structures – while, do-while, if, and switch.

(6 Hours)

Unit II

Functions in C++: main function, Prototyping, call and return by reference, inline functions, default arguments, const arguments, function overloading.

(3 Hours)

Classes and objects: structures, difference between structure and class, specifying a class, creating objects, accessing class members, defining member functions, making outside functions inline, nesting of member functions, private member functions, arrays with in a class, memory allocation for objects, static data members, static member functions, arrays



of objects, objects as function arguments, friends functions, returning objects, const member functions, pointers to members. **(6 Hours)**

Unit III

Constructors and destructors: Parameterized constructors, multiple constructors, constructors with default arguments, dynamic initialization of objects, copy constructor, dynamic constructors, constructing 2 dimensional arrays, destructors. **(4 Hours)**

Operator overloading: defining, overloading unary and binary operators, overloading binary operators using friend functions, manipulation of strings using operator overloading, type conversions – basic to class, class to basic, one class to another class.

(5 Hours)

Unit IV

Inheritance: Defining a derived class, single inheritance, protected members, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance, virtual base classes, abstract classes, constructors on derived classes, nesting of classes.

(5 Hours)

Pointers, virtual functions, polymorphisms: Pointers to objects, this pointer, pointers to derived classes, virtual functions, pure virtual functions. **(4 Hours)**

Student Activities:

Class seminars

Group discussions

Quiz

Books for Reference- Basic Reading List

1. E Balagurusamy, Object Oriented Programming with C++

Additional Reading List

1. D Ravichandran, Programming with C++
2. Robert Lafore, Object Oriented Programming in C++

III SEMESTER - Paper III
Database Management System
Teaching Hours : 3 per week



Rationale /Learning Objectives:

- Understand the role of a database management system in an organization.
 - Understand basic database concepts, including the structure and operation of the relational data model.
 - Construct simple and moderately advanced database queries using Structured Query Language (SQL).
 - Understand and successfully apply logical database design principles, including E-R diagrams and database normalization.
 - Design and implement a small database project using Microsoft Access.
- Understand the concept of a database transaction and related database facilities, including concurrency control, journaling, backup and recovery, and data object locking and protocols

Unit I

Database System Concepts and Architecture, History of Database Systems, Database Systems versus File Systems. Data Abstraction, Data independence, Schemas and Instances, Data models, Database Languages, Database Users, DBA. Structure of Database Systems, **(4 Hours)**

Data Modeling using E-R model, Entity types, sets, Attributes, Keys, Relationships, Relationship Types, Roles, and Structural Constraints, Weak Entity sets, E-R Diagrams. Different types of database models and their advantages and disadvantages.

(5 Hours)

Unit II

Basic structure of Oracle System: Database Structure and its manipulation in Oracle, Storage organization in Oracle.

(1 Hour)

Creation of Database: Creating, changing and dropping the tables. Integrity Constraints specification, maintaining reference integrity constraints, Data insertion, deletion and modification.

(4 Hours)



Querying the database: Information retrieval using SELECT statement, Various features of SELECT statement , Aggregate functions, ORDER BY clause, Working with expressions and sub queries Handling of multiple tables. Views : Creation of views, modification, data insertion and limitations of views.

(4 Hours)

Unit III

PL/SQL Basics: Introduction, character set, reserve words, Block structure, Data types, Conditional statements, looping statements.

(9 Hours)

Unit IV

Stored procedures and functions. Cursors - Implicit and explicit cursors, cursor attributes, triggers, packages. Exceptions.

(9 Hours)

Student Activities:

Class seminars

Group discussions

Quiz

Books for Reference- Basic Reading List

1. Silberschatz and Korth, Database systems concepts, McGrawHill Publication. (Chapter 1)
2. Elmasri and Navathe, Fundamentals of Database systems, Pearson Education Asia publication 4th Edition (chapter 2,3)
3. Ivan Bayross, Commercial application Development using Oracle D2k, BPB publications (chapter 1,2,3,4,5,6)

Additional Reading List

1. Ivan Bayross, SQL, PL/SQL The Programming Language – Oracle, BPB publications.
2. Scott Urman, Oracle 8 PL/SQL Programming, Tata McGrawhill Edition



IV SEMESTER - Paper IV
Programming in Java
Teaching Hours : 3 per week

Rationale /Learning Objectives:

- To model of object oriented programming: abstract data types, encapsulation, inheritance and polymorphism
- Fundamental features of an object oriented language like Java: object classes and interfaces, exceptions and libraries of object collections
- How to take the statement of a business problem and from this determine suitable logic for solving the problem; then be able to proceed to code that logic as a program written in Java.
- How to test, document and prepare a professional looking package for each business project using javadoc.

unit I

Java Evolution: Java history, Java features, Hardware and Software requirements, Java support systems, Java environment.

(2 Hours)

Overview of Java Language: Introduction, Simple Java program, More of Java, An application with two classes, Java program structure, Java Tokens, Java Statements, Implementing a Java program, Java Virtual Machine, Command line arguments.

(2 Hours)

Constants, Variables and Data types: Introduction, Constants, variables, Data types, Declaration of variables, giving values to variables, Scope of variables, Standard default values.

(2 Hours)

Operators and Expressions: Introduction, Arithmetic operators, Relational Operators, Logical operators, Assignment operators, Increment and decrement operators, conditional operator, Bitwise operators, special operators, Arithmetic expressions, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, operator precedence and associativity, Mathematical functions.

(3 Hours)



Unit II

Decision making and branching: Introduction, Decision making with If statement, simple IF statement, the IFELSE statement, Nesting of IFELSE statements. The ELSEIF....ladder, the Switch statement, the ?: operator.

(4 Hours)

Decision making and Looping: Introduction, The While statement, the Do statement, the For statement, Jumps in loops, labeled loops.

(3 Hours)

Arrays, Strings and Vectors: Arrays, One-dimensional arrays, creating an Array, Two Dimensional Arrays, Strings, Vectors, Wrapper Classes.

(2 Hours)

Unit III

Classes Objects and Methods: Introduction, Defining a Class, Adding variables, Adding Methods, Creating Objects, Accessing Class members, Constructors, Methods Overloading, Static Members, Nesting of Methods, Inheritance, Overriding Methods, Final variables and Methods, Final classes, Finalizer Methods, Abstract methods and Classes, Visibility control.

(4 Hours)

Interfaces: Multiple Inheritance: Introduction, Defining Interfaces, Extending interfaces, Implementing interfaces, Accessing interface variables.

(3 Hours)

Packages: Putting Classes Together: Introduction, Java API packages, Using System Packages, Naming conventions, Creating Packages, Accessing a Package, Using a Package, Adding a Class to a package, Hiding Classes.

(2 Hours.)

Unit IV

Multithreaded Programming: Introduction, Creating Threads, Extending the Thread Class, stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread methods, Thread Exceptions, Thread priority, synchronization, Implementing the 'Runnable' Interface.

(3 Hours)



Managing Errors and Exceptions: Introduction, Types of Errors, Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, Using finally statement, throwing our own exceptions, Using Exceptions for Debugging.

(3 Hours)

Applet Programming: Introduction, How Applets differ from Applications, preparing to write Applets, Building Applet Code, Applet Life Cycle, Creating an Executable Applet, Applet Tag, Adding Applet to HTML page, Running the Applet, Passing parameters to Applets, aligning the Display.

(4 Hours)

Student Activities:

Class seminars

Group discussions

Quiz

Books for Reference- Basic Reading List

1. E. Balaguruswamy, Programming with JAVA – A Primer Second Edition, Tata McGraw- Hill Publishing Company Limited.

Additional Reading List

1. Ivor Horton, Beginning Java 2 – JDK 1.3 Edition –Wrox Press Limited.
2. Patrick Naughton, Herbert Schildt, The Complete Reference Java 2 – Third Edition –Tata McGraw Hill Publishing Company Limited.



V SEMESTER - Paper V
Programming in VB.Net
Teaching Hours : 3 per week

Rationale /Learning Objectives:

- Design, formulate, and construct applications with VB.NET
- Integrate variables and constants into calculations applying VB.NET
- Determine logical alternatives with VB.NET decision structures
- Implement lists and loops with VB.NET controls and iteration
- Separate operations into appropriate VB.NET procedures and functions
- Assemble multiple forms, modules, and menus into working VB.NET solutions
- Create VB.NET programs using multiple array techniques
- Build integrated VB.NET solutions using files and structures with printing capabilities
- Translate general requirements into data-related solutions using database concepts

Unit I

Module 1: Overview of the Microsoft .NET Platform

What Is the Microsoft .NET Platform?, What Is the .NET Framework?, What Are the .NET Framework Components?, What Are the Visual Basic .NET Enhancements?

Module 2: Development Environment Features

Describing the Integrated Development Environment – start page, menu system, tool bars, new project, graphical designers, code designers, intellisense, object browser, tool box, solution explorer, class view window, properties window, component tray, server explorer, output window, task list command window.

Module 3: Constants, variable declaration, Data Types, array and strings

(9 Hours)

Unit II

Module 4: Making decisions with if...else, select case, switch, choose, loop statements: Do, For, ForEach...Next, while, with

Module 5: Sub procedures and functions, passing variable number of arguments, optional procedure arguments, static variables

Module 6: Exception handling – structured, unstructured

(9 Hours)



Unit III

Module 7: Windows forms – TextBox, RichTextBox, Labels, link Labels

Module 8: Windows forms – Buttons, Check Boxes, radio buttons, panels, group boxes.

Module 9: Windows forms – List boxes, checked list boxes, combo boxes, picture box

(9 Hours)

Unit IV

Module 10: Object oriented programming methods, classes and objects, members, abstraction, encapsulation, inheritance, polymorphism, overloading, overriding, constructors, destructors, access modifiers, interfaces.

Module 11: Data access with ADO.Net, database basics, creating connections and connection provide data adaptors, creating data set, binding controls to database, navigating in dataset – add, delete, update data

Module 12: Handling database in code, OLEDB connection class, SQL connection class, Oracle Connection class, OLEDB command, SQL command, Oracle Command, OLEDB Adapter, SQL Data adaptor, OLEDB date reader, Creating date connection in code, date reader.

(9 Hours)

Student Activities:

Class seminars

Group discussions

Quiz

Books for Reference- Basic Reading List

1. Book Steven Holzner, Visual Basic Programming Black



V SEMESTER - Paper VI
HTML and JSP
Teaching Hours : 3 per week

Rationale /Learning Objectives:

- Design and build robust and maintainable web applications using the servlet and JSP frameworks
- Understand the capabilities of the servlet API and when to use JSP instead
- Build JSP applications using Model 1 and Model 2 architecture
- Master the JSTL (JSP Standard Tag Library) for rapidly constructing the view of your application
- Use JSTL and other Custom Tag Libraries to separate Java and HTML code
- Access databases with JDBC

Unit I

HTML Overview,-HTML Tags; Document structure; The Document Header; The Document body; Formatting Text -Working with HTML text; Inline type styles – Logical styles, Physical styles; The tag Text Styles – Bold, Italics, Underline; Text Formatting – Paragraph breaks and Line breaks; Lists-Types of Lists – Unordered Lists, Ordered Lists, Definition Lists. Adding Images and other page elements Image basics –; The tag and its attributes ,Marquee.Creating Links ,Tables - Introduction to tables; Basic table structure – Rows and Cells, Spanning rows and columns; appearance – Borders, Frames, and Rules; Positioning a table on the page: Aligning text in Cells: Sizing tables: Table Cell spacing; Frames - Introduction to Frames -Basic Frameset Structure - <noframes> content; Establishing Rows and Columns; Nesting Frames; Frame Frame borders and spacing; Scrolling; Disabling Resize; Frame margins; Targeting frames. Forms - Introduction to Forms; Form elements – Input controls, Text area, other controls.

(9 hours)

Unit II

The J2EE : Introduction -Enterprise Architecture styles :Single tier -Two - Tier Architecture Three Tier Architecture and N - Tier Architecture .The J2EE Platform : Introduction – Features- J2EE APIs (Servlet, JSP, EJB, JMS, JavaMail, JSF, JNDI) Introduction to container Apache Tomcat as a Web Container .

Working with JDBC :Introduction and Need for JDBC Database Drivers JDBC APIs for database Connectivity (Java. sql Package) Connection Statement Prepared statement Callable statement Result set Other JDBC APIs -Database Meta Data - Result Set Meta Data.

(9 hours)



Unit III

Servlet Programming

Introduction to Servlets Servlets Implementation The servlet interface The Generic Servlet class The single thread Model interface The Http Servlet class Service() doGet() doPost() doDelete() doOption() doPut() doTrace() Servlet Exceptions The Servlet Exception class, The unavailable Exception class, Servlet Lifecycle ,Servlet Request and Response, The Http Servlet Request interface, GetAttribute() setAttribute() , getAttributeNames() getparameters() getParameterNames() getParameterValues() getRemoteHost() getRemoteAddr() getCookies() getHeaders() getQueryString() getSession() The Http servlet Response Interface getWriter() getcontentType() addCookie() encodeURL() sendRedirect() setHeader() setStatus()

Session Tracking Approaches URL Rewriting

Hidden Form Fields Cookies ,Session API ,Session Tracking with Servlet API The Http Session interface ,GetAttribute() GetAttributeNames() GetCreationTime() GetId() GetlastAccessedTime() IsNew() RemoveAttribute() SetAttribute() SetMaxInactiveinterval() Invalidate() Servlet Collabration Request Dispatching with Request Dispatcher interface

Forward() Include() Servoet Context The servlet Context interface getContext() getRequestDispatcher() getServerInfo() .

(9 hours)

Unit IV

JSP Programming

Introduction to JSP JSP , development Basic JSP ,LifeCycle, JSP Elements ,Directive Elements Page Directive ,Include directive Scripting elements Declaration Scriptlets Expressions Action elemtns Standard action <jps : param> <jsp : include> <jsp : forward> <jsp : plugin> Comments and template data Scope of JSP variables Page Request Session Application Using implicit objects The request object The response object The out object The session object The config object The exception object The application object Handling Errors and Exception Dealing with exception in the page directive Dealing with exception in the Deployment Descriptor

Adding exception handling in JSP pages Including and forwarding from JSP pages



Include Action Forward Action, getInitParameter() getInitParameterNames()
getAttribute()

setAttribute() removeAttribute().

JSP Standard Tag Library: JSTL Introduction core tags xml tags sql tags fmt tags Core
tags <c : out> <c : set> <c : if>

SQL tags <sql : query> <sql : update> Fmt tags <fmt : formatNumber> <fmt :
formatDate>

(9 hours)

Student Activities:

Class seminars

Group discussions

Quiz

Books for Reference- Basic Reading List

1. Ivan Bayross, HTML, JavaScript, DHTML and PHP, BPB Publications
2. Jim Keogh, J2EE-The Complete Reference, Mc Grawhill Education
3. Java Server Programming, Java EE6 Black Book by DreamTech Publication

Additional Reading List

1. Steven Holzner, HTML Black Book, Dreamtech Press
2. Java2 the complete Reference, Herbert Schildt, Mc Grawhill Education



VI SEMESTER - Paper VII
Software Engineering
Teaching Hours : 3 per week

Rationale /Learning Objectives:

- Be employed in industry, government, or entrepreneurial endeavors to demonstrate professional advancement through significant technical achievements and expanded leadership responsibility;
- Demonstrate the ability to work effectively as a team member and/or leader in an ever-changing professional environment; and
- Progress through advanced degree or certificate programs in computing, science, engineering, business, and other professionally related fields.

Unit I

Introduction : The Software Problem, Software Engineering Problem, The Software Engineering Approach.

(2 Hours)

Software Processes :Software Process, Characteristics of a Software Process, Software Development Process, Waterfall Model, Prototyping, Iterative Enhancement, Spiral Model, Project Management Process, Phases of management process, Metrics, Measurement, and Models, Software Configuration Management Process, Configuration Identification, Change control, Status accounting and auditing, Process Management Process, Building estimation models, Process Improvement and maturity.

(7 Hours)

Unit II

Software Requirements Analysis and Specification : Software Requirements, Need for SRS, Requirement process, Problem Analysis, Analysis Issues, Informal Approach, Structured Analysis, Prototyping, Requirements Specification, Characteristics of an SRS, Components of an SRS, Specification Languages, Structure of a Requirements Document, Validation, Requirement Reviews

(5 Hours)

Preliminary Design :Design Principles, Module-Level Concepts, Design Notation and Specification, Data Flow Diagrams, Structured Design Methodology, Verification

(4 Hours)



Unit III

Detailed Design :Module specification, Specifying functional module, Detailed design, PDL, Logic/Algorithm Design, Verification, Design Walkthroughs, Critical Design Reviews, Consistency checkers

(5 Hours)

Coding :Programming Practice, Top-Down and Bottom-Up, Structured Programming, Information Hiding, Programming Style, Internal Documentation, Verification, Code Reading, Static Analysis, Proving Correctness, Code Inspections or Reviews, Unit Testing

(4 Hours)

Unit IV

Testing and Maintenance :Testing Fundamentals, Error, Fault, and Failure, Top-Down and Bottom-Up Approaches, Test Cases and Test Criteria, Psychology of Testing, Functional Testing, Equivalence class partitioning, Boundary value analysis, Cause-effect graphing, Structural Testing, Control flow based criteria, Data flow based testing, Preventive and Corrective Maintenance activities

(9 Hours)

Student Activities:

Class seminars
Group discussions
Quiz

Books for Reference- Basic Reading List

1. Jalote Pankaj, Integrated Approach to Software Engineering

Additional Reading List

1. Roger Pressman, Software Engineering, McGrawHill Publication



VI SEMESTER - Paper VIII
Operating System and Unix Concepts
Teaching Hours : 3 per week

Rationale /Learning Objectives:

- To learn the fundamentals of Operating Systems
- To gain knowledge on Distributed operating system concepts that includes architecture, Mutual exclusion algorithms, Deadlock detection algorithms and agreement protocols
- To gain insight on to the distributed resource management components viz. the algorithms for implementation of distributed shared memory, recovery and commit protocols
- To know the components and management aspects of Real time, Mobile operating Systems.

Unit I

Introduction: Operating System, simple batch systems, Multi-programmed batched system, time sharing systems, real-time systems, system components, Operating system services

(2 Hours)

Process: Process concept, process scheduling, Cooperating processes.

Threads: Introduction, Benefits, User and Kernel, Threads, Multithreading model

(3 Hours)

CPU Scheduling: Basic concepts, scheduling criteria, scheduling algorithms – First come First Serve, Shortest job first, Priority Scheduling, Round robin, Multilevel Queue Scheduling

(4 Hours)

Unit II

Process synchronization: Critical section problem, synchronization (algorithms excluded), semaphores – usage, Implementation

(4 Hours)

Dead Locks: System model, Deadlock characterization, methods for handling deadlocks, Deadlock prevention, Introduction to Deadlock avoidance (no algorithms), Deadlock detection, recovery from Deadlock.

(5 Hours)

Unit III



Memory Management: Logical verses physical address space, Dynamic loading, swapping, contiguous allocation – Memory protection, memory allocation, fragmentation, paging – Basic method, segmentation – Basic Method.

(4 Hours)

Virtual Memory: Demand paging – Basic Concepts, page replacement – FIFO page replacement, Optimal page replacement.

(3 Hours)

File System: File Concept – File Attributes, file operations, file types, file structure, internal file structure, Access methods – Sequential access, Direct access, Directory structure – Single level directory, two level directory, Tree structure directories, File system structure, allocation methods

(2 Hours)

Unit IV

Introduction to Unix: History, System- V release, Kernel and shell, Features of Unix

(2 Hours)

Commands and Utilities & Unix File System: Locating commands, Internal and external commands, arguments, options and filenames, flexibility of usage, Help. General Utilities: cal, date, who, passwd, echo, script, spell, uname, wc, sort, Unix File System:-Categories, names, parent-child relationship, absolute path name, changing, creating, removing directories, listing files & directories, relative path names. Handling files-displaying, creating, copying, deleting, renaming files, printing, ,comparing files.

(4 Hours)

Shell Programming:

Shell, pattern matching and quotations. Redirection, pipes. Vi editor- modes, working with Text. File ownership-permissions, octal notation. Shell scripts, command line arguments. Operators and conditional execution-if-else, case, Looping- while, for. Expr computations

UNIX/LINUX Practical demonstrations

(3 Hours)



Student Activities:

Class seminars

Group discussions

Quiz

Books for Reference- Basic Reading List

1. Abraham Silberschartz & Peter Galvin, Operating System Concepts – 5th edition, McGraw Hill
2. Sumitabha Das, Unix – Concepts and Applications, Tata McGraw Hill

Additional Reading List

1. Milan Milenchovic, Operating systems, McGraw Hill
2. Bryan Kernighan and Rob Pike, Unix Programming Environment, PHI
3. Colin Ritchie, Operating systems incorporating Unix and Windows- 3rd edition, BPB Publications



Question Paper Pattern

Theory: 80 Marks

Duration of Examination: 3 Hours

This theory paper consists of two parts A and B

Part A

Part A contains 12 questions of 2 marks each from all the units of the syllabus and 10 questions to be answered out of 12.

10x2=20

marks

Part B

Part B contains the 4 units in the following format:

UNIT I:

Questions from UNIT I of the syllabus: Question No.s 2 and 3 (Answer any one)

5X3=15

- 2. a
- b
- c

Or

- 3. a
- b
- c

UNIT II:

Questions from UNIT II of the syllabus: Question No.s 4 and 5 (Answer any one)

5X3=15

- 4. a
- b
- c

Or

- 5. a
- b
- c

UNIT III:

Questions from UNIT III of the syllabus: Question No.s 6 and 7 (Answer any one)

5X3=15

- 6. a
- b
- c

Or

- 7. a
- b
- c

UNIT IV:

Questions from UNIT IV of the syllabus: Question No.s 8 and 9 (Answer any one)

5X3=15

- 8. a
- b
- c

Or

- 9. a
- b
- c

