

The New College (Autonomous), Chennai -14
B.Sc (Computer Science) Degree Course Structure
CBCS Pattern
(Effective from the year 2011 -2012)

Semester	Course Component	Course	Hrs/Week	Credits	T/P	Exam Duration	Internal Marks	External Marks	Total Marks
I	Part-1	Language – 1	5	3	T	3 Hrs	25	75	100
	Part-2	English-1	5	3	T	3 Hrs	25	75	100
	Part-3	Programming in C and Unix	5	5	T	3 Hrs	25	75	100
		Lab 1: Programming in C and Unix	4	2	P	3 Hrs	25	75	100
		Allied-1	5	4	T	3 Hrs	15	60	75
		Allied Practical: 1	2		P				
	Part-4	NME/AT/BT	2	2	T	3 Hrs	25	75	100
		Value Education-1	1		T				
		Soft Skills-1	1		T				
	TOTAL			30	19			140	435
II	Part-1	Language – 2	5	3	T	3 Hrs	25	75	100
	Part-2	English-2	5	3	T	3 Hrs	25	75	100
	Part-3	Introduction to Object Oriented Programming with C++	5	5	T	3 Hrs	25	75	100
		Lab 2: Programming in C++	4	2	P	3 Hrs	25	75	100
		Allied-2	5	4	T	3 Hrs	15	60	75
		Allied Practical: 2	2	2	P	3 Hrs	10	40	50
	Part-4	NME/AT/BT	2	2	T	3 Hrs	25	75	100
		Value Education-1	1	2	T	3 Hrs	25	75	100
		Soft Skills-1	1	2	T	3Hrs	25	75	100
	TOTAL			30	25			200	625
III	Part-1	Language – 3	5	3	T	3 Hrs	25	75	100
	Part-2	English-3	5	3	T	3 Hrs	25	75	100
	Part-3	Data Structure	5	5	T	3 Hrs	25	75	100
		Lab 3: Data Structures using C++	4	2	P	3 Hrs	25	75	100
		Allied-3	5	4	T	3 Hrs	15	60	75
		Allied Practical: 3	2		P				
	Part-4	Environmental Studies	2	2	T	3 Hrs	25	75	100
		Value Education-2	1		T				
		Soft Skills-2	1		T				
	TOTAL			30	20			200	625

Semester	Course Component	Course	Hrs/Week	Credits	T/P	Exam Duration	Internal Marks	External Marks	Total Marks
IV	Part-1	Language – 4	5	3	T	3 Hrs	25	75	100
	Part-2	English-4	5	3	T	3 Hrs	25	75	100
	Part-3	Digital and Microprocessor	5	6	T	3 Hrs	25	75	100
		Lab 4: Digital and Microprocessor	4	2	P	3 Hrs	25	75	100
		Allied-4	5	4	T	3 Hrs	15	60	75
		Allied Practical: 4	2	2	P	3 Hrs	10	40	50
	Part-4	Office Automation	2	2	T	3 Hrs	25	75	100
		Value Education-2	1	2	T	3 Hrs	25	75	100
		Soft Skills-2	1	2	T	3 Hrs	25	75	100
TOTAL			30	26			200	625	825
V	Part-3	Data Communication Networks	6	5	T	3 Hrs	25	75	100
		Visual Programming	6	5	T	3 Hrs	25	75	100
		Database system Concepts	6	5	T	3 Hrs	25	75	100
		Lab 5: RDBMS	6	4	T/P	3 Hrs	25	75	100
		MBE : 1	6	5	T/P	3 Hrs	25	75	100
TOTAL			30	24			125	375	500
VI	Part-3	Web Technology	6	5	T	3 Hrs	25	75	100
		Java Programming	6	5	T	3 Hrs	25	75	100
		Lab 6: Java Programming	6	5	T	3 Hrs	25	75	100
		MBE : 2	6	4	T/P	3 Hrs	25	75	100
		MBE : 3	6	5	T/P	3 Hrs	25	75	100
	Part-5	NCC/NSS/Extension Activities		2					
TOTAL			30	26			125	375	500
GRAND TOTAL			180	140			930	2870	3800

List of Electives

Elective-1	Operating System Concepts	6	4			25	75	100
Elective-2	Computer Graphics	6	4			25	75	100
Elective-3	Mobile Computing	6	4			25	75	100
Elective-4	Data Warehousing & Mining	6	4			25	75	100
Elective-5	Software Engineering	6	4			25	75	100
Elective-6	Mini Project based on Core 13, 14	6	4			25	75	100

CORE 1 : Programming in C and Unix

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit I

UNIX : Fundamentals : Logging In , Logging Out –File System - File Manipulation Commands – Working with directories. Visual Text Editor : Text Processing using Vi editor – Commonly used Unix System Commands

Unit II

C fundamentals : Character set – Identifiers & keywords – Data Types – Constants – Variables – declarations – expressions – Symbolic constants. Operators and expressions– Library functions. Data Input and Output function – getchar(), putchar(), scanf(), printf(), gets() and puts() functions

Unit III

Branching – Simple if, if ... else, nested if...else. Looping – while, do...while, for loop – comma operator. Nested control structures – switch, break and continue – goto statements. Function – defining, accessing, prototypes – passing arguments to function – Recursion. Storage classes – automatic, external, static and register variables, multifile programs.

Unit IV

Arrays – defining and processing – passing arrays to functions – Multidimensional arrays – Arrays and strings. Structures - defining , processing. User defined data types – passing structures to functions – self referential structures – Unions – Bitwise operators.

Unit V

Pointers – declarations – passing pointers to functions – operations on pointers – pointers and arrays – arrays of pointers – structures and pointers. Data files – opening, closing, creating and processing.

Main reading

1. “A User Guide to the UNIX System” – Rebecca Thomas, 2nd edition, McGraw-Hill.
2. Byron Gottfried, Programming with ‘C’, second edition, TMH pub. Co. Ltd., New Delhi 1996.

Supplementary reading

1. “Introduction to Unix and Shell Programming” – M.G. Venkateshmurthy – Pearson
2. H.Schildt, C The complete reference, 4th edition, TMH editions, 2000.
3. B.W.Kernighan and D.M.Ritchie, The C programming Language – 2nd edition, PHI 1988.

CORE 2 : Lab 1 - Programming in C and Unix

Subject Code :

Duration : 3 Hours

Max Marks : 100

I Summation of Series

- (a) $1 + 3 + 5 + \dots + 2n - 1$. Test the program by calculating the sum of the first 100 odd integers (the last integer will be 199)
(b) $\exp(x)$

Compare the results with built – in – function.

- (a) $\sin(x)$
(b) $\cos(x)$

Compare the results with built – in – function.

II String Manipulation

1. Counting the no. of vowels, consonants, words, and white spaces in a line of text.
2. Reverse a string and check for palindrome.
3. Sub string detection & Removal
4. Convert a line of text in lowercase to uppercase

III Recursion

1. npr(permutation), ncr(combination)
2. GCD of two numbers
3. Fibonacci sequence
4. Finding Maximum and Minimum
5. Towers of Hanoi

IV Matrix Manipulation

1. Addition and Subtraction
2. Multiplication
3. Transpose
4. Determinant

V Sorting and Searching

1. Bubble sort
2. Insertion sort
3. Finding first and second maximum
4. Linear Search
5. Binary Search
6. Arrange the names in alphabetical order.

CORE 3 : Object Oriented Programming with C++

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit I

Principles of Object oriented programming , software evolution, procedure oriented programming, benefits of OOP , Applications of OOP ,Introductions to C++, Tokens ,key words, data types, type compatibility, variables, operators, expressions and their types , control structures

Unit II

Main function, function prototyping, Inline functions, function overloading, specifying a class, member function definition, static data functions, static member functions, objects as function arguments, Friendly functions

Unit III

Constructors, Multiple constructors, objects initialization, dynamic constructors, destructors, operator overloading, overloading using unary, binary operators , Rules for overloading, Type conversions

Unit IV

Defining derived classes, making private member inheritable, types of inheritance, virtual base classes, abstract classes, pointers to objects and derived classes, virtual functions, C++ streams, stream classes, unformatted I/O operations, formatted console I/O operations.

Unit V

Files, opening and closing files, file modes, file pointers and their manipulators, error handling during file operations, basics of exception handling, throwing and catching mechanism, rethrowing an exceptions.

Main Reading

1. E. Balagurusamy Object Oriented with C++ , Second edition TMH

Supplementary Reading

1. Robert Lafore Object Oriented in Microsoft C++, Galgotia Publications.

2. H. Scheidt Complete Reference C++

CORE 4 : Lab 2 - Programming in C++

Subject Code :

Duration : 3 Hours

Max Marks : 100

1. Write a C++ program that reads a 6 digit number and print each digit individually.
2. i) Write a program to generate Fibonacci sequence using Constructors.
ii) Write a C++ program to implement multiple Constructors.
3. Write a C++ program to display the following using for loop

i) * * ii) * * * * *

 * *

 *

 * * *

 * *

4. i) Write a C++ program to list out Prime number between 1 to 100.
ii) Write a C++ program to list out Armstrong number between 0 to 5000.
5. Write a C++ program to find no of vowels , consonants, words, white spaces and other characters in a line of text.
6. i) Write a C++ program to sort the set of no's using array.
ii) Write a C++ program to find factorial of a integer using inline function.

7. Write a C++ program to evaluate the following

i) $\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$

$3! \quad 5! \quad 7!$

ii) $\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \dots$

$2! \quad 4!$

8. i) Write a C++ program using class structure to find area and perimeter of circle and square.
ii) Write a C++ program using friend function to add time in the Hour and Minutes format.
9. Create a class FLOAT that contains one float data member overload all the 4 arithmetic operators so that they operate as the objects of FLOAT.

10. Create a class MAT of size $m \times n$. Define the matrix operations for MAT type objects.
 - i) Addition
 - ii) Subtraction
 - iii) Multiplication
11. i) Write a C++ program to add and subtract two complex numbers using friend function.
 - ii) Write a C++ program to transpose a matrix using friend function.
12. i) Write a C++ program to find simple interest using function overloading.
 - ii) Write a C++ program to show how comma operator is overloaded.
13. i) Write a C++ program to find volume using function overloading.
 - ii) Write a C++ program to show how unary/binary operator is overloaded.
14. Write a C++ program for manipulation of string using operators.
15. Write a C++ program using virtual base classes.
16. Write a C++ program to implement the following.
 - i) Hierarchical Inheritance
 - ii) Multilevel Inheritance
 - iii) Multiple Inheritance
17. Write a C++ program to achieve runtime polymorphism
18. Write a C++ program to implement Stack using Templates.
19. Write a C++ program to read and write a file using class objects.
20. Write a C++ program containing a possible exception use a try block to throw it and catch block to handle it properly.

CORE 5 : Data Structure

Subject Code :

Duration : 3 Hours

Max Marks : 100

UNIT I

Definition – Abstract Data types .Arrays – Asymptotic Notations-Complexity Analysis- Arrays- One dimensional and Two dimensional Arrays – Operation on Arrays.Ordered lists.

UNIT II

Stacks – Applications Of Stacks - Infix to Postfix Expression – Postfix Evaluation– Recursion – Queues – Operation on Queues – Queues applications – Circular Queue.- Dequeue.

UNIT III

Singly Linked List : Operations, Applications- Representation of a Polynomial-Polynomial Addition.
Doubly Linked List : Operations, Applications – Ordering of Books in Library(Alphabetical Ordering).Circular Linked list.

UNIT IV

Trees- Binary Trees – Conversion of Forest to Binary Trees, Operations – Tree Traversals . Graphs :
Types of Graphs – Traversal – Shortest path – Dijkstra's Algorithm.

UNIT V

Hashing Table – Hashing function .- Divide and conquer – Binary Search – Maximum and Minimum-Merge Sort

Main Reading

E. Horowitz, S. Shani Fundamentals of Data Structures Galgotia 1999

Supplementary Reading

Data Structures A.Chitra , P.T.Rajan

Computer Algorithms Ellis Horowitz and Sartaj Sahni and Sanguthevar Rajasekaran

CORE 6 : Lab 3 – Data Structures using C++

Subject Code :

Duration : 3 Hours

Max Marks : 100

1. Implement PUSH,POP Operation of Stack using Arrays.
2. Implement PUSH,POP Operation of Stack using Pointers.
3. Implement ADD,DELETE Operation of a Queue using Arrays.
4. Implement ADD,DELETE Operation of a Queue using Pointers.
5. Conversion of infix to postfix using Stack operations
6. Postfix Expression Evaluation.
7. Addition of two polynomials using Arrays and Pointers.
8. Creation, Insertion and deletion in Doubly linked list.
9. Binary tree traversals(In-order,pre-order,post-order) using Linked List.
10. Depth First Search and Breadth first Search for Graphs using Recursion.

CORE 7 : Digital and Microprocessor

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit I

Number Systems: Number systems and Conversion – Binary Arithmetic – Representation of Negative Numbers – Addition of 2's Complement numbers – Addition of 1's Complement Numbers – Binary Codes. Boolean Algebra: Basic Operations – Boolean Expressions and Truth Tables – Basic Theorems and Laws – DeMorgan's Laws - Exclusive OR and Equivalence operations - Algebraic Simplification – Proving validity of an equation.

Unit II

Applications of Boolean Algebra: Conversion of English sentences to Boolean equations – Combinational Logic Design using Truth Table – Minterm and Maxterm Expansions – Design of Binary Adders and Subtractors – Karnaugh Maps. NAND and NOR gates – design of Two-Level circuits using NAND and NOR gates.

Unit III

Combinational Circuits: Full Adder and Full Subtractor – Decoder and Encoder – Multiplexer and Demultiplexer. Sequential Circuits: Latches and Flip-Flops - SR Latch, D Latch – Edge-Triggered D, SR, JK and T Flip-Flops – Shift Registers and Counters.

Unit IV

Introduction to Microcomputer, Microprocessor, Assembly Languages – 8085 Microprocessor Architecture – 8085 Instruction set and classifications - Addressing Modes – Programming Techniques such as Looping, Counting and Indexing – Writing Simple Programs - Stack – Subroutine.

Unit V

Time Delay – Delay Calculation - Interrupt – Implementing Interrupts – Direct Memory Access – Memory Interfaces – RAM and ROM - I/O Interfaces – Direct I/O – Memory-Mapped I/O.

Main Reading

“Fundamentals of Logic Design” – Charles H. Roth, 5th edition, THOMSON.

“Microprocessor Architecture, Programming and Applications with 8085/8085A” – R.S. Gaonkar.

Supplementary Reading

“Digital Logic and Computer Design” – Moris Mano, Prentice Hall.

CORE 8 : Lab 4 – Digital and Microprocessors

Subject Code :

Duration : 3 Hours

Max Marks : 100

Digital

1. Realization of NAND as Universal Gate
2. Realization of NOR as Universal Gate
3. Exclusive-OR using only NAND and only NOR
4. Full-Adder using only NAND and only NOR
5. Full-Subtractor using only NAND and only NOR
6. Karnaugh Map Simplification
7. Code Converter
8. Ripple Counter
9. BCD Counter
10. Serial-In-Serial-Out Shift Register

Microprocessor

11. 8-Bit Hexadecimal Subtraction
12. 8-Bit Hexadecimal Multiplication
13. 8-Bit Hexadecimal Division
14. 8-Bit BCD Subtraction
15. Multibyte Addition
16. BCD to Hexadecimal Conversion
17. Hexadecimal to BCD Conversion
18. Searching an Array
19. Reversing an Array
20. Sorting an Array

CORE 9 : Data Communication Networks

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit I

Introduction to Data Communication ,Network protocols and standards, Standard organizations, Basic Concepts – Line Configuration , Topology, Transmission mode, Categories of Networks , OSI model – Layers of OSI model.

Unit II

Transmission of Digital Data – DTE –DCF interface , other interface standards such as GA –449, GA-580, X.21 , Modems ,guided Media, Unguided Media, Transmission impairment , performance

Unit III

Multiplexing – Types of Multiplexing ,Multiplexing Applications , Error Detection and Correction, Types of Errors, Detection , VRC, LRC,CRC , Check sum, Error Correction, Data line Control – Line , Deceptive flow control , error control.

Unit IV

Local area Network – Project 802 , Ethernet Token Bus , Token ring , FDDI, MAN –IEEE 802.6, SMDS, Switching – Circuit Switching, Packet Switching ,Message Switching ,ISDN – Servers,History, Subscribers Access to the ISDN, ISDN layers, Broad Band ISDN.

Unit V

ATM – ATM architecture, ATM layer , Networking and Interface – Repeative Bridges, Routers , Gateways other devices, Routing Algorithms, Distance vector routing Line star routing, TCP/IP protocol- overview , Network Layer Address Subnetting.

Main Reading

1.Data Communication and Networking 2nd Edition –Behrauz A forouzan tmt 2000

Supplementary Reading

1. Computer Networks , 4th Editon – Aandraw s. Tanenbaum

CORE 10 : Visual Programming

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit I

Introduction to Visual Environment – Tool Bars – Project menu, View Menu, Debug Menu, Tools menu and Add-Ins menu – Tool Box – Project Explorer – Property window - Common form Properties – Creating Controls – Formatting and Locking Controls – Name Property – Navigation between Controls

Unit II

Event Procedure – Form Grid – Properties of form – Basic Controls (Text box, Label, Command button, Image control, Combo Box, List Box) – Coding Basics , The Split bar, Object list box, Procedure list box, intellisense) – Data types – variables – scope of variables – constants – Built-in string constants- type conversion – handling numbers in visual basic .

Unit III

Msgbox – Input box – frames – Option button, Check box , Picture box, Scroll bars – timer control – Statement in visual basic – Determinate loops - indeterminate loops – Conditional statements – Goto statement.

Unit IV

Built-in functions- Functions and procedure – Arrays , static and dynamic arrays – Control Arrays - Sorting and searching – Sub main- do events – MDI Form - Menus – Picture box, Rich text box, Flex grid control – Windows common controls – File system controls, File system objects – Testing and Debugging – Error trapping

Unit V

File handling – Sequential files – Random access files – SQL Basics - Data control – Database objects – Data environment – Data Report – Printer Objects - Basics of API Functions -Creating OLE objects, COM/OLE – Create ActiveX control, Basics of VB Script – Form design and validation with VB script, VB Script and DHTML.

Main Reading

Visual Basic From the Ground Up – Gary Cornell – Tata McGraw-Hill

CORE 11 : Database System Concepts

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit-I

Introduction to Database Management Systems – Data and Data Management – File-based Data Management – Database Systems – Organization of a Database Characteristics of Data – DBMS – Functions – Components – Data Dictionary – Database Users Database Architecture – Data Abstraction – Data Independence – Database Languages – Database Design – Design Constraints – Data Models – Conceptual, Physical, and Logical Database Models, Relationships – Hierarchical, Network, Relational, E-R, and Object-oriented Models.

Unit-II

E-R Modeling – Components of an E-R Model – Relationships – E-R Diagrams. RDBMS: Terminology – Relational Data Structure – Relational Data Manipulation – Codd's Rules – Relational Data Integrity and Database Constraints – Data Normalization – Pitfalls in Relational Database Design – Decomposition – Functional Dependencies – Normalization – Keys – First, Second, Third and Boyce-Codd Normal Forms.

Unit-III

Relational Algebraic Operations – Relational Calculus – Domain Relational Calculus. SQL: Characteristics – Advantages – Types of SQL Commands – SQL Operators – Tables and Views – Queries and Sub queries – Aggregate Functions.

Unit-IV

Files, File Organization and File Structures – Operations on Files – File Storage Organization – File Organization – File Structure – Record Types – Indexing – Hashing – Database Security – Database Environment – Data Security Risks – Data Security Requirements – Protecting the Data within the Database.

Unit-V

Transaction Management and Concurrency Control – Transactions – ACID Properties – Database Structure – Transaction States – Concurrency Control – Serializability – Recoverability – Concurrency Control Schemes Transaction Management in SQL – Transactions and Recovery User defined Transactions – The COMMIT, ROLLBACK and SAVEPOINT Commands – Backup and Recovery.

Text Book:

1. Alexis Leon & Mathews Leon, *Essentials of Database Management Systems*, Vijay Nicole Imprints Private Limited.

CORE 12 : Lab 5 – RDBMS

Subject Code :

Duration : 3 Hours

Max Marks : 100

1. SQL - Data Definition Language

Table Creation

Table Altering

Drop table

2. SQL - Data Manipulation Language

Data Insertion

Built-in Functions

Set operations

Join Operation

Nested Subqueries

3. PL/SQL Procedure

PL/SQL blocks & Simple Program

Reverse a string.

Using recursive function – Factorial & Fibonacci series.

4. Forms & Reports

Student mark sheet preparation.

Pay Roll preparation.

Telephone Directory maintenance

Library Information System

CORE 13 : Web Technology

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit I

Internet Basic concepts – Communication on Internet – Internet Address – Internet Protocol – Telnet. Introduction to HTML: Web server – web browser- Structure of HTML Program- Text Formatting Tags – List – Image – Table – Colors – Links – Internal and External document Interface – Frames – Frame set- Hyper Link.

Unit II

DHTML: CSS – Font attributes – Color and Background attributes – Text attributes – Border attributes- List attributes – Class – Span tag- External Style Sheet. Java Script: Java Script into HTML – Java Script Syntax – Variables – Operators – Java Script Programming Construct – Control Structure – Arrays.

Unit III

Functions in Java Script – Built-in functions – User defined functions – Declaring function – function with parameter and return value – recursive function – Dialog box - Prompt – Confirm – Alert – Java Script DOM – Browser and Document Object – Form Object and form elements- Built-in Objects – String Objects – Math Object – Date Object – User defined Objects – Cookies.

Unit IV

ASP.NET Basics: Page Structure – Page - Compiler Directives – HTML Anchor control – Table – HTML Form and Form input controls –HTML Input File control – Label – TextBox – Button – LinkButton – ImageButton – CheckBox – RadioButton – HyperLink – Image – CheckBoxList – RadioButtonList –DropDownList – ListBox – DataGrid – Repeater – Calendar – AdRotator - Validation Control.

Unit V

Request and Response Object – OleDbConnection Class – Command Class – Transaction Class – Data Adapter Class – DataSet Class – Simple Applications – Connecting to a SQL Server Database – Manipulating data in SQL Server – Retrieving Data from SQL Server - E-Mail – Application Issues.

Text Book:

1. Ivan BayRoss, “Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI”, BPB Publication.
2. Greg Buczek, “ASP.NET Developer’s Guide” Tata McGraw Hill Edition, New Delhi.

Reference Book:

1. Jon Duckett, "Beginning HTML, XHTML, CSS, and JavaScript (Wrox Programmer to Programmer)"
2. Thomas A. Powell, "HTML & CSS: The Complete Reference", Fifth Edition (Complete Reference Series)
3. Mridula Parihar, Essam Ahmed, Jim Chandler and Bill Hatfield, "ASP.NET Bible"

CORE 14 : Java Programming

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit I

Evolution of Java Language – Features of Java – Object oriented Concepts – Lexical Issues : Reserved Keywords, identifiers, Literals, operators, Separators- Control Statements.

Unit II

Class – Objects – Methods – Overloading methods- Constructors: Usage of Constructors, 'this' Keyword, Constructor overloading , Copy Constructors – Static Data members – Static methods – "finalize()" method – Access Control – Inheritance :Inheriting the variables in a class, Inheriting the methods in a class, Overriding methods, 'super' keyword, Inheritance and constructors – Abstract classes – Final Classes

Unit III

Interfaces – Packages : Package Statement , Placing the Class in a package, Package Hierarchy, Import statement, Access protection- Exception Handling : Default Exception handling, User defined Exception Handling, Exception and Error classes , throw and throws, Custom Exceptions.

Unit IV

Threads: Thread, Life cycle of a Thread, Creating and running Threads, Runnable Interface Synchronization, deadlock, Inter thread Communication, Multithreading - I/O stream : File Streams - String : String class, methods in string class, string buffer -Util : working with util package classes.

Unit IV

Applets:Life cycle of an applet, Applet class, methods in the Graphics class – AWT: working with windows using the AWT class,AWT controls, Layout managers, menus and dialogs.

Main Reading

- 1.P. Naughton and H.Schildt – Java 2 (The complete Reference)-Third Edition , TmH 1999
2. Cay S. Hortsman Gary cornell – Core Java2 Volume 1 Fundamentals , 5th edition phi 2000

Supplementary Reading

1. K. Arnoll and J.Gosling – The Java Programming Language Second Edition, Addison Wesley 1996.

CORE 15 : Lab 6 – Java Programming

Subject Code :

Duration : 3 Hours

Max Marks : 100

1. Write a program to find the area and perimeter of a circle using bufferReader class.
2. Write a program to remove a substring from a string
 - a) Using String Buffer Class
 - b) Write a program to illustrate simple string manipulation using char array.
3. Write a program to determine the order of numbers generated randomly using random class.
4. Write a program to illustrate the use of Calendar class
5. Write a program to illustrate the methods in rectar class.
6. Write a program to illustrate exception handling feature.
7. Write a program to create a custom exception
8. Write a program to illustrate Thread creation and usage
9. Write a program to illustrate synchronization concept in Threads
10. Write a program to create and manipulate email address.

Applets.

1. Write a applet program to draw various graphical shapes.
2. Write a program to illustrate incorporation of colours in as applet
3. Write a applet program to draw the familiar traffic signal post with STOP, LISTEN and PROCEED Signals
4. Write a program to illustrate the usage of Font Class.

5. Write a program to a image display using point class and mouse concepts
6. Write a applet program to illustrate the frame window.
7. Write a program to illustrate the Dialog window
8. Write a program to illustrate the menu and submenu controls
9. Write a program to illustrate the borders layout
10. Write a program to illustrate the panel and Grid Layouts.

ELECTIVE 1 : Operating System Concepts

Subject Code :

Duration : 3 Hours

Max Marks : 100

UNIT-I : Introduction – Batch systems, Multiprogramming systems, Time Sharing systems, Distributed Systems, Real time system, OS Structure : System components- Operating system services – System Calls – System design and Implementation.

UNIT-II: PROCESS MANAGEMENT

Process concepts- Concurrent Process- Inter Process Communication- Scheduling Concepts- CPU Scheduling – Scheduling Algorithms- Multi Processor Scheduling .Deadlocks: Characterization – Methods for handling deadlocks – Prevention, Avoidance Detection, Recovery.

UNIT-III : STORAGE MANAGEMENT

Swapping, Single and Multiple Partition allocation – Paging – Segmentation- Paged Segmentation – Virtual memory – Demand paging – Page replacement and Algorithms- Thrashing – Free Space management – Allocation methods – Disk scheduling .

UNIT-IV : Files and Protection : File System organizations – File operation- Access methods – Consistency semantics – Directory structure organization File protection: Implementation issues – Security – Encryption.

UNIT-V: I/O systems: I/O Hardware Application I/O Interface, Kernel I/O Subsystem Case Studies: MS-DOS and UNIX Operating Systems.

Text Books :

1. Peterson and Silberschartz A: Operating System Concepts(3rd Edition). Addison- Wesley Publishing Co., 1991.

Reference :

1. Deitel H.M.: An Introduction to Operating Systems. Addison – Wesley Publishing Co., 1990
2. Milan Milenkovic: Operating System Concepts and Design. (2nd Design)
3. Tanenbaum, A.S.: Operating Systems: Design and Implementation. Prentice Hall of India.
4. Madnick, S.E. and Donovan, J.J.: Operating System, McGraw-Hill, 1974.

ELECTIVE 2 : Computer Graphics

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit – I :

Introduction to Computer Graphics – video display devices – Raster scan systems – random scan systems – input devices – hard copy devices – Graphics software – Line drawing algorithms: DDA, Bresenham's, Parallel Line drawing algorithms.

Unit – II :

Line function – circle generating algorithms – Ellipse generating algorithms - Line attributes – curve attributes – area fill attributes -character attributes.

Unit – III:

Basic transformations – Matrix transformations – composite transformations – reflection – shear – Cohen-Sutherland line clipping – Hodgeman-Sutherland polygon clipping – curve clipping – text clipping.

Unit – IV :

Three dimensional display methods: Parallel projection, Perspective projection, Depth cueing, surface rendering – three dimensional transformations: rotation, scaling, reflection, shears.

Unit – V:

Properties of light – Color models: RGB, YIQ, CMY, HSV, HES – design of animation sequence – computer animation functions – raster animations – key frame systems – morphing – motion specifications.

Text Book :

1. Computer Graphics - Donald Hearn, Pauline Baker.

ELECTIVE 3 : Mobile Computing

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit I Introduction

Wireless Transmission – Signal Propagation - Spread Spectrum – Satellite Networks-Capacity Allocation – FAMA – DAMA –MAC.

Unit II Mobile Networks

Cellular Wireless Networks – GSM – Architecture – Protocol – Connection Establishment – Frequency Allocation – Routing – Handover-Security – GPRS.

Unit III Wireless Networks

WirelessLAN – IEEE 802.11 Standrd – Architecture – Services – AdHoc Networks – HiperLan – Blue Tooth.

Unit IV Routing

Mobile IP – DHCP – AdHoc Networks- Proactive and Reactive Routing Protocols- Multicast Routing.

Unit V

TCP over Adhoc Networks – WAP – Architecture – WWW Programming model- WDP – WTLS – WTP – WSP – WAE – WTA Architecture – WML.

Text Books:

1. Jochen Schiller “ Mobile Communications” PHI/ Pearson, Second Edition,2003.
2. William Stalling “ Wireless Communication and Networks “ ,PHI/Pearson 2002.

References:

1. Kaveh Pahlavan, Prasanth Krishnamoorthy ,”Principals of Wireless Networks “,PHI/Pearson ,2003.
2. Uwe Hansmann, Lothar Merk,Martin S.Nicklons and Thomas Stober,”Principles of Mobile Computing “, New York ,2003.

3. Charles E.Perkins,”AdHoc Networking “,Addison Wesley ,2001.

ELECTIVE 4 : Data Warehousing and Mining

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit I

Data Warehouse Architecture: Data Warehousing architecture – System process – Architecture design – Database schema – Partitioning strategy – Aggregations – Data Marting – Metadata – Data warehouse process managers.

Unit II

Hardware & Operational Design: Hardware and Operational design of warehouses – Hardware architecture – Physical layout – Security – Backup and Recovery – Service level agreement – Operating the Data warehouse.

Unit III

Planning, Tuning & Testing: Capacity planning – Tuning the Data warehouse - Testing the Data warehouse.

Unit IV

Data Mining Introduction: Data Mining introduction – Data mining Vs Query pools – Data mining in marketing and Self-learning computing system – Concept learning – Data Mining and Data Warehousing.

Unit V

Knowledge Discovery Process: Data searching – Cleaning – Enrichment – Coding – Preliminary Analysis of Data Set using traditional Query pools – Visualization techniques – OLAB tools – Neural Networks – Genetic Algorithms – Knowledge Discovery Algorithm (KDA).

Main Reading :- “Data Warehousing in the Real World” – Sam Anahory & Dennis Murray - Pearson Education

“Data Mining” – Dolf Zanting - Pearson Education

Supplementary Reading :-“Data Mining Concepts and Techniques” – Jiawei Han and Micheline Kamber. “Data Mining Techniques” – Arun K. Pujari, University Press.

ELECTIVE 5 : Software Engineering

Subject Code :

Duration : 3 Hours

Max Marks : 100

UNIT I

Introduction – Definitions – Size Factors – Quality and Productivity Factors – Managerial Issues. Planning a Software Project – Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure.

UNIT II

Software Cost Estimation – Cost Factors – Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs - Software Requirements Definition – Software Requirement Specification – Formal Specification Techniques.

UNIT III

Software Design – Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real Time and Distributed System Design – Test Plans – Design Guidelines.

UNIT IV

Implementation Issues – Structured Coding Techniques – Coding Style – Standards and Guidelines – Documentation Guidelines – Data Abstraction – Exception Handling – Concurrency Mechanisms.

UNIT V

Verification and Validation Techniques – Quality Assurance – Walkthroughs and Inspections – Software Testing Strategies - Static Analysis – Symbolic Execution – Black Box Testing – White Box Testing - Unit Testing and Debugging – System Testing – Technical Metrics for Software - Formal Verification- Software Maintenance – Managerial Aspects – Configuration Management.

Text Book :

1. Richard Fairley, Software Engineering Concepts, Tata McGraw Hill Publishers
2. Sommerville , Software Engineering, Prarson Edition
3. Pressman , Software Engineering , Tata McGaw Hill Publishers.