

**Note: Removed Contents are marked in Yellow color and
Added Contents are marked in red color**

SCS1306	DATABASE MANAGEMENT SYSTEM	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT 1 INTRODUCTION TO DATABASES

9 Hrs.

Databases and Databases users - Database system concepts and architecture - Data modeling using Entity Relationship (ER) Model. **Relational Model** - The Relational Data Model and Relational Database Constraints - The Relational Algebra and Relational Calculus.

UNIT 2 DATABASE DESIGN

9 Hrs.

Overview of the QBE Language - Overview of the Hierarchical Data Model - Overview of the Network Data Model - **SQL-99: Schema Definition, Constraints, Queries, and Views**- Functional Dependencies and Normalization for Relational Databases.

UNIT 3 QUERY PROCESSING

9Hrs.

Algorithms for Query Processing and Optimization - Introduction to Transaction Processing Concepts and Theory - Concurrency control techniques.

UNIT 4 RECOVERY AND SECURITY

9Hrs.

Database Recovery Techniques - Database Security - Distributed databases and Client- Server Architecture

UNIT 5 OBJECT DATABASE

9Hrs.

Concepts for Object Database - Enhanced Data Models for Advanced Application Emerging Database Technologies and Application
Max. 45 Hours

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 : Construct ER model for a given application..

CO2 : Apply normalization on Relational Databases

CO3 : Demonstrate query optimization and concurrent transaction processing

CO4 : Analyse recovery techniques, security mechanism, fragmentation and load balancing of databases.

CO5 : Design database using Object Oriented techniques...

CO6 : Create database for a specified application

TEXT / REFERENCE BOOKS

1. Elmasri & Navathe - Fundamentals of Database Systems - 3rd Edition, 2nd Reprint, Addison Wesley, 2000

2. Abraham Silberschatz, Henry. F. Korth and S. Sudharshan "Database System Concepts", 4th Edition, 2002.

3. C. J. Date, "Introduction to database systems", Addison Wesley, 7th Edition, 2001.

4. Jan L. Harrington, "Object oriented database design", Harcourt India private limited

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

PART A : 10 questions of 2 marks each- No choice

PART B : 2 questions from each unit of internal choice, each carrying 16 marks

Exam Duration : 3 Hrs.

20 Marks

80 Marks

SCSA1301	DATABASE MANAGEMENT SYSTEMS	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To understand terms related to database design and management.
- To gain knowledge in relational model and relational database management system.
- To implement relational databases using SQL and My SQL.
- To understand database security and performance issues.
- To understand the basics of Data warehousing and Data mining.

UNIT 1-INTRODUCTION TO DATABASES

9 Hrs.

Databases and database users – Database system concepts and architecture – Data modeling using entity Relationship(ER) model – Enhanced ER model- Relational Model - The Relational Data Model and Relational Database Constraints - The Relational Algebra and Relational Calculus.

UNIT 2-DATABASE DESIGN

9 Hrs.

Overview of the Hierarchical Data Model - Overview of the Network Data Model – Relational database design: **Mapping ER Model to Relational Model** - **Commercial query languages: QBE** – Functional dependency – Normalization.

UNIT 3-QUERY PROCESSING

9 Hrs.

SQL Queries -Embedded SQL -My SQL: Basics, Queries in MySQL and Algorithms for Query Processing and Optimization

- Introduction to Transaction Processing Concepts and Theory - Concurrency control techniques.

UNIT 4-RECOVERY AND SECURITY

9 Hrs.

Database Recovery Techniques - Database Security –Debate on the distributed databases and Client- Server Architecture with reference to Indian Railway Reservation System.

UNIT 5-OBJECT DATABASE AND CURRENT TRENDS

9 Hrs.

Concepts for Object Database - Emerging Database Technologies and Application - **Introduction to Data warehousing & Data mining –Applications of Data mining.**

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Implement SQL to a broad range of query and data update problems.

CO2 - Articulate socio-economic applications of distributed databases and use database recovery mechanisms.

CO3 - Familiar with data warehousing and data mining applications.

CO4 - Apply Normalization techniques to normalize and improve the database design.

TEXT / REFERENCE BOOKS

1. Elmasri&Navathe, "Fundamentals of Database Systems", 6th Edition, Addison Wesley, 2011.
2. Abraham Silberschatz, Henry.F.Korth and S.Sudharshan, "Database System Concepts", 4th Edition, 2002.
3. Jiawei Han and MichelineKamber, "Data Mining Concepts and Techniques", 3rd Edition, Elsevier, 2012.
4. Jan L. Harrington, "Object oriented database design", Harcourt India private limited 2000.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100

Exam Duration: 3 Hrs.

PART A: 10 Questions carrying 2 marks each – No choice

20 Marks

PART B: 2 Questions from each unit of internal choice, each carrying 16 marks

80 Marks

SIT4201	PROGRAMMING IN JAVA (50 Theory + 50 Laboratory)	L	T	P	Credits	Total Marks
		2	0	4	4	100

The course covers both theoretical and practical aspects. Marks split-up for the subject is 50% Theory and 50% Practical. Award of marks for Theory section is based on the Continuous Internal Assessments and for the Laboratory section practical examination will be conducted as per the regular University norms.

The following topics are to be covered for effective coverage of the course objective:

Class Fundamentals, Method Overriding, Inheritance, Packages, Exception Handling, Multithreading, Wrapper Classes, Input and Output Stream Classes, Byte and Character Stream Classes, Utility Packages, Applets, Swings, Database Connectivity, Regular Expressions, Networking, Java Beans

Max. 60 Hours

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 : Comprehend OOP's concepts, Java programming constructs, and Class Library with examples.

CO2 : Develop programs with Exception Handling & Multithreading Concepts.

CO3 : Implement Java Wrapper Classes and Stream Classes.

CO4 : Develop applications using Java Classes for Utility and Networking.

CO5 : Develop applications using Applet & Swings.

CO6 : Create Real time application using JDBC Connectivity.

TEXT / REFERENCE BOOKS

1. Herbert Schildt, "Java the Complete Reference", 9th Edition, McGraw Hill Education, 2014
2. <http://docs.oracle.com/javase/tutorial/>

SITA1301	PROGRAMMING IN JAVA	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To introduce object oriented concepts in Java.
- To understand Packages, Interfaces and Multithreading Concepts.
- To understand lang, io packages.
- To understand the concepts involved internet application development.
- To understand the internet application design using swing controls.

UNIT 1-INTRODUCTION TO JAVA

9 Hrs.

Classes and Objects – Class Fundamentals – Declaring Objects – Methods – Constructors – Garbage Collection. Inheritance – Basics – Using Super – Method Overriding – Abstract Classes – Using final with inheritance. String Handling – String class – String buffer class.

UNIT 2-PACKAGES, INTERFACES AND THREADS

9 Hrs.

Introduction to Packages – User Defined Packages - Importing packages – Access protection – **Interfaces** – Exception Handling - Exception Types – Using try, catch, throw, throws and finally –Multithreading – JavaThreadModel – Main thread – Creating multiple thread – Thread priorities – **Synchronization**.

UNIT 3-LANG AND IO PACKAGES

9 Hrs.

Java. lang package - Wrapper Classes– Simple type wrappers – Using **clone() and the Cloneable Interface** -IO Package - Introduction – Input Stream and Output Stream classes - Data Output Stream and Data Input Stream classes –FileInput Stream – File Output Stream. - Reader and Writer Classes – File Reader and File Writer

UNIT 4-APPLET PROGRAMMING AND EVENT HANDLING

9 Hrs.

Applet Class – Applet basics – HTML APPLET tag – Passing parameters to applets -**Delegation Event Model – Handling Mouse and Keyboard Events – Adapter Classes**.

UNIT 5-SWINGS AND DATABASE CONNECTIVITY

9 Hrs.

Introduction-J Applet Class-J Label Control - J Text Field Control –J Button Control –J Checkbox Control-J Radio Button Control – J Combo Box Control – J tapped Pane Control-J ScrollPane Control – J Table. Introduction –Establishing Connection – Creation of Data Tables – Entering Data into the Tables- Table Updating .

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Develop application programs using java object oriented concepts. CO2 - Implement the interface, package and multithread concepts.

CO3 - Implement various built in packages and its applications. CO4 -

Develop web based applications using applet programming. CO5 -

Implement Swing concepts in real time applications.

CO6 - Design the internet applications frontend and connect with backend using database connectivity.

TEXT / REFERENCE BOOKS

1. Herbert Schildt ,”The Complete Reference JAVA2”, Fifth Edition, Tata Mcgraw Hill, 2017.
2. Bruce Eckel , ”Thinking in Java”, Pearson Education, Fourth Edition 2006.
3. Core Java Volume-I Fundamentals, 9th Edition, Cay Horstman and Grazy Cornell, Prentice Hall, 2013.
4. <https://docs.oracle.com/javase/tutorial/>.
5. <https://www.tutorialspoint.com/java/>.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100

Exam Duration: 3 Hrs.

PART A: 10 Questions carrying 2 marks each – No choice

20 Marks

PART B: 2 Questions from each unit of internal choice, each carrying 16 marks

80 Marks

SCSA1202	PROGRAMMING WITH C AND C++	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To learn the fundamental programming concepts and methodologies which are essential to building good C/C++ program.
- To demonstrate a thorough understanding of modular programming by designing programs which require the use of programmer-defined functions.
- To impart the knowledge about pointers which is the backbone of effective memory handling.
- To demonstrate adeptness of object oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.
- To analyze a problem and construct a C++ program that solves it.

UNIT 1-BASICS OF C PROGRAMMING

9 Hrs.

Introduction to C: Features of C - Structure of C program-Data Types-'C' Tokens-Input/output statements-Control Statement, Functions: – Types of Functions –Recursion.

UNIT 2-ARRAYS, STRINGS AND STRUCTURES

9 Hrs.

Arrays : Single and Multidimensional Arrays-- Array as Function Arguments, Strings: String Handling Functions, Structure: Nested Structures – Array of Structures – Structure as Function Argument–Function that Returns Structure, Union.

UNIT 3-POINTERS AND FILE PROCESSING

9 Hrs.

Pointers: Introduction, Arrays Using Pointers – Structures Using Pointers – Functions Using Pointer, Dynamic Memory Allocation, Storage Classes, File Handling in 'C'.

UNIT 4-OBJECT ORIENTED PROGRAMMING CONCEPTS

9 Hrs.

Introduction-Procedure vs. object oriented programming-Concepts: Classes and Objects-Operator and Function Overloading-Inheritance-Polymorphism and Virtual Functions.

UNIT 5-TEMPLATES AND EXCEPTION HANDLING

9 Hrs

Function Templates and Class Templates – Name spaces – Standard Template Library - Casting – Exception Handling – case study.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Develop simple applications in C using basic constructs.

CO2 - Design and Implement applications using arrays and strings.

CO3 - Develop and Implement applications using memory allocation and File concepts. CO4 -

Use proper class protection to provide security.

CO5 - Describe the reusability of code through Inheritance.

CO6 - Demonstrate the use of virtual functions to implement polymorphism.

TEXT / REFERENCE BOOKS

1. Deitel and Deitel, C how to Program, 7th Edition, Pearson Education, 2013.
2. Brian W.Kernighan and Dennis M.Ritchie, The C Programming Language, Pearson Education, 2015.
3. Yashavant Kanetkar, Understanding Pointers in C, 4th Revised and Updated Edition, Bpb Publications, 2008.
4. E Balagurusamy, Object Oriented Programming with C++, 3rd edition, Tata McGraw Hill, 2006.
5. Bhave, Object Oriented Programming with C++, Pearson Education, 2004.
6. John R Hubbard, "Programming with C++", Schaums Outline Series, McGraw Hill, 2nd edition, 2009.
7. BjarneStroustrup, Programming: Principles and Practice using C++, 1st Edition, Addison Wesley Publications, 2008.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100

Exam Duration: 3 Hrs.

PART A: 10 Questions carrying 2 marks each – No choice

20 Marks

PART B: 2 Questions from each unit of internal choice, each carrying 16 marks

80 Marks

SCSA1104	PROBLEM SOLVING TECHNIQUES WITH C AND C++	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To learn the fundamentals of PST and methodologies which are essential for building good C/C++ programs.
- To demonstrate a thorough understanding of modular programming by designing programs which require the use of programmer-defined functions.
- To impart the knowledge about pointers which is the backbone of effective memory handling.
- To demonstrate adeptness of object-oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.

UNIT 1 INTRODUCTION TO COMPUTER PROBLEM SOLVING 9 Hrs.

Algorithms - Building blocks of algorithms (statements, control flow, functions) -Notation (pseudo code, flow chart) - Algorithmic problem solving for socio economic conditions in global perspectives - Simple strategies for developing algorithms (iteration, recursion) - Efficiency of algorithms.

UNIT 2 BASICS OF C PROGRAMMING 9 Hrs.

Introduction to C: Features of C - Structure of C program-Data Types-‘C’ Tokens-Input/output statements-Control Statement, Functions: – Types of Functions –Recursion.

Algorithms: Reversing the digits of a number - Generation of Fibonacci sequence- Factorial Computation.

UNIT 3 ARRAYS, STRINGS AND STRUCTURES 9 Hrs.

Arrays: Single and Multidimensional Arrays— Array as Function Arguments, Strings: String Handling Functions, Structure: Nested Structures – Array of Structures – Structure as Function Argument– Function that Returns Structure, Union.

Algorithms: Sum of array elements- Removal of duplicates from an array-Finding the Kth smallest element.

UNIT 4 POINTERS AND FILE PROCESSING 9 Hrs.

Pointers: Introduction, Arrays Using Pointers – Structures Using Pointers – Functions Using Pointer, Dynamic Memory Allocation, Storage Classes, File Handling in 'C'.

Algorithms: Swap elements using Call by Reference – Sorting Arrays using pointers- Finding sum of array elements using Dynamic Memory Allocation.

UNIT 5 OBJECT ORIENTED PROGRAMMING CONCEPTS 9 Hrs.

Introduction-Procedure vs. object-oriented programming-Concepts: Classes and Objects-Operator & Function Overloading-Inheritance-Polymorphism and Virtual Functions.

Max.45 Hrs.

COURSE OUTCOMES

On completion of the course the student will be able to

CO1: Develop solutions for the given problem.

CO2: Design and Implement applications using arrays and strings.

CO3: Develop and Implement applications using memory allocation and File concepts.

CO4: Use proper class protection to provide security.

CO5: Describe the reusability of code through Inheritance.

CO6: Demonstrate the use of virtual functions to implement polymorphism.

TEXT / REFERENCE BOOKS

1. Dromey.R.G, “How to Solve it by Computer”, Prentice-Hall of India, 8th Indian Reprint, 2008.
2. Aho.A.V.,Hopcroft.J.E and Ullman.J.D, “The Design and Analysis of Computer Algorithms”, Pearson education, 2004.Deitel and Deitel, C how to Program, 7th Eition, Pearson Education, 2013.
3. Brian W.Kernighan and Dennis M.Ritchie, The C Programming Language, Pearson Education, 2015.
4. Bhave, Object Oriented Programming with C++, Pearson Education, 2004.
5. John R Hubbard, “Programming with C++”, Schaums Outline Series, McGraw Hill, 2nd edition, 2009.
6. Bjarne Stroustrup, Programming: Principles and Practice using C++, 1st Edition, Addison Wesley Publications, 2008.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

Exam Duration : 3 Hrs.

PART A : 10 Questions of 2 marks each-No choice

20 Marks

PART B :2 Questions from each unit with internal choice, each carrying 16 marks

80 Marks