



**S. S. JAIN SUBODH P.G. COLLEGE**

**(AUTONOMOUS)**

**JAIPUR**

# **SYLLABUS**

**THREE YEAR UNDERGRADUATE PROGRAMME IN**

**SCIENCE**

**I & II SEMESTER EXAMINATION 2025-26**

**III & IV SEMESTER EXAMINATION 2026-27**

**V & VI SEMESTER EXAMINATION 2027-28**

**As per NEP-2020**

**S. S. JAIN SUBODH P.G. COLLEGE**

**(AUTONOMOUS)**

**JAIPUR**

# **FACULTY OF SCIENCE**

**Programme Name: THREE YEAR UNDERGRADUATE  
PROGRAMME IN SCIENCE**

**Subject/Discipline: Computer Science**

**(Syllabus as per NEP-2020 and Choice Based Credit System)**

**Medium of Instruction: English**

**w.e.f Academic Session 2025-26**

# Core Subject: Computer Science

## Programme Specific Outcomes:

PSO1: Identify, formulate, analyze, and solve programming problems using different programming languages.

PSO2: Improve logical ability and programming concepts through practical implementation in the programming lab.

PSO3: Introduce the concept of project development using the technologies learned during the semester to enhance programming skills in young IT professionals.

PSO4: Prepare students for the future Technologies like Big Data, Cloud Computing, AI etc.

PSO5: Ability to understand changes and future trends in the field of computer applications.

## Examination Scheme

Duration: 3 hrs.

(Min. Marks/Max. Marks): As per B.Sc. program norms of S. S. Jain Subodh PG (Autonomous) College

Max. Marks of End-Semester Exam = 70 Marks

Continuous Internal Assessment (CIA) = 30 Marks

Maximum Marks (Each Theory Paper) = 100 Marks

Part A 7 QUESTIONS (Very Short Answer Questions Out of 10) 7 x 2 MARKS EACH = 14 Marks

Part B 4 QUESTIONS  
(1 Question From Each Unit With Internal Choice) 4 x 14 MARKS EACH = 56 Marks

Maximum Practical Exam Marks = 50 Marks

[Internal Practical Exam = 20 Marks; External Practical Exam = 30 Marks]

Total of Theory Papers Per Semester = 1 x 100 Marks = 100 Marks

(Minimum Pass Marks 40% = 40 Marks)

Total of Practical Marks = 50 Marks

Grand Total of Marks Per Semester = 100 Marks (Theory) + 50 Marks (Practical)  
= 150 Marks

### Semester-I

| S.No . | Subject Code | Course Title         | Course Category | Credit | Contact Hours Per Week |   |   | EoSE Duration (Hrs.) |   |
|--------|--------------|----------------------|-----------------|--------|------------------------|---|---|----------------------|---|
|        |              |                      |                 |        | L                      | T | P | Theory               | P |
| 1.     | BSCS101      | Programming with C   | DSC             | 4      | 4                      |   |   | 6                    |   |
| 2.     | BSCS151      | Computer Practical-I | DSCP            | 2      |                        |   | 6 |                      | 2 |

### Semester-II

| S.No . | Subject Code | Course Title                          | Course Category | Credit | Contact Hours Per Week |   |   | EoSE Duration (Hrs.) |   |
|--------|--------------|---------------------------------------|-----------------|--------|------------------------|---|---|----------------------|---|
|        |              |                                       |                 |        | L                      | T | P | Theory               | P |
| 1.     | BSCS201      | Concepts of Operating System and DBMS | DSC             | 4      | 4                      |   |   | 6                    |   |
| 2.     | BSCS251      | Computer Practical-II                 | DSCP            | 2      |                        |   | 6 |                      | 2 |

# Semester-I

## BSCS101: Programming with C

### Course Outcomes

CO1: Understand the concept of Algorithms and different symbols used in flowcharts

CO2: Develop Control statements to write C programs.

CO3: Able to implements Arrays, String handling in C programs.

CO4: Understand the concept of Function Structure and Pointer.

### UNIT – I

Fundamental of Programming: Programming Concepts, Pseudo code, Flowchart, Algorithm, Characteristics of Algorithms. History and Importance of C, Basic Structure and Execution of a C program, Constants, Variables, Data Types.

### UNIT - II

Operators & Control Statements: Operators and Expressions, Managing Input and Output Operations, Decision Making and Branching While, Do...While, For Loop, Nested Loops, Break and Continue, Go to Statements.

### UNIT – III

Array & String: Arrays Declaration, Initialization and Representation of One –Dimensional and Two-Dimensional Arrays, Strings and String - Handling Functions

### UNIT – IV

Advance Concept of C : Definition, Need of Functions, Function Calls and Declaration, Function Types, Declaring a Structure Variable, Accessing Structure Members, Union. Basic concept of Pointer, Declaration and Initialization of Pointer Variables. Pointers and Arrays, Pointers and Function Arguments

### Reference Books:-

- 1 Principles of Programming Languages Notes – PPL Notes – PPL Pd Notes
2. Concepts of Programming Languages Robert .W. Sebesta 6/e, Pearson Education
3. E. Balagurusamy – Programming in ANSI C, 3rd Edn. , TMH, New Delhi ; 2004.
4. Kerighan & Richie The C programming language (PHI Publication).

## **BSCS151: COMPUTER PRACTICAL-I**

### **Course Outcomes**

CO1: Develop a C program based on a given task or algorithm.

CO2: Read, comprehend, and trace the execution of C programs.

CO3: Implement C programs using arrays, pointers, decision-making statements, and looping statements.

**Exercises to be framed to cover the Programming Concepts using C taught in the theory paper.**

# **Semester-II**

## **BSCS201: Concepts of Operating System and DBMS**

CO1: Analyze various scheduling algorithms.

CO2: Understand deadlock, prevention, avoidance and memory management schemes

CO3: Fundamental concepts of database management systems

CO4: Techniques involved in RDBMS and Develop proficiency in SQL.

### **UNIT- I**

Introduction to Operating System & Process Management: Need of operating systems, Evolution of operating system, Characteristics, Types of Operating System, Functions of Operating System, Systems Calls , Process Concept, Process States, CPU Scheduling- Preemptive and Non preemptive Scheduling Algorithms, Types of Schedulers,

### **UNIT-II**

Deadlock & Memory management: Deadlock Characterization, Methods for Handling Deadlocks: Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock , Logical And Physical Address Space, Contiguous Memory Allocation, Fragmentation- Internal and External Fragmentation, Virtual Memory Management.

### **UNIT-III**

Introduction to Database Concepts: Database and Need for DBMS, Characteristics of DBMS, Database Users, 3-tier architecture,(its advantages over 2- tier) Data Models, Views of data-schemes and instances, Data Independence, Overview of Network Model, Hierarchical Model, Relational Model, ER Model : Entities, Relationships, Representation of entities, attributes, relationship set, Generalization , Aggregation

### **UNIT- IV**

Relational Database Design & SQL : Functional dependencies, Normalization Normal forms based on primary keys (1 NF, 2 NF, 3 NF), Introduction to SQL, SQL Data types and Literals, Types of SQL commands, SQL Operators and their procedures, Tables, aggregate function, insert, delete and update operations.

#### **Reference Books:-**

1. James L. Peterson & A. Silberschatz: Operating System Concepts.
2. Andrew S. Tenenbaum: Modern Operating Systems; Prentice Hall, India.
3. Introduction to database systems by C. J .Date
4. Database system concept by Korth

## **BSCS251: COMPUTER PRACTICAL-II**

### **Course Outcomes:**

- CO1: Write both simple and complex SQL queries to retrieve information from databases with many tables to support business decision making.
- CO2: Write SQL DDL to create, modify and drop objects within a relational database.
- CO3: Retrieve and store information in a relational database using SQL in a multi-user environment.

**Exercises to be framed to cover the concepts of SQL taught in theory papers.**