

# Lesson Plan:

## Computer Science (Class XII) – 2026-27

**TERM 1: SQL, Python & Data Structures (April – October)**

**April - May: Relational Database & SQL (Simple Queries)**

| Topics Covered            | Teaching Methods     | Activities                                       |
|---------------------------|----------------------|--|
| Introduction to Databases | Lecture + Discussion | Overview of RDBMS vs. Non-RDBMS                  |
| Basics of SQL             | Hands-on Lab         | Execute simple SQL queries (SELECT, FROM, WHERE) |
| Sorting & Filtering Data  | Hands-on Coding      | Use ORDER BY, DISTINCT, and LIMIT                |
| Aggregation Functions     | Live Demo + Coding   | Implement COUNT(), SUM(), AVG(), MAX(), MIN()    |

**June: SQL – Table Creation & Data Manipulation**

| Topics Covered                             | Teaching Methods    | Activities                            |
|--|---------------------|---------------------------------------|
| Creating & Modifying Tables                | Hands-on Lab        | CREATE TABLE, ALTER TABLE, DROP TABLE |
| Data Manipulation (INSERT, UPDATE, DELETE) | Hands-on Coding     | Modify database records               |
| Grouping & Aggregation (GROUP BY, HAVING)  | Live Demo           | Perform group operations              |
| SQL Joins (INNER, LEFT, RIGHT, FULL)       | Interactive Session | Combine tables using joins            |

**July: Python & SQL Integration**

| Topics Covered                          | Teaching Methods   | Activities                                       |
|---|--------------------|--|
| Introduction to MySQL Connector         | Lecture + Hands-on | Set up MySQL with Python                         |
| Connecting Python with SQL              | Live Coding        | Write Python programs to interact with databases |
| Performing CRUD Operations using Python | Hands-on Lab       | Implement INSERT, SELECT, UPDATE, DELETE         |

| Topics Covered                           | Teaching Methods       | Activities  |
|--|------------------------|---|
| Real-World Application: Student Database | Project-Based Learning | Create a Python-MySQL-based student management system |

### August: Functions & Using Python Libraries

| Topics Covered   | Teaching Methods   | Activities                                  |
|--|--------------------|---|
| Functions in Python  | Lecture + Hands-on | Define & call functions                     |
| Function Arguments & Return Values   | Live Demo + Coding | Implement functions with parameters         |
| Using Python Libraries ( <code>math</code> , <code>random</code> , <code>datetime</code> ) | Hands-on Coding    | Perform operations using built-in libraries |

### September: Data File Handling & Program Efficiency

| Topics Covered  | Teaching Methods   | Activities                                  | Assessment            |
|---|--------------------|---|-----------------------|
| File Handling Basics ( <code>open()</code> , <code>read()</code> , <code>write()</code> ) | Lecture + Hands-on | Read & write text files                     |                       |
| Working with CSV & Binary Files   | Hands-on Lab       | Process data in CSV format                  |                       |
| Exception Handling in Python  | Live Demo          | Handle errors using <code>try-except</code> | Term one Examinations |

## TERM 2: Advanced Python, Networks & Revision (October – January)

### October: Data Structures – Lists, Stacks, & Queues

| Topics Covered                         | Teaching Methods       | Activities                                      |
|--|------------------------|---|
| Lists & Operations                     | Hands-on Lab           | Perform insertion, deletion, and slicing        |
| Stacks – Implementation using Lists    | Hands-on Coding        | Implement push, pop, peek operations            |
| Queues – FIFO Concept & Implementation | Live Demo + Hands-on   | Implement enqueue & dequeue operations          |
| Applications of Stacks & Queues        | Project-Based Learning | Solve real-world problems using stacks & queues |

## November: Computer Networks – Part 1 & 2

| Topics Covered                            | Teaching Methods      | Activities                               |
|---|-----------------------|--|
| Introduction to Networking                | Lecture + Discussion  | Basics of network types (LAN, WAN, MAN)  |
| OSI & TCP/IP Model                        | Hands-on Learning     | Identify layers in network communication |
| Network Protocols (HTTP, FTP, SMTP, DHCP) | Interactive Session   | Explain the role of network protocols    |
| Cyber Threats & Security Measures         | Case Study + Hands-on | Discuss real-world cyber threats         |

## December – January: Revision & Final Assessment

| Topics Covered            | Teaching Methods            | Activities                     | Assessment   |
|---------------------------|-----------------------------|--------------------------------|--|
| Concept & Coding Revision | Hands-on Coding             | Practice SQL & Python problems | Mock Test  |
| Practical Revision        | Lab-Based Learning          | Debug & optimize code          | Practical Test   |
| Final Project Evaluation  | Viva + Project Presentation | Present final projects         | Final Project and Journal Submission (First week of January) |