

\* “The internship organization is requested to deliver the above modules; however, the actual delivery may be enhanced or customized in accordance with organizational requirements and industry standards.”

# Common Syllabus

## Computer Applications Internship (6 Months)

### Program Overview

This internship program is designed to bridge academic learning with industry practices. It focuses on developing practical skills in programming, software development, databases, and modern tools used in the IT industry.

- **Duration:** 6 Months
- **Mode:** Blended (Theory + Demo + Hands-on Practicals / Physical / Virtual )
- **Outcome:** Industry-ready skills with a project portfolio

### Module Structure

#### Module 1: Fundamentals of Computer Applications (As Required by the chosen industry)

##### Theory

- Basics of Computer Systems
- Operating Systems Overview
- Software Development Life Cycle (SDLC)
- Introduction to Programming Concepts

##### Demo

- OS navigation (Windows/Linux)
- IDE setup (VS Code / PyCharm)
- Basic command-line operations

##### Practicals

- File handling and system commands
- Writing simple programs (input/output)
- Version control basics using Git

#### Module 2: Programming Foundations (As per Industry)

##### Theory

- Data types, variables, operators
- Control structures (loops, conditions)
- Functions and modular programming
- Error handling

## **Demo**

- Writing structured programs
- Debugging techniques
- Code optimization basics

## **Practicals**

- Programs on loops and conditions
- Function-based problem solving
- Mini exercises (calculator, number systems)

## **Module 3: Data Structures & Problem Solving (4 Weeks)**

### **Theory**

- Arrays, Strings, Linked Lists
- Stacks, Queues
- Searching & Sorting Algorithms
- Basics of Time Complexity

### **Demo**

- Visualization of data structures
- Algorithm execution walkthroughs

### **Practicals**

- Implement data structures
- Solve coding problems
- Build small logic-based applications

## **Module 4: Database Management Systems (3 Weeks)**

### **Theory**

- DBMS concepts
- Relational Model
- SQL (DDL, DML, TCL)
- Normalization basics

### **Demo**

- Working with MySQL / PostgreSQL
- Query execution and optimization

### **Practicals**

- Create databases and tables
- Write SQL queries
- Mini project (Student Management System DB)

## **Module 5: Web Development Basics (Beyond the Syllabus Content)**

### **Theory**

- HTML, CSS fundamentals
- JavaScript basics
- Client-server architecture

### **Demo**

- Building responsive web pages
- DOM manipulation

### **Practicals**

- Create static websites
- Form validation using JavaScript
- Mini project (Personal Portfolio Website)

## **Module 6: Advanced Tools & Technologies (3 Weeks)**

### **Theory**

- Introduction to APIs
- Cloud basics
- Software testing fundamentals
- Agile methodology

### **Demo**

- API integration
- GitHub collaboration workflows

### **Practicals**

- Consume APIs
- Work on collaborative coding
- Basic testing scenarios

## **Module 7: Major Project (4–6 Weeks)**

### **Theory**

- Project planning
- Documentation standards
- Deployment basics

## **Demo**

- End-to-end project walkthrough
- Code reviews

## **Practicals**

- Develop a real-world project:
  - Web Application / Desktop Application / Database System
- Documentation & presentation
- Final deployment

## **Assessment (External)**

- Internal : 50
- External : 150
- Total : 200 Marks

## **Learning Outcomes**

By the end of the internship, students will be able to:

- Develop structured programs
- Work with databases and web technologies
- Build and deploy real-world applications
- Collaborate using modern development tools
- Apply problem-solving and debugging skills

## **Tools & Technologies Covered**

- Programming: Python / Java / C++
- Database: MySQL / PostgreSQL
- Web: HTML, CSS, JavaScript
- Tools: Git, GitHub, VS Code
- Optional Exposure: Cloud platforms (AWS/Azure basics)

## **Deliverables**

- Weekly assignments
- Lab records
- Mini projects
- Final project report & presentation
- GitHub repository submission