# II Year IV Semester
# COURSE: PYTHONPROGRAMMING
## (w.e.f. 2024-25)

## Unit-I

**Getting Started with Python:** Introduction to Python, Python Keywords, Identifiers, Variables, Comments, Data Types, Operators, Input and Output, Type Conversion, Debugging. Flow of Control, Selection, Indentation, Repetition, Break and Continue Statement, Nested Loops.

**Strings-**String Operations, Traversing a String, String handling Functions.

## Unit-II

**Functions:** Functions, Built-in Functions, User Defined Functions, recursive functions, Scope of a Variable

**Python and OOP:** Defining Classes, Defining and calling functions passing arguments, Inheritance, polymorphism, Modules– date time, math, Packages.

**Exception Handling**- Exception in python, Types of Exception, User-defined Exceptions.

## Unit-III

**List:** Introduction to List, List Operations, Traversing a List, List Methods and Built-in Functions.

**Tuples and Dictionaries:** Introduction to Tuples, Tuple Operations, Tuple Methods and Built in Functions, Nested Tuples. Introduction to Dictionaries, Dictionaries are Mutable, Dictionary Operations, Traversing a Dictionary, Dictionary Methods and Built-in functions.

## Unit-IV

**Introduction to NumPy:** Array, NumPy Array, Indexing and Slicing, Operations on Arrays, Concatenating Arrays, Reshaping Arrays, Splitting Arrays, Statistical Operations on Arrays.

**Data Handling:** Introduction to Python Libraries, Series, Data Frame, Importing and Exporting Data between CSV Files and Data Frames.

## Unit-V

**Plotting Data using Matplotlib:** Introduction, Plotting using Matplotlib – Line chart, Bar chart, Histogram, Scatter Chart, Pie Chart.

**Database Connectivity:** Importing MySQL for Python, connecting with a database, forming a query in MySQL, Passing a query to MySQL.

# II Year IV Semester
# COURSE: OPERATINGSYSTEMS
## (w.e.f. 2024-25)

## Unit I

**Introduction:** What is Operating System? History and Evolution of OS, Basic OS Functions, Computer System Architecture, Operating System Structure.

**System Structures:** Operating System Services, User Operating System Interface, System Calls, Types of System Calls, Overview of UNIX Operating System, Basic Features of Unix Operating System.

## Unit II

**Process Management:** Process Concept, Operation on Processes, Communication in Client - Server Systems.
**Process Scheduling:** Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, RR, Priority).

## Unit III

**Synchronization:** Process Synchronization, Semaphores: Usage, Implementation, The Critical Section Problem., Classic problems of synchronization.

**Deadlocks:** Introduction, Deadlock Characterization, Necessary and Sufficient conditions for Deadlock, Deadlock Handling Approaches: Deadlock prevention, Deadlock Avoidance and Deadlock detection and Recovery.

## Unit IV

**Memory Management:** Overview, Swapping, Contiguous Memory Allocation, Paging, Paging Examples, Segmentation, Page Replacement Algorithms

## Unit V

**Files and Directories:** Files, Directory Structure, File Operations, File System.
Implementation:  File Allocation Methods, Comparison of UNIX and Windows.

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**II Year IV Semester**
**COURSE: MOBILE APPLICATION DEVELOPMENT USING ANDROID**
**(w.e.f. 2024-25)**

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**UNIT-I**

**Introduction to Android:** - Overview, History, Features of Android, The Android Platform, Understanding the Android Software Stack–Android Development Environment -Android SDK, Android Installation, Building you First Android application.

**UNIT-II**

**Android Application Design Essentials:** Understanding Anatomy of Android Application, Android terminologies, Creating User Inter faces with basic views – Application Context, Activities, Services, Intents, linking activities with Intents, Receiving and Broad casting Intents, Android Mani fest File and its common settings, Using Intent Filter, Permissions.

**UNIT-III**

**Android User Interface Design Essentials**: User Inter face Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation. Layouts, Recycler View, List View, Grid View and Web view

**Input Controls:** Buttons, Checkboxes, Radio Buttons, Toggle Buttons, Spinners, Input Events, Menus, Toast, Dialogs, Styles and Themes, Creating lists, and Custom lists

**UNIT-IV**

**Testing Android applications:** Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources.

**UNIT-V**

**Using Common Android APIs**: Internal Storage, External Storage, SQLite Databases, managing data using SQLite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs.