



ଓଡ଼ିଶା ରାଜ୍ୟ ମୁକ୍ତ ବିଶ୍ୱବିଦ୍ୟାଳୟ, ସମ୍ବଲପୁର, ଓଡ଼ିଶା
Odisha State Open University, Sambalpur, Odisha

Established by an Act of Government of Odisha.

Diploma in Android Programming (DAP)

Duration: 01 Year

Total credit: 32

1st Semester (DAP)			
Theory			
Course Code	Course Title	(T-L-P)	Credit
CSP-80	Operating Systems	T	04
CSP-45	Programing in JAVA	T	04
CSP-46	Introduction to Android Programming & Python	T	02
Total Theory Credits			10
Project / Laboratory			
CSPL-80	Operating Systems	L	02
CSPL-45	Programing in JAVA	L	02
CSPL-46	Introduction to Android Programming & Python	L	02
Total Project / Laboratory Credits			06
TOTAL SEMESTER CREDITS			16

2nd Semester (DAP)			
Theory			
Course Code	Course Title	(T-L-P)	Credit
CSP-81	Android GUI Design	T	02
CSP-82	Android Application Development	T	02
CSP-43	Database management System	T	02
Total Theory Credits			06
Project / Laboratory			
CSPL-81	Android GUI Design Lab	L	02
CSPL-82	Android Application Development Lab	L	02
CSPL-43	Database management System Lab	L	02
CSPP-04	Project Work	P	04
Total Project / Laboratory Credits			10
TOTAL SEMESTER CREDITS			16

SEMESTER 1

Operating Systems (CSP-80) (6 cr.)



Block-01 (Basics of Operating System)

UNIT-01

Introduction, Operating System Concept and its Types, Function of OS, Evolution of Operating Systems, Structure of OS: Operating System Services, System components, Protection System, Operating System Services, System Calls.

Process Management: Introduction, Life Cycle of Process, Scheduler

UNIT-02

Memory Management: introduction, Concept of Paging & segmentation, Virtual Memory

UNIT-03

File: File System, file structure, Directory Structure

Block-02(Windows Operating System)

UNIT-01

Introduction to Windows, Version of Windows, Operating System Administrator, My Computer, Recycle Bin, Desktop, Drives, create a directory/folder, rename/change to a directory/folder, creating a file in a directory/folder, Make the file read only, Make the file/directory hidden, Editing a file in a directory/folder, Delete a file in a directory/folder.

UNIT-02

Listing the files in the directory, Copy a file from one directory /folder to the other, Deleting all files from a directory/folder, deleting a directory/folder

Installation Process: Formatting a hard disk and loading Operating System.

Domain, Workgroup, Active Directory, User Management, network setting, IIS Configuration

Block-03(Linux Operating System)

UNIT-01

Linux: Introduction, History of Linux, Distributions of Linux, Devices and drivers used, File System Hierarchy, The Components: Kernel, Distribution, XFree86, Sawfish, Gnome, The command-line commands, File management commands, working with Nano, Working with the help (man).

UNIT-02

SSH and X-forwarding, Managing compressed archives with zip and tar, Working with the GNU screen, How to add users and groups, Working with su, Working with sudo, Changing user password, Printing,

Installing Software with Yum, Yast, Rpm, Installing Webmin.

Programming in Java (CSP-45) (6 cr.)



Block-01(Introduction to Java)

UNIT-01

Introduction, History of Java, Edition of Java, What is Java, Why Learn Java, Languages and Paradigms, The Basics of Java, Java Features, OOPS Concepts, Evolution of Java, How Java program works, Difference Between C++ and JAVA, Java and Internet, Java and World Wide Web, Java Support System, Java Environment, Components of JDK, Components of API (Application programming Interface)

UNIT-02

Java Program Structure, Simple Java Program, Tokens, Reserved Keywords, Identifiers, Literals, classification of Java Statements, JVM Architecture, How Does the JVM Work, Constants and Variables, Declaration of Variables, Scope of Variable, Data type, symbolic Constant, Default Values, Type Casting, Command line arguments

UNIT-03

Operators, Different types of Operators, Unary Operator, The Arithmetic Operator, The Relational Operators, The Logical Operator, Conditional Operators, The Assignment Operators, The Bitwise Operators, Special Operators, Instance of Operator, Dot operator, new operator, Precedence of Java Operators

Keyboard input programming: Using InputStreamReader class, Scanner class, CLA, Console class

UNIT-04

Sequence Control, Implicit and Explicit Sequence Control, Control Statements, Selection Statements, if-Then Statement, If-Then-Else Statement, Switch Statement, Repetition Statements, While Statement, Do-While Loop Statements, for Loop Statements, Java Jump Statements, Break Statement, Continue Statement, Return Statements, Labeled Loop

Block-02(OOPs Concept in Java)

UNIT -01

Arrays And Strings: Introduction, Overview of Array , Need of Array, Types of Array, One dimensional Array, Two-Dimensional Array, Multidimensional Array, Strings , Concatenation of Strings, Methods for String Comparison, Methods for searching Strings, Changing the case of characters, String Buffer, String Builder

UNIT-02

Classes: Introduction, Defining a Class, Adding Variables, Adding Methods, Creating Objects, Accessing Class members, Call-by-value and call by reference, Recursion, Access Control Constructors, Method over Loading, Constructor Overloading, Garbage Collection, finalize() method, this keyword, Static Members, Nesting of Methods

UNIT-3

Inheritance: Inheritance, Single Inheritance, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Using Super, Constructor -Order of Execution in Inheritance, Overriding

methods, Final variables and methods, Final Classes, Abstract methods and Classes, Containership, Visibility Control

UNIT-4

Wrapper Classes And Vectors: Introduction, Wrapper Classes, Number Class, Byte class, Short class, Integer class, Long class, Converting Numbers to and from Strings, Float class, Double class, Character class, Boolean class, Vectors, Creating a vector

Block-03(Advanced Concept in Java)

UNIT -01

Interface & Packages: Introduction, Interfaces, Defining interface, Implementing interface, Accessing interface method, Accessing interface variable, Extending interfaces, Packages, System packages, Using system packages, User defined packages, Adding class to a package, Accessing and using package

UNIT-2

Exception Handling: Introduction, Exceptions, Using try& catch, multiple catch clauses, Finally, Throw, Throws

UNIT-03

Applets: Introduction, Local & remote applets, Applet vs. applications, Writing applets, Life cycle of an applet, Creating source code of applet, Creating an executable applet, Creating applet tag, Adding applet tag to html, Running the applet, Detailed form of applet tag, Passing parameters to applet, Aligning the display, HTML tags, Getting input from user.

UNIT-04

Multithreading in Java:

Introduction, Multithreading, Uses of Multithreading, The Main Thread, Creating and Running Threads, How to terminate a Threads, Multiple Task using Single Threads, Multiple Task using Multiple Threads, Multiple Task using Multiple Threads and Single Object, Threads Synchronization, Threads Priority, Thread Methods, Threads Communication, Threads Life Cycle

Block-04 (Graphics Programming & Java Database Connectivity)

UNIT -01

AWT: AWT Classes window fundamentals, component, container, panel, Window, Frame, Canvas, Creating a frame window in an Applet, working with Graphics, Control Fundamentals, Layout managers, Handling Events by Extending AWT Components.

UNIT-2

Swing: J applet, Icons & Labels, Text fields, Buttons, Combo boxes, Tabbed panes, Scroll panes, Trees, Tables.

UNIT-03

JDBC: Fundamentals, Type I, Type II, Type III, Type IV drivers.

Introduction to Android Programming & Python (CSP-46) (4 Cr.)

Block-01(Introduction to Android)

UNIT-01

Introduction, Android as a popular mobile Platform, History of Android, Features of Android, Comparison of Mobile OS, Device that run Android as OS

UNIT-02

Android Architecture, Types of mobile applications, Application Fundamentals

UNIT-03

Activity, Activity Life cycle, Activity Life cycle, Methods, Managing Activities in the Application, Android process states

Block-02(Android Development Environment)

UNIT-01

Reasons for Android Development, Android Development Platforms, Features and Tools, Android Platform version and specific features, Python for Mobile App Development.

UNIT-02

Configuring Android Development Environment (Android Studio and Eclipse): download and complete installation process of JDK, Eclipse and Android Studio, Dealing with backward compatibility

UNIT-03

Creating first Android application, Creating a new Android project in Eclipse, Creating a new Android project in Android Studio, create a new Android virtual Device in both IDEs (Eclipse and Android Studio)., Creating and saving launch configuration, Running and debugging the app, Running on the actual device

Block-03(Introduction to Python)

UNIT-01

Introduction to Python, History of Python and versions, Features of Python programming, Application of Python, Download, installation and run the first Program.

UNIT-02

Variables, Expressions and Statements: Values and types, Variables, keywords, Operators and operands, Expressions and statements, Interactive mode and script mode, Order of operations, Comments in Programming, Debugging. Selection Structure (if... else), Iteration structures (while, for), break, continue and pass Statements

UNIT-03 Functions: Introduction, Why Functions? How to write a function definition in Python, Flow of execution, Functions with arguments, Void Functions, Functions with return statements, Built-in functions, Type Conversion functions, Math functions.

UNIT-04 Strings: Introduction, Strings in Python, String Operations, String methods, Parsing strings.

SEMESTER 2



Android GUI Design (CSP-81) (4 cr.)

Block-01 (Component of Android Project)

UNIT-01

Understanding the development platform: Introduction to important Android project files (AndroidManifest.xml, MainActivity.java, activity_main.xml, strings.xml, R.java)

Introduction to different Android tools (DVM and ART, AVD Manager, Android SDK Manager, Android Emulator, DDMS, The Android ADB)

Building blocks of Android application (Activity, Services, Content Providers, Broadcast Receivers), Adding permissions to the AndroidManifest.java file

UNIT-02

Views: Views, TextView, EditText, Button, RadioButton, CheckBox, ImageButton, ToggleButton, TimePicker, DatePicker, Spinner, ProgressBar, ImageView

UNIT-03

Layouts: Linear Layout, Relative Layout, WebView Layout, Measurement Units

Block-02 (Activity and its Modules)

UNIT-01

Activity: Introduction, Activity, Creating an Activity, Activity Lifecycle, Using Themes and Styles, Defining the Styles and the Themes, applying the Styles and the Themes

UNIT-02

Fragment: Creating a Fragment, Fragment Lifecycle, Fragment Transactions

UNIT-03

Intents, Menus and Dialogs: Intent, Types of Intents, Working with Intents, Linking the Activities using Intents, Intent Filters, Menus, Types of Menus, Popup Menu, Option Menu, Context Menu, Dialog, Types of Dialogs, Creating Dialogs, Creating Alert Dialog, Creating List Dialog, Creating Progress Dialog

Android Application Development (CSP-82) (4 cr.)



Block-01 (SQL and Multimedia)

UNIT-01

Saving Data on Android Devices: Introduction, Android Storage Options, Shared Preferences, Internal Storage, External Storage, Saving Data in SQLite Databases

UNIT-02

Integrating Multimedia: Introduction to Multimedia, Audio and Video Integration into Android Application Development, Multimedia for Android Interactive Application Development, Camera functions in Android Application Development, Supported Media Formats

UNIT-03

Locating and Sensing: Introduction to Sensors, Android Sensor Framework, Identifying Sensors and sensor Capabilities, Monitoring Sensor Events, Sensor Coordinate System, Best Practices for Accessing and Using Sensors

Commonly Used Sensors, Making Your App Location-Aware, Getting the Last Known Location, Changing Location Settings, Receiving Location Updates, Adding Google Maps to Your App

Block-02 (App Development Lifecycle)

UNIT-01

Testing and Debugging: What is Testing, How to test Android Application, Unit Testing, How to setup Testing Environment, What is Debugging, Logcat

UNIT-02

Security: Introduction, Security Concerns of an Android Application, Security Provided by the OS, Information Leakage, Device management policies

UNIT-03

Publish to Android Market: Introduction, How can you obtain an Android application, App Stores, Revenue Models Google Play, Process of Publishing an Android Application

Database Management System (CSP-43) (4 cr.)

Block-01

Unit-01

Introduction: Data and Information, Record, File, File oriented System, Databases, Database System and its Characteristics, Database Administrator (DBA), Other Users of database, Database Languages (DDL, DML).

Unit-02

Database System Architecture: Schema, Subschema, Instance, Three Tier Architecture of database, Data Independence, Mappings, Types of Database.

Unit-03

Data Models: Data Models and its Types (Object Based Data Models, Record Based Data Models), Constraints.

Unit-04

ER-Model: Entity, Attribute, Keys, Relationship, ER Diagram Notations, Conversion of ER diagram to Relations.

Block-02

Unit-01

Relational database Overview, Relational Languages (Relational Algebra, Relational Calculus), Operation of Relational Algebra, Join, Minus, Translating SQL Queries into Relational Algebra, Division Operation.

Unit-02

Procedural and Non procedural Query Language, Codd's Rule, introduction to SQL, Data Types in SQL, Operator, DQL, DDL, DML, DCL, TCL, Constraints in SQL.

Unit-03 (Functional Dependency)

Database Dependencies (Functional Dependencies, Trivial Functional Dependencies, Full Functional Dependencies, Transitive Dependencies, Multi-valued Dependencies), Importance of Dependencies, Study of Functional Dependency, Basics of Functional Dependency, Axioms Rules, Trivial Functional Dependency, Why FD Is Important In Database Design, Characteristics of FD in Normalization, Functional Dependency Diagrams (FDD), Full Functional Dependency (FFD), Redundant Functional Dependencies, Closures, decomposition, Properties of Decomposition

Unit-04 (Normalization)

Database Normalization, Need of Normalization, Multi-valued Dependencies, Types of Normalization (1NF, 2NF, 3NF, BCNF, 4NF, 5NF)

Block-03

Unit-01(Transaction processing and concurrency control)

Transaction concepts, concurrency control, locking and Timestamp methods for concurrency control.

Unit-02(Database Recovery System)

Types of Data Base failure & Types of Database Recovery, Recovery techniques.

Project Work using Android Studio (CSPP-04) (4 cr.)