Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati.

SYLLABUS STRUCTURE

SYBBA (C.A) (2022 Pattern)

Bachelor of Business Administration (Computer Application)

Syllabus (CBCS Pattern) under Academic Autonomy for the year 2023-2024

Semester –III

Subject Code	Name of Subject	Credit
UBCA231	Java Programming	03
UBCA232A	Elective: PHP	03
UBCA232B	Node JS	
UBCA233	Python Programming	03
UBCA234	Operating System Concepts	03
UBCA235	Business Statistics using R Programming	03
UBCA236	Computer Laboratory I[Based on UBCA231 & UBCA233]	02
UBCA237	Computer Laboratory II [Based on UBCA232 & UBCA235]	02
	Certificate Course	02
	Environmental Study (EVS)	02
Total		23

BBA (C.A) Programme Outcome

PSO1. Knowledge: To understand and apply the fundamental principles, concepts, and methods in diverse areas of computer science, computer applications, management, mathematics, statistics, etc.

PSO2. Problem Analysis: Identify, analyse and formulate complex real-life computing problems. Attain substantiated conclusions to solve the problems using fundamental principles of computer science and application domains by using various tools and emerging technologies.

PSO3. Design and Development: Design and develop efficient solutions for complex real-world computing problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety and the cultural, societal, and environmental considerations.

PSO4.Conduct investigations of complex problems: Ability to research, analyze and Investigate complex computing problems through the design of experiments, analysis, and interpretation of data, and synthesis of the information to arrive at valid conclusions.

PSO5. Modern Tool Usage: Create, identify and apply appropriate techniques, skills, and modern computing tools to computing activities.

PSO6. Ethics and Social Responsibility: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.

PSO7. Individual and Team Work: Ability to work effectively as an individual, and as a member or leader as per need in, multidisciplinary teams.

PSO8. Life-Long Learning: Recognize the need and have the ability to engage in independent continuous reflective learning in the context of technological advancement.

PSO9. Project Management: Understand and apply computing, management principles to manage projects.

PSO10. Communication: Able to use interpersonal skills and communicate effectively with the professionals and with society to convey technical information effectively and accurately and able to comprehend and write effective reports, design documentation, and make effective presentations.

PSO11. Innovation, employability, and Entrepreneurial skills:
Identify opportunities, and pursue those opportunities to create value and wealth for the betterment of the individual and society at large.

SYLLABUS (CBCS) FOR S.Y.BBA (C.A.) (w. e. from June, 2023)

Academic Year 2023-2024

Class : S.Y.BBA (C.A.) (Semester - III)

Paper Code : UBCA231   Title of Paper: Java Programming

Credit: 3   No. of. Lectures: 48

A] Course Objectives:

1. To learn the syntax and program structures in Java Programming.

2. To understand concepts of object-oriented programming in Java.

3. To learn Design and develop GUI applications using Abstract Windowing Toolkit (AWT), Swing and Event Handling.

4. To understand how to use programming in day-to-day applications.

B] Course Outcomes:

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

CO1. Know the different basic concepts of Java programming language.
CO2. Use the Java programming use various programming technologies
CO3. Able to understand the use of abstract classes
CO4. Able to solve problems using java collection framework and I/O classes.
CO5. Able to develop multithreaded applications with synchronization.
CO6. Able to develop applets for web applications.
CO7. Develop software in the Java programming language.

Topics/Contents

Unit 1   Introduction to JAVA   (08L)

     1.1 Features of Java

     1.2 JDK Environment & tools like (java, javac, applet viewer, Javadoc, jdb)

     1.3 OOPs Concepts

       Class, Abstraction, Encapsulation, Inheritance, Polymorphism

     1.4 Difference between C++ and JAVA

     1.5 Structure of Java program

     1.6 Data types, Variables, Operators, Keywords, Naming Convention

     1.7 Decision Making (if, switch), Looping (for, while)

     1.8 Type Casting

     1.9 Array

      -Creating an Array Types of Array

- One Dimensional Arrays

- Two Dimensional Arrays

1.10 String

- Arrays, Methods, String Buffer Class

Unit 2: Classes and Objects (10L)

2.1 Creating Classes and Objects

2.2 Memory Allocation for Objects

2.3 Constructor

2.4 Implementation of Inheritance Simple, Multilevel,

2.5 Interfaces

2.6 Abstract Classes and Methods

2.7 Implementation of Polymorphism

2.8 Method Overloading, Method Overriding

2.9 Nested and Inner classes.

2.10 Modifiers and Access Control

2.11 Packages

Packages Concept

Creating User Defined Packages

2.12 Java Built in Packages

java.lang->math

java.util->Random, Date, Hashtable

2.13 Wrapper Classes

Unit 3 Collection (10L)

1.1 Collection Framework.

1.1.1 Interfaces

- Collection

- List

- Set

- Sorted Set

- Enumeration

- Iterator

- List Iterator

1.1.2 Classes

- Linked List

- Array List

- Vector

- Hash Set

- Tree Set

- Hash table

1.2 Working with Maps

1.2.1 Map Interface

1.2.2 Map Classes

- Hash Map

- Tree Map

Unit 4   File and Exception Handling   **(10L)**

Exception

4.1 Exception Types

4.2 Using Try Catch and Multiple Catch

- Nested try, throw, throws and finally

4.3 Creating User Defined Exceptions

File Handling

4.4 Stream

- Byte Stream Classes

- Character Stream Classes

4.5 File IO basics

4.6 File Operations

- Creating File

- Reading File (character, byte)

- Writing File (character, byte)

Unit 5:   Applet, AWT and Swing Programming   **(10L)**

5.1 Introduction

5.2 Types Applet

5.3 Applet Life Cycle

- Creating Applet

- Applet tag

5.4 Applet Classes

- Color

- Graphics

- Font

AWT

5.5 Components and Container used in AWT

5.6 Layout Managers

5.7 Listeners and Adapter classes

5.8 Event Delegation Model

Swing

5.9 Introduction to Swing Component and Container Classes

Reference Books:

1. Programming with JAVA - E Balguru swamy

2. The Complete Reference – JAVA Herbert Schildt

3. The Java TM Programming Language- Ken Arnold, James Gosling, David Holmes, AddisonWesley, Fourth Edition

4. Core Java Volume I- Fundamentals, Cay S. Horstmann, Gary Cornell, Pearson India Education Services Pvt. Ltd. ,Eleventh Edition

5. Core Java An Integrated Approach (Black Book)-Dr. R. Nageswara Rao, dreamtech Press 2017 Edition

6. Head First Java - Kathy Sierra and Bert Bates, O'REILLY, Second Edition

Website Reference Link:

1. https://www.javatpoint.com/java-tutorial
2. https://www.geeksforgeeks.org/java

Evaluation:

Internal Evaluation	External Evaluation
Unit Test (20)	Fill in the blanks, One Sentence Answer (12)
Assignments/Performance/Attendance / Seminars (20)	Short Notes (12)
	Short Answers Que (12)
	Short Answers Que (12)
	Long Answer Questions (12)
40	**60**

Class: SYBBA (C.A) (Sem III)   **Subject**: BBA (C.A)
Course: Java Programming   **Course Code:** UBCA231

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3										2
CO2					3						2
CO3	3										2
CO4		3	3								2
CO5			3						3		2
CO6			3					2	3		2
CO7	3		3					2	3		

PO1. **Knowledge:**
All of the course outcomes (COs) strongly contribute to the development of students' disciplinary knowledge in Java.
CO1 needs students to deeply understand the use of abstract classes. CO7 strongly helps to understand the basics of the abstract classes, the Java collection framework, and its implementation.

PO2. **Problem Analysis:**
CO4 strongly contributes as the student can solve problems using the Java collection framework and I/O classes.

PO3. **Design and Development:**
CO4, CO5, CO6, and CO7 strongly contributes to program outcome Design and Development as CO4 needs student to develop applets for web applications.

PO5. **Modern Tool Usage:**
CO2 Strongly uses various programming technologies like applet, spring, and hibernate.
CO1, CO2, CO7 Slightly mapped as students use notepad, sublime editor's web browsers, Apache web server, XAMP, MySQL for design and execute the server-side PHP scripts interacting with the database

PO8. **Life-Long Learning:**
Co6 CO7 moderately contributes to recognizing the need for lifelong learning in the context of technology development.

PO9. **Project Management:**
CO5 CO6 CO7 contributes to the development of project development and management skills using all advanced Java tools and technology.

PO11. **Innovation, employability, and Entrepreneurial skills:**
All Cos are moderately mapped since students can create an interface, and develop applets for web applications. Develop software in the Java programming language

SYLLABUS (CBCS) FOR S.Y.BBA (C.A.) (w. e. from June, 2023)

Academic Year 2023-2024

Class: S.Y.BBA (C.A.) (Semester - III)

Paper Code: UBCA232A   Title of Paper: PHP

Credit: 3   No. of. Lectures: 48

A] Course Objectives:

1. To understand how server-side programming works on the web

2. Using PHP built-in functions and creating custom functions

3. To understanding POST and GET in form submission.

4. How to receive and process form submission data

5. To Read and process data in a MySQL database

B] Course Outcomes:

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

CO1. Write PHP scripts to handle HTML forms.
CO2. Write regular expressions including modifiers, operators, and Meta characters.
CO3. Create PHP programs that use various PHP library functions, and that manipulate files and directories.
CO4. Analyze and solve various database tasks using the PHP language
CO5. Analyze and solve common Web application tasks by writing PHP programs
CO6. Outline Object Oriented Programming capabilities of PHP.
CO7. Enhance advanced skills to provide traditional and modern library using PHP

Topics/ Contents

Unit 1   PHP Basics   (07L)

1.1 Setting up a Development Environment

1.2 Variables, Numbers and Strings

1.3 Calculations with PHP

1.4 Using Arrays

Unit 2	**Control Structures and Loops**	**(06L)**

2.1 Conditional Statements

2.2 Using Loops for Repetitive tasks

2.3 Combing Loops and Arrays

Unit 3	**Functions, Objects and Errors**	**(07L)**

3.1 PHP's Built-in functions

3.2 Creating Custom functions

3.3 Passing Values by Reference

3.4 Understanding Objects

Unit 4	**Working with Forms**	**(07L)**

4.1 Building a Form

4.2 Processing a Form's Data

4.3. Differences between POST and GET

4.4. Preserving User Input

Unit 5	**More with Forms**	**(07L)**

5.1 Dealing with checkboxes and radio buttons

5.2 Retrieving values from lists

5.3 Validating and restricting data

5.4 Sending Email

Unit 6	**Storing and Protecting Data**	**(07L)**

6.1 Setting and Reading Cookies

6.2 Protecting Online Files

6.3 Understanding Session Variables

Unit 7	**MySQL Database Overview**	**(07L)**

7.1 phpMyAdmin Overview

7.2 Using a MySQL Database

7.3 Reading and Writing Data

References Book:

1. PHP: A Beginner's Guide 1st Edition McGraw-Hill Osborne Media;
   1editionby Vikram Vaswani
2. Murach's PHP and MySQL (2nd Edition) by Joel Murach and Ray Harris
3. PHP: The Complete Reference Paperback – 1 Jul 2017by Steven Holzner (Author)
4. Programming PHP - Rasmus Lerdorf and Kevin Tatroe, O'Reilly publication
5. Beginning PHP 5 - Wrox publication
6. "Beginning PHP and MySQL From Novice to Professional" by W Jason Gilmore
7. "PHP Object - Oriented Solutions" by David Powers

Website Reference Link:

1. https://www.php.net/
2. https://www.w3schools.com/php/
3. https://www.tutorialspoint.com/php/index.htm

Evaluation:

Internal Evaluation	External Evaluation
Unit Test (20)	Fill in the blanks, One Sentence Answer (12)
Assignments/Performance/Attendance / Seminars (20)	Short Notes (12)
	Short Answers Que (12)
	Short Answers Que (12)
	Long Answer Questions (12)
40	**60**

Class: SYBBA (C.A) (Sem III)   **Subject**: BBA (C.A)

Course: PHP   **Course Code:** UBCA232A

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3			3	3						
CO2	3			3		3					
CO3	3			3	3						3
CO4		3	3	3		3					3
CO5			3	3	3						3
CO6	3										
CO7	3				3						

PO1. Knowledge:
CO1 CO2, CO3, CO6, CO7 are strongly mapped as student able to Develop proficiency in programming languages and tools.

PO2. Problem Analysis:
CO4 is strongly mapped as student able to use various techniques to analyze and interpret data.

PO3. Design and Development:
CO4 and CO5 are strongly mapped as student acquire knowledge to solve real-world problems.

PO4. Conduct investigations of complex problems:
All Cos are strongly mapped as student able to programming skills and the ability to use appropriate tools for web development.

PO5. Modern Tool Usage:
CO1, CO3 and CO5, CO7 are strongly mapped as student able to communicate effectively using appropriate tools and technologies.

PO11. Innovation, employability, and entrepreneurial skills:
CO3, CO4 and CO5 are strongly mapped as student will gain the skill required for software development.

Name of the Programme: BBA (Computer Application)

Class: S.Y.BBA (C.A.) (Semester - III)

Paper Code: UBCA232B   Title of Paper: Node JS

Credit: 3   No. of. Hours: 48

A] Course Objectives:

1. To Understand the JavaScript and technical concepts behind Node JS

2. To learn Structure a Node application in modules

3. To Understand and use the Event Emitter

4. To Understand Buffers, Streams, and Pipes

5. To Build a Web Server in Node and understand how it really works

6. To Use NPM and manage node packages.

B] Course Outcomes:

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

CO1. Understand Node JS and REPL terminal.

CO2. Experiment with Node JS Modules and Node Package Manager.

CO3. Develop applications to handle events in Node JS.

CO4. Make use of Web Server to manage database.

CO5. Demonstrate Express Framework.

Topics/Contents

Unit 1	**Introduction to Node JS**	(04L)

1.1 Introduction
1.2 What is Node JS?
1.3 Features and advantages of Node JS
1.4 Traditional Web Server Model
1.5 Node.js Process Model
1.6 Asynchronous programming with Node.js
1.7 Types of applications that can be
     developed using Node.js
1.8 Setup Dev Environment
     1.8.1 Install Node.js on Windows

Unit 5   File System   (06L)

5.1 Fs.readFile

5.2 Writing a File

5.3 Writing a file asynchronously

5.4 Opening a file

5.5 Deleting a file

5.6 Other IO Operations

    5.6.1   Append

    5.6.2   Rename

    5.6.3   Truncate.

5.7 File System Module with URL Module

    5.7.1 Create

    5.7.2 Read

    5.7.3 Remove a Directory

Unit 6   Debugging Node JS Application   (04L)

6.1 Core Node JS debugger

6.2 Node Inspector

6.3 Debugging with Visual Studio

Unit 7   Events   (04L)

7.1 Event Emitter class

7.2 Methods and Events of Even Emitter Class

7.3 Returning event emitted

7.4 Extend Event Emitter Class

7.5 Passing Arguments and 'this' to listeners, Asynchronou

    and Synchronous call, Handle Events only Once

7.6 Inhering events

7.7 Error Events.

Unit 8   Express.JS   (07L)

8.1 Introduction to Express Framework

8.2 Express Server Request-Response

8.3 Routes

    8.3.1 Route Parameters,

    8.3.2 Multiple Route Callback/Harler Functions,

    8.3.3 Methods of Response Object

8.3.4 Chaining Route Handlers,

8.4 Send Static Files,

8.5 Accept User Input,

8.6 File Upload with Express,

8.7 Manage Cookies,

8.8 Send file as a response,

8.9 Templates and Express.

Unit 9   **Serving Static Resources**   **(03L)**

9.1 Serving static files
9.2 Working with middle ware

Unit 10   **Database Connectivity**   **(06L)**

10.1 Connection string

10.2 Configuring

10.3 Working with select command

10.4 Updating records

10.5 Deleting records

10.6 Drop tables

10.7 Ordered Result Set

Reference Books:

1. Basarat Ali Syed, Beginning Node.js, A press, 2014.

2. Learning Node: Moving to the Server-Side by Shelley Powers

3. Node.JS Web Development by David Herron

4. Express in Action. Writing, Building, and Testing Node.js Applications by Evan M. Hahn

5. Practical Node.js by Azat Mardan

Website Reference Link:

1. https://nodejs.org/en/docs

Text Books:

1. Dhruti Shah, "Node.JS Guidebook", BPB Publications, 2018.

Evaluation:

Internal Evaluation	External Evaluation
Unit Test (20)	Fill in the blanks, One Sentence Answer (12)
Assignments/Performance/Attendance / Seminars (20)	Short Notes (12)
	Short Answers Que (12)
	Short Answers Que (12)
	Long Answer Questions (12)
40	60

Class: SYBBA (C.A) (Sem III)   **Subject**: BBA (C.A)

Course: Node JS   **Course Code:** UBCA232B

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3				3						
CO2		3	3		3						3
CO3	3		3								3
CO4	3			3							3
CO5	3		3	3	3						3

PO1. Knowledge:
CO1,CO3,CO4,CO5 are strongly mapped as student will be able to gain the knowledge about the Node JS and REPL terminal, Web Server to manage database, Express Framework.

PO2. Problem Analysis:
CO2 is strongly mapped with Experiment with Node JS Modules and Node Package Manager.

PO3. Design and Development:
CO2, CO3 and CO5 are strongly mapped as to develop applications, Demonstrate Framework

PO4. Conduct investigations of complex problems:
CO4 and CO5 are strongly mapped as student use the Web Server to manage database and handle frameworks.

PO5. Modern Tool Usage:
CO1, CO2 and CO5 are strongly mapped as student able to use different tools and technology.

PO11. Innovation, employability, and entrepreneurial skills:
CO2 CO3 CO4 CO5 are strongly mapped as student able to different technology so he can use various software for development.

SYLLABUS (CBCS) FOR S.Y.BBA (C.A.) (w. e. from June, 2023)

Academic Year 2023-2024

Class   : S.Y.BBA (C.A.) (Semester - III)

Paper Code   : UBCA233   Title of Paper: Python Programming

Credit: 3   No. of. Lectures: 48

A] Course Objectives:

1. To develop problem solving skills and their implementation through Python
2. To understand and implement concept of object-oriented methodology and GUI Interface using Python.

B] Course Outcomes:
By the end of the course, students will be able to:

CO1. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.

CO2. Design and develop Python applications

CO3. Design and implement functions for code modularity, reusability, and maintainability.
CO4. Apply principles of OOP, including classes, objects, inheritance, encapsulation, and polymorphism, in Python programming.

CO5. Demonstrate proficiency in using and manipulating common data structures in Python, such as lists, dictionaries, tuples, and sets.

CO6. Understand and apply OOP principles, including classes, objects, inheritance, encapsulation, and polymorphism.

CO7. Develop, run and manipulate Python programs using Core data structures like Lists, Dictionaries, and use of Strings Handling methods

Topics / content

Unit 1:   Introduction to Python   (05L)

1.1   Basics of Python programming

1.2   Working with Python interpreter in interactive mode and script mode

1.3   Structure of a program

1.4   Debugging-errors and exceptions

1.5   Identifiers, keywords, constants

1.6   Variables, types of operators, precedence of operators

1.7   Data types, mutable and immutable data types

1.8   Statements, expressions, evaluation and comments, input and output statements

1.9   Data type conversion, Debugging

Unit 2:   Decision Control Statements   (06L)

2.1   Introduction to Decision Control Statements

2.2   Selection /Conditional Branching Statements

   2.2.1   if statement

   2.2.2   if-else statement

   2.2.3   Nested if statement

   2.2.4   if-elif –else statement

2.3   Basic Loop Structures/Iterative Statements

   2.3.1   while Loop

   2.3.2   for Loop

   2.3.3   Selective an appropriate loop

2.4   Nested loops

2.5   The break statements

2.6   The continue Statement

2.7   The pass Statement

2.8   The else Statement used with loops

Unit 3:   Functions   (07L)

3.1 Introduction

    3.1.1   Need of Functions

3.2 Function definition

3.3 Function call

    3.3.1   Function Parameters

3.4 Variables Scope and Lifetime

    3.4.1   Local and Global variable

    3.4.2   Using the Global statement

    3.4.3   Resolution of Names

3.5 The return Statements

3.6   More on defining functions

    3.6.1   Required arguments

    3.6.2   Keyword arguments

    3.6.3   Default arguments

    3.6.4   Variable length arguments

3.7 Lambda Functions or anonymous functions

3.8 Recursive functions

    3.8.1   Greatest common divisor

    3.8.2   Finding exponents

    3.8.3   The Fibonacci series

    3.8.4   Recursion vs Iteration

Unit 4:   Data Structures   (11L)

4.1 Strings

    4.1.1   Initializing Strings and Accessing Strings

    4.1.2   String Indexing, String Slicing, String Operations

    4.1.3   Built-in functions for String Manipulation

    4.1.4   String Traversal, String as Argument to Function.

4.2 Lists

    4.2.1   List Operations–Creating, Initializing, Traversing and Manipulating Lists

    4.2.2   List Methods and Built in Functions

    4.2.3   Nested Lists

    4.2.4   List as Argument to A Function.

4.3 Sets

    4.3.1   Concept of Sets

    4.3.2   Creating, Initializing and Accessing the Elements of Set

    4.3.3   Sets Operation (Membership, Union, Intersection, Difference,and Symmetric Difference

4.4 Tuples

    4.4.1   Creating Initializing, Accessing Elements, Tuple Assignment

    4.4.2   Operations on Tuples

    4.4.3   Tuple Methods and Built-in Functions

    4.4.4   Nested Tuples.

4.5 Dictionary*:*

    4.5.1   Concept of Key-Value Pair

    4.5.2   Mutability

    4.5.3   Creating, Initializing, Traversing, Updating and Deleting

Elements

4.5.4   Dictionary Methods and Built-In Functions.

Unit 5:   Modules   (06L)

5.1 Modules loading and Execution

5.1.1   the form …… import statements

5.1.2   Name of Module

5.1.3   Making your own module

5.1.4   The dir( ) Function

5.1.5   The Python Module

5.1.6   Modules and Namespaces

5.2 Packages in Python

5.2.1   Importing * From a Package

5.2.2   Intra-Package References

5.2.3   Packages in Multiple Directories

5.3 Standard Library Modules

Unit 6:   Exception and File Handling in Python   (07L)
6.1 Exception Handling

6.1.1   Syntax errors

6.1.2   Exceptions

6.1.3   Need of Exception Handling

6.2 User-defined exceptions

6.2.1   Raising Exceptions

6.2.2   Handling Exceptions

6.2.3   Catching Exceptions

6.2.4   Try - except - else clause,

6.2.5   Try - finally clause,

6.2.6   Recovering and Continuing with Finally

6.2.7   Built-In Exception Classes.

6.3 File Handling:

6.3.1   Text File and Binary File

       6.3.2   File Types - Open and Close Files

       6.3.3   Reading and Writing Text Files.

6.4 Reading and Writing Binary Files Using Pickle Module

6.5 File Access Modes.

Unit 7:   Classes and Objects   (06L)

7.1 Introduction

7.2 Classes and Objects

       7.2.1   Defining Objects

       7.2.2   Creating Objects

       7.2.3   Data Abstraction & hiding through classes

7.3 Class method and self-argument

7.4 The _init_() Method (The Class Constructor)

7.5 Class Variables and Object Variables

7.6 The ___del__() Method

7.7 Other special Methods

7.8 Public and Private Data Members

7.9 Private Methods

7.10 Calling a class Method from another Class method

7.11 Built-in Functions to check, Get, Set, and delete class Attributes

7.12 Built-in Class Attributes

7.13 Garbage Collection (Destroying Object)

7.14 Class Methods

7.15 Static Methods

Reference Books:

1. Python Programming Problem Solving Approach by Reema Thareja, Oxford Higher Education

2. Learning Python By Mark Lutz,O'Reilly Publication

3. Programming with python, A users Book, Michael Dawson, Cengage Learning

4. Python Essential Reference, David Beazley, Third Edition 5. Python Bible

5. Python: The Complete Reference by Martin C. Brown

Website Reference Link:

1. https://docs.python.org

2. https://www.javatpoint.com/python-tutorial

3. https://www.pythontutorial.net/

4. https://www.tutorialspoint.com/python/index.htm

Evaluation:

Internal Evaluation	External Evaluation
Unit Test (20)	Fill in the blanks, One Sentence Answer (12)
Assignments/Performance/Attendance / Seminars (20)	Short Notes (12)
	Short Answers Que (12)
	Short Answers Que (12)
	Long Answer Questions (12)
40	**60**

Class: SYBBA (C.A) (Sem III)   **Subject**: BBA (C.A)

Course: Python Programming   **Course Code:** UBCA233

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3										
CO2	3		3								
CO3	3		3								
CO4				3	2						
CO5	3			3	2						
CO6	3										
CO7		2	3		2						3

PO1. **Knowledge:**
CO1, O2, CO3, CO5, CO6 Strongly mapped as the students need the knowledge of python syntax and semantics related to List, Dictionaries, and strings to apply them in building applications which need python programming constructs

PO2. **Problem Analysis:**
CO7 Moderately mapped to develop, run, and manipulate Python programs. Students are able to apply critical thinking skills to analyze and solve complex problems in web development.

PO3. **Design and Development:**
CO2, CO3, and CO7 strongly contribute as students who are able to design, develop, and implement Python applications.

PO4. **Conduct investigations of complex problems:**
CO4, CO5 Strongly mapped as the students demonstrate proficiency in using and manipulating common data structures in Python, such as lists, dictionaries, tuples, and sets.

PO5. **Modern Tool Usage:**
CO4, CO5, and CO7 students are moderately mapped as students learn modern IDE tools to execute Python programs and applications (Python IDLE and Anaconda with Spyder IDE).

PO11. **Innovation, employability, and entrepreneurial skills:**
CO7 Strongly mapped since students can create an interface set tuple for web applications.

SYLLABUS (CBCS) FOR S.Y.BBA (C.A.) (w. e. from June, 2023)

Academic Year 2023-2024

Class : S.Y.BBA (C.A.) (Semester - III)

Paper Code : U BCA234   Title of Paper: Operating System Concepts

Credit: 3   No. of. Lectures: 48

A] Course Objectives:

1. To learn the fundamentals of Operating Systems and handle processes and threads
2. To learn the mechanisms involved in memory management in contemporary OS
3. To know the scheduling concept
4. To learn about Basics of Linux.
5. To learn programmatically to implement Linux OS mechanisms
6. To know about Basic Administration of Linux
7. To understand design issues related to File management and various related algorithms

B] Course Outcomes:
By the end of the course, students will be able to:

CO1. Control access to a computer and the files that may be shared.

CO2. Demonstrate the knowledge of the components of computer and their respective roles in computing.

CO3. Ability to recognize and resolve user problems with standard operating environments

CO4. Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use effectively.

CO5. Identify different types of disk scheduling algorithms.

CO6. Understand the concepts of secondary storage structure, protection and case study of Linux operating system.

Topics/Contents

Unit 1:   **Introduction to Operating System**   **(02L)**

       1.1 Overview of Operating Systems

       1.2 Functionalities and Characteristics of OS   .

       1.3 Hardware Concepts related to OS,

       1.4 CPU States

       1.5 I/O Channels.

Unit 2: Memory Management

    2.1 Memory Management Techniques   **(08L)**

    2.2 Contiguous & Non-Contiguous Allocation

    2.3 Logical & Physical Memory

    2.4 Conversion of Logical to Physical Address

    2.5 Paging

    2.6 Segmentation

    2.7 Segment with Paging

    2.8 Virtual Memory Concept

    2.9 Demand Paging

    2.10 Page Replacement Algorithm

      2.10.1 FIFO Algorithm

      2.10.2 Optimal Algorithm

      2.10.3 MRU

      2.10.4 LRU

      2.10.5 Second Chance Algorithm

    2.11 Thrashing

Unit 3: Processor Management and Synchronization   **(10L)**

    3.1 Process Control and Management

    3.2 PCB

    3.3 Job and Processor Scheduling

    3.4 Scheduling Algorithms

      3.4.1 FCFS (Non-preemptive)

      3.4.2 SJF (Non-preemptive & preemptive)

      3.4.3 Priority (Non-preemptive & preemptive)

      3.4.4 Round Robin

    3.5 Process Hierarchies

    3.6 Problems of Concurrent Processes

      3.6.1 Critical Sections

      3.6.2 Mutual Exclusion

      3.6.3 Synchronization

      3.6.4 Deadlock

Unit 4: Device Management & Information Management   (08L)

4.1. Introduction

4.2. Disk Scheduling

4.2.1 FCFS

4.2.2 Shortest Seek Time First

4.2.3 SCAN

4.2.4 C-Scan

4.2.5 C- Look

File System

4.3. Introduction & File concepts (file attributes, Operations on files)

4.4. Access methods

4.4.1 Sequential access

4.4.2 Direct access

4.5. File Structure

4.5.1 Contagious Allocation

4.5.2 Linked Allocation

4.5.3 Indexed Allocation

Unit 5: Basics of Linux   (07L)

5.1 History

5.2 FOSS

5.3 Current Linux Distributions

5.4 Distros Examples

5.5 Linux Operating System Layers

5.6 The Linux Shell (different kinds of shell)

5.7 Process: (parent and child processes)

5.8 Files and Directories (File Structure and directory structure)

5.9 Interaction with System.

Unit 6: Shells and Utilities   (07L)

6.1 Getting Started with Shell Programming

6.2 The Bash Shell

6.2.1 Shell Commands

6.2.2 The role of Shells in the Linux Environment

6.2.3 Other Standard Shells

6.2.4 Write a Simple Shell Script - "Hello World!"

6.2.5 Variables in Shell

6.2.6 Bash Variable Existence Check

6.3 Customize the Bash Shell Environments:

6.3.1 Recalling Command History

6.3.2 Path Name Expansion

6.3.3 Create and Use Aliases

6.3.4 The Tilde Expansion

6.3.5 Startup Scripts Commonly Used Commands and Utilities.

Unit 7: Basic Administration of Linux (06L)

7.1 Basic System Administration (Run Levels, User Accounts)

7.2 Kernel Administration: (Linux Kernel Sources, Rebuilding Kernel, Installing Kernel)

7.3 Managing Users

7.4 Managing File Systems

7.5 Linux File Permissions

7.6 Devices and Modules (Device Drivers).

Reference Books:

1. Operating System Concepts, 9th Edition, John Wiley & Sons, Inc. bySilberschatz, Peter Baer Galvin, GregGagne.
2. Linux Administration, A Beginner's, Guide by Wale Soyinka, Tata McGrawHill.
3. Operating Systems: Internals and Design Principles, 8th editionPearson Education Limited, 2014 by William Stallings.
4. Linux Shell Scripting by Ganesh Naik.
5. Linux Bible by Christopher Negus.

Website Reference Link:

1. https://www.webopedia.com/operating-system
2. https://www.javatpoint.com/linux-system-admin-commands

Evaluation:

Internal Evaluation	External Evaluation
Unit Test (20)	Fill in the blanks, One Sentence Answer (12)
Assignments/Performance/Attendance / Seminars (20)	Short Notes (12)
	Short Answers Que (12)
	Short Answers Que (12)
	Long Answer Questions (12)
40	**60**

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	2	3	2						
CO2	3	2	2	2	2						
CO3	3	3	3	3	2						
CO4	2	2	3	2	3						
CO5		2									
CO6	1	1									

Justification:

PO1. **Knowledge:**
CO1, CO2, CO3, CO4, and CO6 Slightly mapped as students gain the knowledge on concepts of secondary storage structure and protection.

PO2. **Problem Analysis:**
CO1, CO2, CO3, CO4, CO5, CO6 Moderately mapped problem analysis is necessary to find solutions for disk scheduling and problems with the Linux operating system. Knowledge about system calls helps to find the solution of complex problems related to OS.

PO3. **Design and Development:**
CO1, CO2, CO3, CO4 Moderately mapped as the knowledge about the significance of OS in computing devices helps to design and develop new computing devices with new OS.

PO4. Conduct **investigations of complex problems:**
CO1, CO2, CO3, and CO4 are moderately or strongly mapped as the disk scheduling algorithms, which helps to choose the suitable algorithm when designing a new OS so as to solve complex problems.

PO5. **Modern Tool Usage:**
CO1, CO2, CO3, CO4 Moderately mapped as student use various different types of Operating System like Linux, Windows operating system.

Class: S.Y.BBA (C.A.) (Semester – III)

Paper Code: UBCA235   Title of Paper: Business Statistics using R Programming

Credit: 3   No. of. Lectures: 48

A] Course Objectives:

1. To understand role and importance of statistics in various business situation.

2. To develop skills related with basic statistical technique.

3. Develop right understanding regarding regression, correlation and data interpretation.

4. Understand how to link data, statistical methods using R Programming.

B] Course Outcomes:

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

CO1. Develop proficiency in using statistical tools and software..

CO2. Apply mathematical and statistical techniques to analyze and interpret data.

CO3. Apply knowledge of mathematics and statistics to solve real-world problems.

CO4. Demonstrate programming skills and the ability to use appropriate tools for statistical analysis.

CO5. Communicate effectively using graphical and numerical representations.

CO6. Apply statistical principles and methods to design experiments and analyze data.

CO7. Understand and apply probability concepts in statistical analysis.

Topics/Contents

Unit1   Introduction to Statistics   (8L)

1.1 Introduction to Statistics

1.2 Importance of Statistics in Modern Business Environment.

1.3 Need of Data

1.4 Types of Data

1.5 Principles of Measurement

1.6 Source of Data

1.7 Data Classification

Graphical Methods

1.8 Raw Data

1.9 Attributes, Variables and Classification

1.10 Frequency Distribution

1.11 Cumulative Frequency Distributions.

1.12 Graphs -Histogram, Frequency Polygon, Scattered plot

1.13 Diagrams - Multiple Bar, Pie, Subdivided Bar.

Unit2   Measures of Central Tendency and Dispersion   **(8L)**

2.1 Criteria for Good Measures of Central Tendency.

2.2 Arithmetic Mean, Median and Mode for Grouped

and Ungrouped Data, Combined Mean.

Measures of Dispersion:

2.3 Concept of Dispersion

2.4 Absolute and Relative Measure of Dispersion

2.5 Range, Variance

2.6 Standard Deviation

2.7 Coefficient of Variation

2.8 Quartile Deviation

2.9 Coefficient of Quartile Deviation

Unit3   Probability and Probability Distribution   **(8L)**

3.1 Basics of Probability

3.2 Conditional Probability

3.3 Counting Principles-Permutation and Combination

3.4 Random Variable

3.5 Expected Values and Variance

Probability Distribution

3.6 Normal Distribution- Probability function, Mean and Variance, Standard

deviation, Skewness and Kurtosis

3.7 Bernoulli –Probability Function, Mean and Variance

3.8 Binomial- Probability Distribution, Cumulative Probability Distri ution,

Mean and Variance.

Unit4   Sampling and Sampling Statistics   **(6L)**

4.1 Population and Sample

4.2 Sampling Strategies

4.2.1 SRSWR

4.2.2 SRSWOR

4.3 Distribution of Sampling Strategies

4.4 Mean, Variance, Standard Deviation

4.5 Central Limit Theorem

Unit5   Simple Correlation and Regression   (8L)

5.1 Concept of Correlation

5.2 Positive & Negative Correlation

5.3 Karl Pearson's Coefficient of Correlation

5.4 Meaning of Regression

5.5 Simple linear equation

5.6 Two Regression Equations

5.7 Regression Coefficients and Properties.

Unit6   Basics of R programming   (10L)

6.1 Introduction, Basic Features of R, Data Types and

Data Structures in R, Variables, Operators

6.2 R Commands and Functions

6.3 Creating a Vector using C, Scan Function

6.4 Data Frame –Creating, Accessing and Merging

Data Frame

6.5 Importing Data from File

6.6 Using Read Table Command

6.7 Saving the R-output in a File

6.8 Concept of R-script File

6.9 Graphics using R:

    6.9.1 High Level Plotting Functions

    6.9.2 Low Level Plotting Functions

    6.9.3 Interactive Graphic Functions

Programming in R

6.10 Statements: if and if…else, for loop

6.11 Cat and Print Commands.

Reference Books:

1. Business Statistics, J. K. Sharma, Pearson Education-2nd Edition

2. Business Statistics, Naval Bajpai, Pearson Education-2nd Edition

3. Complete Business Statistics, Amir Aczel, Jayavel Sounderpandian, (Seventh Edition)

4. Statistics - An introduction using R. John Wiley, London, Crawley, M. J. (2006).

5. Statistics using R, second edition. Narosa Publishing House, New Delhi, Purohit, S.G.;Gore, S.D. and Deshmukh, S.R. (2015).

Website Reference Link:

1. https://www.tutorialspoint.com/statistics/probability.html.

2. https://statisticsbyjim.com/basics/introduction-statistics-r-programming-language/

3. Central Tendency | Understanding the Mean, Median & Mode (scribbr.com)

Evaluation:

Internal Evaluation	External Evaluation
Unit Test (20)	Fill in the blanks, One Sentence Answer (12)
Assignments/Performance/Attendance / Seminars (20)	Short Notes (12)
	Short Answers Que (12)
	Short Answers Que (12)
	Long Answer Questions (12)
40	**60**

Class: SYBBA (C.A) (Sem III) **Subject**: BBA (C.A)
Course: Business Statistics using RProgramming **Course Code:** UBCA235

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1			3		3						
CO2	3	3	3		3						3
CO3	3	3	3								
CO4				3	3						
CO5			3		3					3	
CO6	3	3	3	2							3
CO7	3	3		2							

PO1. **Knowledge:**
CO2 CO3 CO6 CO7 are strongly mapped as students gain knowledge on concepts of analyzing and interpreting data, statistical principles, and methods.

PO2. **Problem Analysis:**
CO2 CO3 CO6 is strongly mapped as students can solve mathematics and statistics real-world problems.

PO3. **Design and Development:**
CO1 CO2 CO3 CO5 CO6 is Strongly Mapped to Design experiments and analyze data using R. Develop skills in producing graphical and numerical representations. Apply knowledge of mathematics and statistics to solve real-world problems.

*PO4.***Conduct investigations of complex problems:**
CO4 CO6 CO7 moderately Demonstrate programming skills and the ability to use appropriate tools for statistical analysis. Apply statistical principles and methods to design experiments and analyze data. Understand and apply probability concepts in statistical analysis.

PO5. **Modern Tool Usage:**
CO1 CO2 CO4 CO5 are strongly mapped as student's able to various software for design experiments and analyze data. Communicate effectively using graphical and numerical representations.

*PO10***. Communication:**
CO5 is strongly mapped as Communicate effectively using graphical and numerical representations.

*PO11***. Innovation, employability, and Entrepreneurial skills:**
CO2 CO6 is strongly mapped as various techniques to analyze and interpret data.

Class   : S.Y.BBA (C.A.) (Semester - III)

Paper Code   : UBCA236
Title of Paper: **Computer Laboratory I (Based on UBCA231 & UBCA233)**
Credits: 02   No of Lectures: 48

A] Course Objectives:

1. To study basic concepts of Java
2. To understand how to develop applications using Applet, Swing, AWT
3. To study basic concepts of Python
4. To develop and understand how to create modules in Python
5. To understand working of String, List, Tuple, Dictionary, Set for Python Programming

B] Course Outcomes:
By the end of the course, students will be able to:

CO1. Use of Appropriate Data Types, Control Statements
CO2. Write programs using String, List, Tuple, Dictionary, Set for Python Programming
CO3. Gain experience working with different Python libraries and frameworks. This could include NumPy, Pandas, Matplotlib, and Django.
CO4. Develop State full, Stateless and Entity Beans.
CO5. Designing pages using Applet, AWT, Swing in Java
CO6. Create dynamic web pages, using Servlets and JSP.
CO7.Apply event handling on AWT and Swing components.

Topics/Content

Java Programming Assignments
- Assignment on Basic Programs of Java
- Assignment on Classes and Objects in Java
- Assignment on Constructor and destructor
- Assignment on Inheritance
- Assignment on Interfaces
- Assignment on Packages
- Assignment on Collection – Linked List , Set, Vector, Array List
- Assignment on File Handling in Java
- Assignment on Exception Handling in Java
- Assignment on Applet
- Assignment on AWT
- Assignment on Swing

Python Programming Assignments

- Assignment on Operator and Evaluation of Expression
- Assignment on Decision Making Statements
- Assignment on Looping Statements (for, while ,Nested Loop)
- Assignment on User defined functions
- Assignment on String, List & Tuple
- Assignment on Dictionary & Set
- Assignment on File Handling (Reading & Writing Files)
- Assignment on Modules
- Assignment on Exception Handling
- Assignment on OOPs concept in Python

Evaluation:

Internal Evaluation	External Evaluation
Programs –(A) – 20 M Programs –(B) – 15 M Oral – 05 M	Programs –(A) – 25 M Programs –(B) – 20 M Journal – 10 M Oral – 05 M
Total – 40 M	Total- 60 M

Class: SYBBA (C.A) (Sem III) **Subject**: BBA (C.A)

Course: Computer Laboratory I (UBCA231, UBCA233) **Course Code:** UBCA236

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3										3
CO2	3	3									3
CO3	3	3			3						3
CO4	3		3								3
CO5	3		3		3						3
CO6	3		3		3						3
CO7	3										3

PO1. **Knowledge:**
All Cos are strongly mapped as student to gain the knowledge in java programming and python.

PO2. **Problem Analysis:**
CO2 and CO3 are strongly mapped with the student real life problem solving.

PO3. **Design and Development:**
CO4, CO5 and CO6 are strongly mapped with the student to create dynamic web pages, using Servlets and JSP.

PO5. **Modern Tool Usage:**
CO3, CO5 and CO6 are strongly mapped with the student for use various different tools and technology.

PO11. **Innovation, employability, and Entrepreneurial skills:**
All COs is strongly mapped as various techniques to analyze and interpret data.

Class   : S.Y.BBA (C.A.) (Semester - III)

Paper Code: UBCA237

Title of Paper: **Computer Laboratory II (Based on UBCA232 & UBCA235)**

Credits: 02   No of Lectures: 48

A] Course Objectives –

1. To study basic concepts of PHP
2. To Understanding POST() & GET() in PHP
3. To study how to create Databases in PHP
4. To develop and understand Data Visualization using R-Programming
5. To understand programming with Vector, List, Matrix, Dataframe, Factors using R-Programming

B] Course Outcomes-
By the end of the course, students will be able to:
CO1. Write PHP Scripts to handle HTML Forms
CO2. Analyze and Solve web Application task by writing PHP Programs
CO3. Analyze and solve database task using PHP
CO4. Get familiar with R-Software and Learn basics of R-Programming
CO5. Understand the Basics in R-Programming in terms of control statements, String Functions
CO6. Appreciate and apply R-Programming from statistical perspective.
CO7. Design and implement PHP scripts for handling HTML forms, validating user input, and processing form data.

Topics/Content

PHP Assignments

- Assignment on Basic of PHP
- Assignment on Control Statement and Loops
- Assignment on Functions
- Assignment on PHP Database
- Assignment on POST() & GET()
- Assignment on PHP Array
- Assignment on PHP Classes
- Assignment on String and Math Functions

R - Programming Assignments

- Assignment on Operator and Evaluation of Expression
- Assignment on Decision Making Statements
- Assignment on Functions (Built in & User Defined)
- Assignment on Mean, Mode Median
- Assignment on Looping Statements
- Assignment on Vector
- Assignment on List
- Assignment on Matrix
- Assignment on Data Frame
- Assignment on Factor
- Assignment on Data Visualization in R-Programming
- Assignment on File Handling in R-Programming

Evaluation:

Internal Evaluation	External Evaluation
Programs –(A) – 20 M Programs –(B) – 15 M Oral – 05 M	Programs –(A) – 25 M Programs –(B) – 20 M Journal – 10 M Oral – 05 M
Total – 40 M	Total- 60 M

Class: SYBBA (C.A) (Sem III)   **Subject**: BBA (C.A)
Course: Computer Laboratory II (UBCA232, UBCA235) **Course Code:** UBCA237

Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3			3					3		
CO2	3	3		3	3				3		
CO3		3		3					3		
CO4	3				3				3		
CO5	3								3		
CO6			3		3				3		3
CO7		3	3						3		3

PO1. **Knowledge:**
CO1, CO2, CO4, and CO5 are strongly mapped as students gain knowledge about the

PO2. **Problem Analysis:**
CO2 CO3 is strongly mapped, as students can visualize and analyze the data.

PO3. **Design and Development:**
CO6 and CO7 are strongly mapped, as students can design and develop design experiments using visualization and analysis data.

PO4. Conduct **investigations of complex problems:**
CO1, CO2, and CO3 are strongly mapped as a student able to demonstrate programming skills using HTML, PHP, and Graphs.

PO5. **Modern Tool Usage:**
CO2, CO4, and CO6 are strongly mapped as students get familiar with R and Python software.

PO9. **Project Management:**
All COs contribute to the development of project development and management skills using all Python tools and technology.

PO11. **Innovation, employability, and entrepreneurial skills:**
CO6 and CO7 are strongly mapped as students who can develop software and acquire programming skills.