Progressive Education Society's

Modern College of Arts, Science and Commerce, Ganeshkhind, Pune – 411 016

(NEP Version I)

26th April 2025.

Syllabus for T.Y.B.B.A(CA)

A.Y.2024-25

Introduction:

The degree shall be titled as Bachelor of Business Administration (B.B.A.)(Computer Application) under the Faculty of Commerce and Management. First Year B.B.A.(CA) Basedon Credit System is implemented w.e.f. the academic year 2022-2023 , Second Year B.B.A.(CA) is implemented w.e.f. 2023-2024 ,Third Year B.B.A.(CA) will be w.e.f. 2024- 2025.

Programme Objectives:

BBA (CA) Graduate's will be able to

Po1: The BBA (CA) Programme provides sound academic base to develop an advancedcareer in Computer Application with various Management and Business skills.

Po2: This course focus on conceptual grounding of computer usage as well as its practicalBusiness Application.

Po3: BBA (CA) inculcates basic programming ability amongst students which can help themto become a good programmer.

Po4: This course nurtures good Soft Skills and Managerial Skill in the students which createnoble IT Professionals.

Po5: Students get excellent exposure to learn the process of Software development in the Vthand VIth semester by developing their own projects which helps them in campus placement.

Suggested internal assessment tools for courses:

The concerned teacher shall announce the units for which internal assessment will takeplace. A teacher may choose one of the methods given below for the assessment.

1. Library notes
2. Students Seminar
3. Short Quizzes / MCQ Test
4. Home Assignments
5. Tutorials/ Practical
6. Oral test
7. Research Project
8. Group Discussion
9. Open Book Test
10. Written Test
11. PPT presentation
12. Industrial Visit
13. Viva

Teaching Methodology:

1. Classroom Teaching
2. Guest Lectures
3. Group Discussions
4. Surveys
5. Power Point Presentations
6. Visit to Industries
7. Research Papers & Projects
8. E-content

Subject List

TYBBA(CA)SEM-V

Sr.No	Course Type	Course(Subject)	Course (Subject)code	Credits	Weightage for Internal Mark	Weightage for External Mark	Weightage for practical	Total Marks
1	Major 1	Java Programming	**BBA3511**	4	40	60	-	100
2	Major 2	Python Programming	**BBA3512**	4	40	60	-	100
3	Major3	Computer Laboratory Based on **BBA3511& BBA3512**	**BBA3513**	2	20	30	-	50
4	DSE Elective	Software Engineering	**BBA3514**	4	40	60	-	100
5	Minor	Startup Management	**BBA3525(A)**	4	40	60	-	100
		OR						
5	Minor	International Monitory system and Exchange rate	**BBA3525(B)**	4	40	60	-	100
6	VSC	Internet of Things(IOT)	**BBA3546**	2	20	30	-	50
7	FP	FP/CEP	**BBA3567**	2	20	30	-	50
		Total Credits		**22**				**550**

TYBBA(CA)Sem VI

Sr. No	Course Type	Course(Subject)	Course (Subject)code	Credits	Weightage for Internal Mark	Weightage for External Mark	Weightage for practical	Total Marks
1	Major 1	Advanced Java	**BBA3611**	4	40	60	-	100
2	Major 2	PHP	**BBA3612**	4	40	60	-	100
3	Major 3	Computer Laboratory Based on **BBA3611 & BBA3612**	**BBA3613**	2	20	30	-	50
4	DSE Elective	Software Testing	**BBA3614**	4	40	60	-	100
5	Minor	Computerized Accounting(Tally)	**BBA3625(A)**	4	40	60	-	100
		OR						
5	Minor	International Financial Institutions	**BBA3625(B)**	4	40	60	-	100
6	FP	OJT	**BBA3666**	4	40	60	-	100

		Total Credits		**22**				**550**

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous) Ganeshkhind,
Pune-16Syllabus for B.B.A (CA)
Semester :-V

Subject Code: - BBA3511
Subject Name :- Java Programming
Total Contact Hours: 60 **Total Credits:- 4**

Pre-Requisite:

- Students shall have the Knowledge of Core Java Programming Language.

Course Objectives:

- To understand object-oriented programming concepts, and apply them in solvingproblems.
- To introduce the principles of inheritance and polymorphism; and demonstratehow they relate to the design of abstract classes.
- To study the implementation of packages and interfaces.
- To learn the concepts of exception handling.
- To design Graphical User Interface using and swing controls.

Course Outcomes: At the end of the course, students will able to

- Solve real world problems using OOP techniques.
- Write programs using java collection framework and I/Oclasses.

Unit No.	Topic	No. of Hours
1	**Java Fundamentals** 1.1 Introduction to Java. 1.1 Features of Java 1.2 Basics of Java: - Data types, variable, expression, operators,constant. 1.3 Structure of Java Program. 1.4 Execution Process of java Program. 1.5 JDK Tools. 1.6 Command Line Arguments. 1.7 Array and String: 1.7.1 Single Array & Multidimensional Array 1.7.2 String, String Buffer 1.8 Built In Packages and Classes: 1.8.1 java.util: - Scanner, Date, Math etc. 1.8.2 java.lang	8
2	**Classes, Objects and Methods** 2.1 Class and Object 2.2 Object reference 2.3 Constructor: Constructor Overloading 2.4 Method: Method Overloading, Recursion, Passing and Returning object form Method 2.5 new operator, this and static keyword, finalize() method 2.6 Nested class, Inner class, and Anonymous inner class	10

3	**Introduction to Inheritance** 3.1 Overview of Inheritance 3.2 inheritance in constructor 3.3 Inheriting Data members and Methods, 3.4 Multilevel Inheritance – method overriding Handlemultilevel constructors 3.5 Use of super and final keyword 3.6 Interface: 3.7 Creation and Implementation of an interface,Interface reference 3.8 Interface inheritance 3.9 Dynamic method dispatch 3.10 Abstract class 3.11 Comparison between Abstract Class and interface 3.12 Access control	10
4	**Packages and Collection** 4.1 Packages 4.1.1 Packages Concept 4.1.2 Creating user defined packages 4.1.3 Java Built in packages 4.1.4 Import statement, Static import 4.2 Collection 4.2.1 Collection Framework. 4.2.2 Interfaces: Collection, List, Set 4.2.3 Navigation: Enumeration, Iterator, ListIterator 4.2.4 Classes: LinkedList, ArrayList, Vector, HashSet. 4.3 Reflection in Java 4.3.1 Reflection API. 4.3.2 NewInstance() & Determining the class objectJavap tool, Creating javap tool	10
5	**File and Exception Handling** 5.1 Exception 5.1.1Exception and Error 5.1.2 Use of try, catch, throw, throws and finally 5.1.3Built in Exception 5.1.4Custom exception 5.1.5 Throwable Class. 5.2File Handling: Introduction to file handling 5.2.1Overview of Different Stream (Byte Stream, Character stream) 5.2.2 Readers and Writers class 5.2.3 File Class 5.2.4 File Input Stream, File Output Stream 5.2.5 Input Stream Reader and Output Stream Writerclass 5.2.6 FileReader and FileWriter class 5.2.7 Buffered Reader class.	12

6	**AWT, Event and Swing Programming** 6.1 AWT 6.1.1 Components and container used in AWT 6.1.2 Layout managers 6.1.3 Listeners and Adapterclasses 6.1.4 Event Delegationmodel 6.2 Swing 6.2.1 Introduction to Swing Componentand Container Classes Exploring Swing Controls- JLabel and Image Icon, JText Field, The Swing Buttons JButton, JToggle Button, JCheck Box, JRadio Button, JTabbed Pane, JScroll Pane, JList, JTable, JComboBox, Swing Menus, Dialogs, JFileOpen, JColorChooser.	10
	Total Lectures	**60**

Reference Books:

1. Programming with JAVA - EBalgurusamy
2. The Complete Reference – JAVA HerbertSchildt
3. Programming in Java, S. Malhotra, S. Chudhary, 2nd edition, Oxford Univ.Press.
4. Java Programming and Object-oriented Application Development, R. A.Johnson, Ceng
5. Java: A Beginner's Guide. Author: Herbert Schildt.

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Modern College of Arts, Science and Commerce (Autonomous)

Ganeshkhind, Pune-16Syllabus for B.B.A (CA)

Semester :-V

Subject Code: -BBA3512

Subject Name -: Python Programming

Total Contact Hours: -60 hrs **Total Credits**: - 4

Prerequisite:

- Experience with a high-level language (C/C++, Java, MATLAB) is suggested.
- Prior knowledge of a scripting language (Perl, UNIX/Linux shells) and ObjectOriented concepts is helpful but not mandatory.

Course Objectives: -

- To learn Python programming basics and paradigm.
- To understand python looping, control statements and string manipulations.
- Students should be made familiar with the concepts of GUI controls and designingGUI applications.
- To know the concepts of file handling, exception handling.

Course Outcomes: At the end of the course, students will able to

- Demonstrate the use of built-in data structures "lists" and "dictionary".
- Write a program to solve a real world problem.
- Implement GUI application and handle exceptions and files.

Unit	Topic	No .of Lectures
1.	**Python Fundamentals** 1.1 Debugging in python 1.2 Introduction to Python 1.3 Basic Syntax, Variables, and Data Type 1.4 Control Flow Statements(for loop , while loop) 1.5 Control Statements 1.6 Sequence Data Type(List, String, Tuple ,Dictionary ,Set) 1.7 Functions	12
2.	**Modules and Packages** 1.1 Python Modules – DateTime module , Date Module , Calender Module , Random module ,Time Module 1.2 Packages – Application of Concatenation of two modules	6

3.	**Object-Oriented Programming and Inheritance** 3.1 Classes and Objects 3.1.1 Creating classes and objects. 3.1.2 Attributes, methods, and constructors. 3.1.3 Creating objects 3.2 Inheritance 3.2.1 Single Inheritance 3.2.2 Multilevel Inheritance 3.2.3 Multiple Inheritance 3.2.4 Hybrid Inheritance 3.2.5 Hierarchical Inheritance 3.3 IS-A and HAS-A relationships 3.4 Overriding Methods	12
4.	**Exception Handling and File Handling** 4.1 Exception Handling 4.1.1 Python Exception 4.1.2 Common Exception 4.1.3 Exception handling in Python (try-except-else) 4 .1.4 The except statement with no exception 4.1.5 Multiple Exception 4.1.6 The try-finally clause 4.1.7 Custom Exception and assert statement 4.2 File Handling 4.2.1 File handling Modes 4.2.2 Writing& Appending to Files 4.2.3 Reading Files	10
5.	**GUI Programming with Tkinter** 5.1 Introduction to GUI Development 5.2 Tkinter Widgets 5.2.1 Frames, buttons, labels, and entry fields. 5.2.2 Events and event handling.	6
6.	**Database Programming with Python** 6.1 Introduction to Databases 6.2 Database Connection 6.3 SQL Opeartions 6.4 Transactions	8
7.	**Introduction to Python Libraries** 7.1 Data Analysis Libraries 7.1.1 NumPy 7.1.2 Pandas 7.2 Data Visualization Libraries 7.2.1 Matplotlib 7.2.2 Seaborn 7.2.3 Plotly 7.3 Machine Learning 7.4 Natural Language Processing (NLP)	6
Total Lectures		60

Reference Books:

1. Mark Lutz, Programming Python, O`Reilly, 4th Edition, 2010
2. Dive into Python, Mike
3. Learning Python, 4th Edition by Mark Lutz
4. Programming Python, 4th Edition by Mark Lutz
5. Python Programming :An introduction to computer, John Zelle,3rd Edition

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Modern College of Arts, Science and Commerce (Autonomous) Ganeshkhind, Pune-16

Syllabus for B.B.A (CA)
Semester :-V

Subject Code: BBA3513

Subject : Computer lab based on BBA3511 &BBA3512

(2 Credit each= 04 credit course) (Total Practical= 30 P (30x2hrs. for each course)

Course Objectives:-

- To identify concepts of various data models used.
- To understands the uses of operators, functions, input/output methods.

Course Outcomes:- At the end of the course, students will able to

- Create error free applications giving desired results.
- Analyze problem statements and problem solvingmethodology.

Sr. No.	Assignment Name	No of Practical's
1	Introduction to Java	**5**
2	Classes, Objects and Methods	**5**
3	Inheritance, Package and Collection	**7**
4	File and Exception Handling	**6**
5	AWT, Event & Swing Programming	**7**
Total		**30**

Sr. No.	Assignment Name	No of Practical's
1	Introduction to Basic Python	**2**
2	Working with Strings and List	**3**
3	Working with Tuples, Sets and Dictionaries	**4**
4	Working with Functions, Modules and Packages	**7**
5	Python Classes and Objects, Inheritance	**4**
6	Exception Handling	**3**
7	Python GUI Programming using Tkinter	3
8	Connectivity to database	**6**
Total		**30**

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Modern College of Arts, Science and Commerce (Autonomous) Ganeshkhind, Pune-16

Syllabus for B.B.A (CA)

Semester :- V

Subject Code: - BBA3514

Subject Name: Software Engineering

Total Contact Hours: 60 **Total Credits: 4**

Pre-Requisite:

- Understanding of data structures and algorithms, and basic knowledge of mathematics.

Course Objectives:

- To learn the fundamentals of object modeling
- To differentiate Unified Process from other approaches.
- To design the UML dynamic and implementation diagrams.
- To understand the software design with design patterns.

Course Outcome:- At the end of the course, students will able to

- Design Specifications for Project.
- Acquire Knowledge in Basic Modeling.
- Gain Project Management Skills

Unit	Topic	No. of Lectures
1	**1.** Introduction and Basics of Software Engineering 1.1 Software Life Cycle Models (Revision of SE) 1.2 System Concepts o Definition o Basic Components o Elements of the System o Types of System	8

	o System Characteristics 1.3 Project Organization 1.4 Communication in Project Management 1.5 Risk Management in Project Management	
2	**2.** Introduction to Software Engineering 2.1 Definition of Software 2.2 Characteristics of Software 2.3 Definition of Software Engineering 2.4 Need for Software Engineering 2.5 McCall's Quality Factors 2.6 The Software Process 2.7 Software Product and Process	8
3	Software Development Life Cycle (SDLC) 3.1 Introduction to SDLC 3.2 Activities of SDLC 3.3 A Generic Process Model 3.4 SDLC Models 3.4.1 Waterfall Model 3.4.2 Spiral Model 3.4.3 V Model	8
4	Requirement Engineering 4.1 Introduction to Requirements 4.2 Requirement Elicitation 4.3 Requirement Elaboration 4.4 Fact-Finding Techniques 4.5 SRS Format	**10**
5	**5.** Analysis and Design Tools 5.1 Decision Tree and Decision Table 5.2 Data Flow Diagrams (DFD) (up to 2nd level)	**8**

	5.3 Data Dictionary (DD) o Elements of DD o Advantages and Disadvantages of DD **5.4 Coupling and Cohesion** **5.5 Case Studies** (compulsory)	
6	**Introduction to UML and Object-Oriented Concepts** **6.1 Introduction to UML** o Concept of UML o Advantages of UML **6.2 Introduction in Requirement engineering** o Introduction o Types of requirements o Case Studies and Examples	**8**
7	**Structural and Behavioral Modeling** **7.1 Structural Modeling** 7.1.1 Classes, Relationships, Common Mechanisms 7.1.2 Class Diagrams (examples included) 7.1.3 Interface, Types, Roles, Packages 7.1.4 Object Diagram (examples included) **7.2 Behavioral Modeling** 7.2.1 Use Cases, Use Case Diagrams (with stereotypes and examples) 7.2.2 Interaction Diagrams (Sequence and Collaboration) 7.2.3 Activity Diagrams and State Chart Diagrams (examples included)	**10**
	Total number of lectures	**60**

Reference books:

Sr. No.	Title of the Book	Author's Name	Publication
1	The Unified Modeling LanguageUser/Reference Guide,	Grady Booch, James Rambaugh	Pearson EducationInc
2	The Unified software developmentProcess	Ivar Jacobson,Grady Booch, Jame sRambaugh	Pearson Education
3	Agile Software development	Alistair Cockbair	Pearson Education

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Syllabus for B.B.A (CA)

Semester :- V

Subject Code: BBA3546

Subject Name:IOT

Total Contact Hours: 30 **Total Credits: 2**

Course Objectives:

- To understand technical aspects of Internet of things.
- To describe smart objects and IoT Architecture.
- To study and compare different Application protocols of IoT.
- To apply IoT platform using Arduino Uno.

Course Outcomes: Students will be able

- To explain key technologies, smart objects, IoT Architecture and security in Internetof Things.
- To illustrate the role of IoT protocols for efficient network communication.
- To design IoT model using Arduino Uno.

Unit No.	Contents Theory	No. of Lectures
1	**Fundamentals of IoT** 1.1 Basic Concepts of IoT 1.2 Major components of IoT devices 1.3 IOT Architecture 1.4 Pros & Cons of IOT	03
2	**Communication Technologies** 2.1 Wireless Communication: Bluetooth, ZigBee, WiFi, RF Links 2.2 Wired Communication: Ethernet 2.3 IOT Protocol: MQTT, CoAP, XMPP, OSGi	05
3	**Microcontroller Fundamental and Arduino uno** 3.1 System on Chip & Microcontroller 3.2 Arduino UNO: Introduction to Arduino, Arduino UNO, ArduinoBoard, The Anatomy of an Arduino Board 3.3 The Development Environment of Arduino Board 3.4 Writing Arduino Software, The Arduino Sketch 3.5 Fundamentals of Arduino Programming 3.6 Trying the code on an Arduino Emulator 3.7 Arduino Libraries 25 Programming & Interfacing 3.8 Application of IoT 3.9 Case studies: Home Automation, Smart Parking, etc.	07
Total		**15**
Practical Please Refer Lab Book		**15**

Reference Books:

1. Learning internet of things by Waher, Peter -Packt Publishing Ltd, 2015
2. "Fundamentals of Wireless Sensor Networks: Theory and Practice" by WaltenegusDargie,
   Christian Poellabauer
3. Internet of Things (A Hands-on-Approach) by Vijay Madisetti , ArshdeepBahga
4. Designing the Internet of Things by Adrian McEwen, Hakim Cassimally
5. Internet of Things with Arduino Cookbook by Schwartz, M. - Packt Publishing Ltd.
6. "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, 1stEdition, Pearson Education (Cisco Press Indian Reprint)
7. "Internet of Things" by Srinivasa K G, CENGAGE Leaning India, 2017
8. Computer Networks by Tanenbaum, Andrew S - Pearson Education Pte. Ltd., Delhi,4th Edition
9. Data and Computer Communications; By: Stallings, William - Pearson Education Pte. Ltd., Delhi, 6th Edition

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Syllabus for B.B.A (CA)

Semester :- V

Subject Code: 24-BBACA355

Subject : Project(04 credit course)

Course Objective :-

- To gain project management skill.
- To develop coding and testing skills

Course Outcome :- At the end of the course, students will able to

- Do hands on experience in specific computer language.
- Develop and validate application program using various platforms.

Guidelines:

· Students should work in a team of maximum 2 students.

· Students can choose a project topic without any restriction on technology or domain. · The student group will work independently throughout the project work including: problem identification, information searching, literature study, design and analysis, implementation, testing, and the final reporting.

· Project guide must conduct project presentations (minimum 4) to monitor the progress of the project groups.

· At the end of the project, the group should prepare a report which should conform to international academic standards. The report should follow the style in academic journals and books, with clear elements such as: abstract, background, aim, design and implementation, testing, conclusion and full references, Tables and figures should
be numbered and referenced to in the report.

· The final project presentation with demonstration (UE) will be evaluated by the project guide (appointed by the college) and one external examiner (appointed by the University).

Evaluation guidelines:

CI (30 marks)	**CE (70 marks)**

· First presentation	· Second presentation	· Documentation	· Project · Logic/Presentation	· Documentation	· Viva
10	10	10	40	10	20

Recommended Documentation contents:

Abstract

Introduction

-motivation
-problem statement
-purpose/objective and goals
-literature survey
-project scope and limitations

System analysis

-Existing systems

- scope and limitations of existing systems

-project perspective, features

- stakeholders
-Requirement analysis - Functional requirements, performance requirements, security requirements etc.

System Design

- Design constraints

- System Model: Uml designs

- Data Model

-User interfaces

Implementation details

-Software/hardware specifications

Outputs and Reports Testing

Test Plan, Black Box Testing or Data Validation Test Cases, White Box Testing or Functional Validation Test cases and results

Conclusion and Recommendations

Future Scope Bibliography and References

SEM VI

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Modern College of Arts, Science and Commerce (Autonomous) Ganeshkhind, Pune-16

Syllabus for B.B.A (CA)

Semester :- VI

Subject Code- BBA3611

Subject Name: Advance Java

Total Contact Hours: 60 **Total Credits: 4**

Prerequisite: Students should know basic Java programming concepts.

Course Objectives :-

- To know the concept of Java Programming.
- To understand how to use programming in day to day applications.
- To develop programming logic.

Course Outcomes : At the end of the course, students will able to

- know the concepts of JDBC Programming.
- Write programs of Multithreading and Socket Programming.
- Apply the concepts of Spring and Hibernate.
- Develop the project by using JSP and JDBC.

Sr.No	Topic	No. of Lectures
1.	**JDBC** 1.1 Introduction 1.2 JDBC Architecture. 1.3 JDBC Process **1.4 Working with ResultSet Interface.**	**10**
2	**Multithreading:** 2.1 Introduction to Multithreading. 2.2 Thread creation: Thread Class, Runnable Interface. 2.3 Life cycle of Thread. 2.4 Thread Priority. 2.5 Execution of Thread Application. 2.6 Synchronization and Interthread communication.	**13**
3	**Networking:** 3.1 Overview of Networking. 3.2 Networking Basics: Port Number, Protocols and classes. 3.3 Sockets, Reading from and Writing to a Socket.	**10**

4	**Servlet and JSP** 4.1 Introduction to Servlet 4.2 Types of Servlet: Generic Servlet and Http Servlet 4.3 Life cycle of servlet 4.4 Session Tracking. 4.5 Servlet with database. **JSP** 4.6 Introduction to JSP. 4.7 JSP Life Cycle. 4.8 Components of JSP. 4.9 JSP with Database.	**12**
5	**Spring & Hibernate** **Spring:** 5.1 Introduction 5.2 Applications and Benefits of spring 5.3 Architecture and Environment Setup 5.4 Hello World Example 5.5 Core Spring- IoC Containers, Spring Bean Definition, Scope,Lifecycle **Hibernate** 5.6 Architecture and Environment 5.7 Configuration, Sessions, Persistent Class 5.8 Mapping Files, Mapping Types 5.9 Examples	**15**
	Total Hours	**60**

Reference Books:

1. The Complete Reference – JAVA Herbert Schildt
2. Professional Hibernate, by Eric Pugh, Joseph D. Gradecki by WileyPublishing, Inc.,ISBN: 0 - 7645- 7677-1
3. Spring In Action, Craig Walls, Ryan reidenbach,ManningPublishing Co., ISBN: 1-932394- 35-4
4 Head First Servlets and JSP: Passing the Sun Certified WebComponent DeveloperExam -2nd Edition-Bryan Basham, KathySierra, Bert Bates- O'REILLY.

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Syllabus for B.B.A (CA)

Semester :-VI

Subject Code: -

BBA3612 Subject

Name :- PHP

Total Contact Hours:- 60 **Total Credits:- 4**

Prerequisite:- 1. Basic Understanding of Web Development
2. Basic Understanding of Databases**.**
3. Basic Programming Concepts like Variables and Data Types, Control Structures, Functions

Course Objectives:-

- To understand the basics of PHP programming.
- To learn web development techniques
- To explore web design and dynamic user interaction using JavaScript and DHTML:

Course Outcomes:- **At the end of the course, students will able to**

- Write basic PHP scripts, including handling variables, form processing, and maintainingstate in web applications.
- Apply Database Connectivity in program and project.

Unit	Topic	No. of Lectures
1	**PHP Basics** 1.1 Setting up a development environment 1.2 Variables, numbers and strings 1.3 Calculations with PHP 1.4 Using Arrays	**7**
2	**Control Structures and Loops** 2.1 Conditional Statements 2.2 Using Loops for Repetitive tasks 2.3 Combing Loops and Arrays	**8**
3	**Functions, Objects and Errors** 3.1 PHP's Built-in functions 3.2 Creating Custom functions 3.3 Passing Values by Reference	**9**

	3.4 Understanding Objects	
4	**Working with Forms** 4.1 Building a Form 4.2 Processing a Form's Data 4.3 Differences between POST and GET 4.4 Preserving User Input	**7**
5	**More with Forms** 5.1 Dealing with checkboxes and radiobuttons 5.2 Retrieving values from lists 5.3 Validating and restricting data 5.4 Sending Email	**9**
6	**Storing and Protecting Data** 6.1 Setting and Reading Cookies 6.2 Protecting Online Files 6.3 Understanding Session Variables	**11**
7	**MySQL Database Overview** 7.1 phpMyAdmin Overview 7.2 Using a MySQL Database 7.3 Reading and Writing Data	**9**
	Total Lectures	**60**

References:

1. "PHP & MySQL: Novice to Ninja" by Tom Butler & Kevin Yank
2. "PHP Objects, Patterns, and Practice" by Mika Schwartz
3. "Modern PHP: New Features and Good Practices" by Josh Lockhart
4. "PHP: A Beginner's Guide" by Vikram Vaswani
5. "CodeIgniter 4: From Beginner to Advanced" by Sanjiv Kumar
6. "Ajax: The Complete Reference" by Thomas A. Powell

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Syllabus for B.B.A (CA)

Semester :-VI

Subject Code:BBA3613
Subject : Computer lab based on BBA3611 & BBA3612(2 Credit)

Total contact Hours: 60(Total Practical= 30 P (30x2hrs. for each course)
Course Objectives:-

- To identify concepts of various data models used.
- To understands the uses of operators, functions, input/output methods**.**

Course Outcomes:-At the end of the course, students will able to

- Create error free applications giving desired results.
- Analyze problem statements and problem solving methodology

Sr. No.	**Assignment Name**	**No of Practical's**
1	JDBC Programming	**5**
2	Multithreading	**5**
3	Socket Programming	**7**
4	JSP and Servlet	**6**
5	Spring and Hibernate	**7**
Total		**30**

Sr. No.	**Assignment Name**	**No of Practical's**
1	Basics in PHP	**3**
2	Control Structures and Loops	**4**
3	Arrays and String	**6**
4	Functions, Objects and Errors	**5**
5	Working with Forms & Form Element	**5**
6	Session and Cookies	**4**
7	Database	**3**
Total		**30**

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous) Ganeshkhind, Pune-16Syllabus for B.B.A (CA)
Semester :-VI

Subject Code: - BBA3614
Subject Name -: Software Testing
Total Contact Hours: -60 hrs **Total Credits: - 4**
Pre requisite:

- Students shall have basic Knowledge of Software Engineering.
- Students shall have basic Knowledge of OOSE.
- Student should know basic security constraints.

Objectives:

- To provide skills to design basic Test Cases
- To understand how testing methods can be used as an effective tool in providingQuality Assurance for software
- To lean the fundamentals of cyber security and various categories of Cybercrime, Cyber-attacks.

Course Outcomes: At the end of the course, students will able to

- Introduced to testing tools.
- Acquire Knowledge of Basic SQA.
- Design basic Test Cases
- Understand the aspects related to personal data privacy and security
- Identify the different types of Cyber Crimes.

Unit	Topic	No. of lectures
1.	**Fundamentals of Software Testing** 1.1 Introduction to Software Testing • Definition and Importance • Role of Testing in Software Development 1.2 Testing Objectives and Challenges 1.3 Types of Errors and Defects 1.4 Software Development Life Cycle (SDLC) vs. Software Testing LifeCycle (STLC) 1.5 Principles of Software Testing 1.6 Categories of Testing (Manual vs. Automated)	**06**
2.	**Testing Approaches and Methods** 2.1 White Box Testing: • Basics and Key Concepts • Code Coverage Techniques (Statement, Branch, and Path) 2.2 Black Box Testing: • Equivalence Partitioning • Boundary Value Analysis • Decision Table Testing 2.3 Gray Box Testing: • Overview and Practical Examples 2.4 Introduction to Test Design Techniques	**06**

3.	**Levels of Testing and Testing Strategies** 3.1 Unit Testing **Functional Testing** 3.2 Integration Testing • Top-Down and Bottom-Up Approaches 3.3 System Testing 3.4 Acceptance Testing • Alpha, Beta, and Gamma Testing) 3.5 Regression Testing 3.6 Smoke and Sanity Testing **Non-Functional Testing:** 3.7 Performance Testing • Load, Stress, and Volume Testing 3.8 Usability Testing 3.9 Security Testing (Basic Concepts)	**08**
4.	**Software Metrics and Testing for Specialised Environments** 4.1 Writing Test Plan, Preparing Traceability matrix, Writing TestExecution Report and Summary Report. 4.2 Agile Testing/Methodology • Agile model • Principles of Agile Testing, • Advantages and Disadvantages • Scrum Technology • Agile/Scrum Framework • Test Management tool: Jira Tool	**08**
5.	**Practical Test Design and Execution** 5.1 Writing Effective Test Cases • Test Case Design Techniques • Test Case Templates 5.2 Test Planning and Documentation • Writing a Test Plan • Preparing Test Reports and Traceability Matrices 5.3 Test Execution • Manual Test ExecutionTest Review and Feedback	**08**
6.	**Specialized Topics in Testing** 6.1 Testing for Mobile Applications 6.2 Testing for Web Applications 6.3 Basics of API Testing (Introduction to Postman)	**06**
7.	**Introduction to Automated Testing:** 7.1 Difference between Manual and Automated Testing 7.2 Install and configure Selenium Testing Tool 7.3 Case Study through selenium tool • Design Test Case for Email Login Page • Internet Banking Login	**08**

	• Online Shopping	
8.	**Introduction to Cyber Crime and Cyber Security** 8.1 Introduction 8.2 Cybercrime: Definition and Origin of the Word 8.3 Cybercrime and Information Security 8.4 Who are Cybercriminals? 8.5 Classifications of Cybercrimes: • E-Mail Spoofing, Spamming, Cyber defamation, Internet Time Theft,Salami Attack/Salami Technique, Data Diddling, Forgery, Web Jacking,Newsgroup, Spam/Crimes Emanating from UsenetNewsgroup, Industrial Spying/Industrial Espionage, Hacking, Online Frauds, Computer Sabotage,Email Bombing/Mail Bombs, Computer Network Intrusions, PasswordSniffing, Credit Card Frauds, Identity Theft 8.6 Definition of Cyber Security 8.7 Vulnerability, Threats and Harmful acts 8.8 CIA Triad 8.9 Cyber Security Policy and Domains of Cyber Security Policy 8.10 Criminals Plan: • Categories of Cybercrime8.11Cyber Attacks: • Reconnaissance, Passive Attack, Active Attacks, Scanning/Scrutinizing gathered Information, Attack (Gainingand Maintaining the System Access) 8.12 Social Engineering: Classification of Social Engineering: humanbased, computer based	**10**
Total Lectures		**60**

References Books:

1. The Complete Reference – JAVA Herbert Schildt
2. Professional Hibernate, by Eric Pugh, Joseph D. Gradecki by Wiley Publishing, Inc.,ISBN:0-7645-7677-1
3. Computer Security: Principles and Practice -William Stallings and Lawrie Brown, 3rdedition, Pearson, 2015.
4. Ethical Hacking – by Daniel G. Graham