

TYBBA (CA) Sem VI

Syllabus

Savitribai Phule Pune University
T.Y.B.B.A.(C.A.) Sem-VI (CBCS 2019 Pattern)

Subject Code: CA-601

Subject: Recent Trends in IT

Total Hours: 48

Total Credits: 3+1=4

Prerequisites:

1. Basic knowledge of related programming and database concepts.

2. Fundamentals of Mathematical logic & Data structures.

Course Objectives

1. To introduce upcoming trends in Information technology.
2. To study Eco friendly software development concepts.
3. To provide a strong foundation of fundamental concepts in Artificial Intelligence.
4. To evaluate the performance of various data mining task.
5. To understand Data analytics using Spark Programming.

Course Outcomes: On completion of the course, student will be able

1. To discuss the basic concepts AI.
2. To apply basic, intermediate and advanced techniques to mine the data.
3. To provide an overview of the concept of Spark programming.

Unit No.	Contents	No. of Lectures
1	Introduction to recent trends 1.1 Artificial Intelligence 1.2 Data Warehouse 1.3 Data Mining 1.4 Spark	02
2	Artificial Intelligence 2.1 Introduction & Concept of AI 2.2 Applications of AI 2.3 Artificial Intelligence, Intelligent Systems, Knowledge –based Systems, AI Techniques 2.4 Early work in AI & related fields. 2.5 Defining AI problems as a State Space Search 2.6 Search and Control Strategies 2.7 Problem Characteristics 2.8 AI Problem: Water Jug Problem, Tower of Hanoi, Missionaries & Cannibal Problem	08
3	AI Search Techniques 3.1 Blind Search Techniques: BFS, DFS, DLS, Iterative deepening Search, Bidirectional Search, and Uniform cost Search 3.2 Heuristic search techniques: Generate and test, Hill Climbing, Best First search, Constraint Satisfaction, Mean-End Analysis, A*, AO*	08
4	Data Warehousing 4.1 Introduction to Data warehouse 4.2 Structure of Data Warehouse 4.3 Advantages & uses of Data Warehouse 4.4 Architecture of Data Warehouse 4.5 Multidimensional data model	08

	4.6 OLAP Vs. OLTP 4.7 OLAP Operations 4.8 Types of OLAP Servers: ROLAP versus MOLAP versus HOLAP	
5	Data Mining 5.1 Introduction to Data Mining 5.2 Data mining Task 5.3 Data mining issues 5.4 Data Mining versus Knowledge Discovery in Databases 5.5 Data Mining Verification vs. Discovery 5.6 Data Pre-processing – Need, Data Cleaning, Data Integration & Transformation, Data Reduction 5.7 Accuracy Measures: Precision, recall, F-measure, confusion matrix, cross-validation, bootstrap 5.8 Data Mining Techniques 5.9 Frequent item-sets and Association rule mining: Apriori algorithm, FP tree algorithm 5.10 Graph Mining: Frequent sub-graph mining 5.11 Software for data mining : R, Weka, Sample applications of data mining 5.12 Introduction to Text Mining, Web Mining, Spatial Mining, Temporal Mining	12
6	Spark 6.1 Introduction to Apache Spark 6.2 Spark Installation 6.3 Apache Spark Architecture 6.4 Components of Spark 6.5 Spark RDDs 6.6 RDD Operations: Transformation & Actions 6.7 Spark SQL and Data Frames 6.8 Introduction to Kafka for Spark Streaming	10
Total		48

Reference Books:

1. Artificial Intelligence by Elaine Rich, Kevin Knight - Tata McGraw Hill, 2nd Edition
2. Artificial Intelligence: A new Synthesis, Nilsson, Elsevier, ISBN 9788181471901
3. Data Mining Concepts and Techniques, by Jiawei Micheline Kamber, Morgan Kaufmann Publishers.
4. Advanced Analytics with Spark by Sandy RyzaPublicatio O'REILLY
5. Apache Spark for Data Science Cookbook by Padma Priya Chitturi

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T.Y.B.B.A.(C.A.) Sem-VI (CBCS 2019 Pattern)

Subject Code: CA-602

Subject: Software Testing

Total Hours: 48

Total Credits: 3

Prerequisite:

1. Students shall have basic Knowledge of Software Engineering.
2. Students shall have basic Knowledge of OOSE.

Objectives:

1. To provide learner with knowledge in Software Testing techniques.
2. To understand how testing methods can be used as an effective tool in providing quality assurance for software.
3. To provide skills to design test case plan for testing software.

Outcomes:

1. Students will be introduced to testing tools.
2. Students will acquire Knowledge of Basic SQA.
3. Students will be able to design basic Test Cases.

Chapter	Course Content	No of lectures
1	Introduction 1.1 Introduction, Nature of errors, 1.2 Testing Objectives 1.3 Testing principles 1.4 Testing fundamentals, 1.5 Software reviews, Formal Technical reviews, 1.6 Inspection and walkthrough 1.7 Testing Life Cycle	10
2	Approaches to Testing –Testing Methods 2.1 White Box Testing and types of white box testing 2.2 Test Case Design 2.3 Black Box Testing and types of black box testing 2.4 Gray Box Testing	5
3	Software Testing Strategies &Software metrics 3.1 Software Testing Process 3.2 Unit Testing 3.3 Integration- Top-down ,Bottom up 3.4 System Testing 3.5 Acceptance Testing (alpha, Beta testing) 3.6 Validation and Verification 3.7 Big Bang Approach 3.8 Sandwich approach 3.9 Performance Testing 3.10 Regression Testing 3.11 Smoke Testing 3.13 Load Testing	10
4	Software metrics 4.1 Introduction 4.2 Basic Metrics –size-oriented metric, Function –oriented metric 4.3 Cyclometric Complexity Metrics Examples on Cyclometric Complexity	10
5	Testing for Specialized Environments 5.1 Testing GUI's 5.2 Testing of Client/Server Architectures 5.3 Testing Documentation and Help Facilities 5.4 Testing for Real-Time Systems	5

6	Testing Tools& Software Quality Assurance (Introduction) 6.1 JUnit, Apache JMeter, Win runner 6.2 Load runner, Rational Robot 6.3 Quality Concepts, Quality Movement, Background Issues, SQA activities 6.4 Formal approaches to SQA 6.5 Statistical Quality Assurance 6.6 Software Reliability 6.7 The ISO 9000 Quality Standards 6.8 SQA Plan 6.9 Six sigma 6.10 Informal Reviews	8
Total		48

Reference Books:

Sr. No.	Title of the Book	Author's Name	Publication
1.	Software Engineering – A Practitioner's approach	Roger S Pressman	7th Edition Tata McGraw-Hill
2.	Effective Methods of Software Testing.	William E Perry	Wiley Publishing Inc
3.	Software Testing Principles and Practices	Srinivasan Desikan, Gopalswamy Ramesh	Pearson Publication
4.	Total Quality Management	DaleH. Besterfield,	Prentice Hall, 2003

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T.Y.B.B.A.(C.A.) Sem-VI (CBCS 2019 Pattern)

Subject Code: CA-603

Subject: Advanced Java

Total Hours: 48

Total Credits: 3

Prerequisite: Students should know basic programming concepts.

Objectives -:

1. To know the concept of Java Programming.
2. To understand how to use programming in day to day applications.

3. To develop programming logic.

Outcomes:

1. Students will know the concepts of JDBC Programming.
2. Students will know the concepts of Multithreading and Socket Programming.
3. Students will know the concepts of Spring and Hibernate.
4. Students will develop the project by using JSP and JDBC.
5. Students will develop applications in Spring and hibernate.

Sr. No	Topic	Number Of Lectures
1.	JDBC 1.1 Introduction 1.2 JDBC Architecture. 1.3 JDBC Process 1.4 Working with ResultSet Interface.	8
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.	12
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.	5
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	11

Reference 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. Spring In Action, Craig Walls, Ryan Breidenbach, Manning Publishing Co., ISBN: 1-932394- 35-4
4. Head First Servlets and JSP: Passing the Sun Certified Web Component Developer Exam -2nd Edition-Bryan Basham, Kathy Sierra, Bert Bates- O'REILLY.

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T.Y.B.B.A.(C.A.) Sem-VI (CBCS 2019 Pattern)

Subject Code: CA-604

Subject: Android Programming

Total Hours: 48

Total Credits: 3

Pre-requisite:

1. Concepts of OOP's.
2. Basic Knowledge About JAVA Programming

Objective:

1. To understand the Android Operating System and develop applications using Google's Android open-source platform.
2. To understand the issues relating to Wireless applications.

Outcome:

1. Student will be able to write simple GUI applications, use built-in widgets and components, work with the database to store data locally, and much more.
2. Demonstrate their understanding of the fundamentals of Android operating systems
Demonstrate their skills of using Android software development tools

Unit	Topic	No. of lectures
1	INTRODUCTION TO Android Programming 1.1 What is Android? 1.2 History and Versions 1.3 Android Architecture 1.4 Basic Building Blocks 1.5 Android API Levels 1.6 Application Structure 1.7 First Hello World Program	04
2	ACTIVITY, INTENT AND LAYOUT 2.1 Introduction to Activity 2.2 Activity life cycle 2.3 Introduction to Intent 2.4 Types of Intent(Implicit and Explicit Intent) 2.5 Layout Manager 2.5.1 View and View Group 2.5.2 Linear Layout 2.5.3 Relative Layout 2.5.4 Table Layout 2.5.5 Grid Layout 2.5.6 Constraint Layout 2.5.7 Frame Layout 2.5.8 Scroll Layout	07
3	BASIC UI DESIGN 3.1 Button(Push Button, Check Box, Radio Button, Toggle Button, Image Button) 3.2 Text Fields 3.3 Spinner 3.4 List View 3.5 Toast 3.6 Scroll View 3.6 ProgressBar View 3.7 Auto Complete Text View 3.8 Dialog Box 3.8.1 Alert Dialog. 3.8.2 DatePicker Dialog. 3.8.3 TimePicker Dialog. 3.8.4 Custom Dialog.	10
4	ADAPTER AND MENU 4.1 Base Adapter 4.2 Array Adapter 4.3 ListView using Adapter 4.4 GridView using Adapter 4.5 Photo Gallery using Adapter	05

	4.6 Using Menu with Views 4.6.1 Option Menu 4.5.2 Context Menu 4.5.3 Popup Menu	
5	THREADS AND NOTIFICATION 5.1 Worker thread 5.2 Handlers & Runnable 5.3 AsynTask (in detail) 5.4 Broadcast Receiver 5.5 Services 5.5.1Service life Cycle 5.5.2 Bounded Service 5.5.2 Unbounded Service 5.6 Notification 5.7 Alarm 5.8 Accessing Phone services(Call,SMS)	06
6	CONTENT PROVIDER 6.1Content Providers 6.2 SQLite Programming 6.3 SQLiteOpenHelper 6.4 SQLiteDatabase 6.5 Cursor 6.6 Searching for content 6.7 Adding, changing, and removing content 6.8 Building and executing queries 6.9 Android JSON	08
7	LOCATION BASED SERVICES AND GOOGLE MAP 7.1 Display Google Maps 7.1.1 Creating the project 7.1.2 Obtaining the Maps API Key 7.1.3 Displaying the Map 7.1.4 Displaying the Zoom Control 7.1.5 Changing Views 7.1.6 Navigating to a specific location 7.1.7 Adding Markers 7.1.8 Getting the location that was touched 7.1.9 Geocoding and Reverse Geocoding 7.2. Getting Location Data 7.3. Monitoring a Location	08
Total Lectures		48

Reference Books:

1. Beginning Android4 Application Development, By Wei-Meng Lee WILEY India Edition WROX Publication
2. Professional Android 4 Application Development, By Reto Meier WROX Publication
3. The official site for Android developers - <https://developer.android.com>

Savitribai Phule Pune University
T.Y.B.B.A.(C.A.) Sem-VI (CBCS 2019 Pattern)
Subject Code: CA-604
Subject: Dot Net Framework

Total Hours: 48

Total Credits: 3

Course Prerequisites:

Student should have basic knowledge of:

- Visual Basic
- HTML
- Object Oriented concepts
- Ms-Access, Mysql, SQL Server

Course Objectives:

- To learn Microsoft framework architecture.
- Understand development of windows application.
- To learn data access mechanism.
- Create and consume libraries.
- Create a web application.
- To develop the website and application.

Course Outcome:

- Use the features of Dot Net Framework along with the features of VB, C# and ASP
- Design and develop window based and web based .NET applications.
- Design and develop a Website.
- Design and Implement database connectivity using ADO.NET for VB, C# and ASP.

Sr.No	Chapter Name	No.of Lectures
1	Introduction to DOT NET FRAMEWORK 1.1 What is Framework? 1.2 Architecture of Dot Net Framework 1.2.1 Common Language Runtime 1.2.2 Common Type System(CTS) 1.2.3 Common Language Specification(CLS) 1.2.3 JIT Compilers 1.2.3 Base Class Library 1.3 IDE (Integrated Development Environment) 1.4 Event Driven Programming	5
2	Introduction to VB.Net 2.1 Basics of VB.Net 2.1.1 Operators 2.1.2 Data Types 2.1.3 Control Structures 2.2 Build Windows Applications 2.2.1 Controls: Form, TextBox, Button, Label, CheckBox, ListBox, ComboBox, RadioButton, DateTimePicker, MonthCalender, Timer, Progressbar, Scrollbar, PictureBox, ImageBox, ImageList, TreeView, ListView, Toolbar, StatusBar, Datagridview 2.2.2 Menus and PopUp Menu 2.2.3 Predefined Dialog controls: Color, Save, File, Open, Font 2.2.4 DialogBox - InputBox(), MessageBox, MsgBox()	11
3	Introduction to C# 3.1 Language Fundamentals 3.1.1 Data type and Control Constructs 3.1.2 Value and Reference Types, Boxing 3.1.3 Arrays 3.1.4 String class and its various operations 3.1.5 Functions 3.2 Object Oriented Concepts 3.2.1 Defining classes and Objects	12

	3.2.2 Access modifiers 3.2.3 Constructors 3.2.4 Inheritance 3.2.5 Interface 3.2.6 Abstract Class 3.2.7 Method Overloading and Overriding 3.2.8 Delegates	
4	Introduction to ASP.NET 4.1 What is ASP.NET? 4.2 ASP.NET Page Life Cycle 4.3 Architecture of ASP.NET 4.4 Forms, WebPages, HTML forms, 4.5 Request & Response in Non-ASP.NET pages 4.6 Using ASP.NET Server Controls 4.7 Overview of Control structures 4.8 Functions 4.9 HTML events 4.9.1 ASP.NET Web control events 4.9.2 Event driven programming and postback 4.10 Introduction to Web forms 4.10.1 Web Controls 4.10.2 Server Controls 4.10.3 Client Controls 4.10.4 Navigation Controls 4.10.5 Validations 4.10.6 Master Page 4.10.7 State Management Techniques	10
5	Architecture of Ado.Net 5.1 Basics of Ado.net 5.1.1 Connection Object 5.1.2 Command Object 5.1.3 Dataset 5.1.4 Data Table 5.1.5 Data Reader Object 5.1.6 Data Adapter Object 5.2 Data gridview & Data Binding: Insert, Update, Delete records 5.3 Navigation Using Data Source	10
Total		48

Reference Books:

- Beginning Visual C#, Wrox Publication
- **Beginning ASP.NET 3.5**, Wrox Publication
- **Programming ASP.NET 3.5** by Jesse Liberty, Dan Maharry, Dan Hurwitz, O'Reilly
- Programming Microsoft Visual Basic .NET – Francesco Balena
- The Complete Reference - Visual Basic .NET – Jeffrey R. Shapiro
- ADO.NET Examples and Best Practices for C# Programmers, By Peter D, Blackburn, William
- VB.NET database programming with ADO.NET - Anne Prince and Doug Lowe

Savitribai Phule Pune University
T.Y.B.B.A.(C.A.) Semester-VI
Subject: Project
Course Code : DSE- 605
Total Credits: 04

For the evaluation / conduction of project separate guidelines will be provided.

T.Y.B.B.A.(C.A.) Semester-VI
Subject: Computer Laboratory Based on 603 and 604(2 credits each)
Course Code: 606
Total Credits: 04

For the conduction of practical's, Practical Assignments are given in the Lab book.

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T.Y.B.B.A.(C.A.) Semester-VI
Subject: Soft Skill
Course Code : CA – 607

Total Hours: 30

Credit:02

Prerequisite:

1. Basic Writing Skills in English including grammar.
2. Basic knowledge in communication and a good understanding of English.
3. Ready to adhere the new techniques.

Objectives:

1. It helps participants to communicate effectively and to carry themselves confidently.
2. They also learn how to identify and overcome the barriers in interpersonal relationships.

3. To improve oral and written communication, teamwork, leadership, problem-solving and decision-making skills, to gain best results.
4. This course is useful for landing a great job, building a career and also finding employment as soft skills trainers.

Outcomes:

1. Understand the significance and essence of a wide range of soft skills
2. Learn how to apply soft skills in a wide range of routine social and professional settings.
3. Learn how to employ soft skills to improve interpersonal relationships.
4. Learn how to employ soft skills to enhance employability and ensure workplace and career success.

Unit	Topics	No. of Lectures
1	Introduction to Soft Skills 1.1 An Introduction to Soft skill - 1.1.1 Definition and Significance of Soft Skills 1.1.2 Soft skill Process 1.1.3 Uses of Soft Skill Development.	02
2	Communication Skills 2.1 Introduction - Components of communication process, Communication process , Effective communication process. 2.2 Types of communication – 2.2.1 Verbal Communication – • Punctuation • Meaning & opposites , vocabulary • Real Life conversations 2.2.2 Non – Verbal Communication - • Facial Expression , Posture , Gesture , Eye contact • appearance (dress code) , Body Language, listening skills • essential formal writing skills	04
3	Skills Development 3.1 Interview Skills – Interviewer and Interviewee – in-depth perspectives. Before, During and After the Interview. Tips for Success. 3.2 Presentation Skills - Types, Content, Audience Analysis, Essential Tips Before, During and After, Overcoming Nervousness. 3.3 Etiquette and Manners - Social and Business 3.4 Time Management - Concept, Essentials, Tips 3.5 Personality Development - Meaning, Nature, Features,	05

	Stages, Models, Learning Skills, Adaptability Skills.	
4	<p>Skill Implementation</p> <p>4.1 Resume writing –</p> <p>4.1.1 How to write your resume.</p> <ul style="list-style-type: none"> • Contact details. • Opening statement. • List of key skills. • List of technical/software skills. • Personal attributes/career overview. • Educational qualifications. • Employment history /volunteering/work placements. • References/referees. <p>4.1.2 Types of resume</p> <p>4.2 Group Discussion - Importance, Planning, Elements, and Skills assessed, Effectively disagreeing, Initiating, Summarizing and Attaining the Objective.</p> <p>4.3 Teamwork and Leadership Skills - Concept of Teams, Building effective teams, Concept of Leadership and honing Leadership skills , A Good Leader, Leaders and Managers , Types of Leaders , Leadership Behaviour.</p>	04
Total		15
Practical Please Refer Lab Book		15

Reference Books :

1. Managing Soft Skills for Personality Development – edited by B.N.Ghosh, McGraw Hill India, 2012.
2. English and Soft Skills – S.P.Dhanavel, Orient Blackswan India, 2010.
3. Soft skills Training – A workbook to develop skills for employment by Fredrick H. Wentz .
4. Personality Development and Soft skills, Oxford University Press by Barun K. Mitra
5. The Time Trap : the Classic book on Time Management by R. Alec Mackenzie