Anekant Education Society's

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

(Autonomous)
SYLLABUS STRUCTURE OF

Bachelor of Business Administration (Computer Application)

Syllabus (CBCS Pattern) under Academic Autonomy for the year 2024-2025

T.Y.BBA (CA) (2022-Pattern)

Semester –V (w.e.f.A.Y.2024-2025)

Subject Code	Subject Name	Credit
UBCA351	Android Application Programming	03
UBCA352	.Net Programming	03
UBCA353A UBCA353B	Elective: Cloud Computing Internet of Things	03
UBCA354A UBCA354B	Elective: Digital Marketing Machine Learning	03
UBCA355	Project	04
UBCA356	Computer Laboratory I [Based on UBCA351]	02
UBCA357	Computer Laboratory II [Based on UBCA352]	02
UBCA358	Computer Laboratory III [Based on UBCA353]	02
	Total	**22**

Semester –VI (w.e.f.A.Y.2024-2025)

Subject Code	Subject Name	Credit
UBCA361	Data Analytics using Python	03
UBCA362	NOSQL Databases	03
UBCA363A UBCA363B	Elective: Big Data Block Chain	03
UBCA364A UBCA364B	Elective: Data Mining Deep Learning	03
UBCA365	Project	04
UBCA366	Computer Laboratory I [Based on UBCA361]	02
UBCA367	Computer Laboratory II [Based on UBCA362]	02
	Certificate Course	02
	Total	**22**

BBA (C.A) Programme Outcome

PO1. Knowledge: To understand and apply the fundamental principles, concepts, and methods in diverse areas of computer science, computer applications, management, mathematics, statistics, etc.

PO2. 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.

PO3. 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.

PO4.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.

PO5. Modern Tool Usage: Create, identify and apply appropriate techniques, skills, and modern computing tools to computing activities.

PO6. Ethics and Social Responsibility: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.

PO7. Individual and Team Work: Ability to work effectively as an individual, and as a member or leader as per need in, multidisciplinary teams.

PO8. Life-Long Learning: Recognize the need and have the ability to engage in independentcontinuous reflective learning in the context of technological advancement.

PO9. Project Management: Understand and apply computing, management principles to manage projects.

PO10. 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.

PO11. 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 T.Y.BBA (C.A.) (w. e. from June, 2024)

Academic Year 2024-2025

Class   : T.Y.BBA (C.A.) (Semester – V)
Paper Code   : UBCA351
Title of Paper: Android Application Programming
Credit: 3   **No. of. Lectures: 48**

A] Course Objective:
1. To understand the Android Operating System and develop applications usingGoogle's Android open-source platform
2. To understand the key forces and constraints acting on handheld devices andknow how to accommodate these when designing and building their own Android applications.
3. To know where to find additional sources of information to understand andsolve Android-related problems.
4. To understand the Android platform's organization, patterns and programmingmechanisms and be able to use them effectively to develop their own Androidapplications.
5. To learn to develop and how to store data in SQLite Data base
6. To understand both the basic and advanced concepts of Android Applicationdevelopment using Java
7. To understand different concepts of android programming like Activity,Intent, Broadcast Receiver, Fragments etc.

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

CO1: Create a seamless user interface that works with different mobile screens.
CO2: Build enterprise level mobile applications with Java on Android.
CO3: Install and configure Android Studio.
CO4: Explain and use key Android programming concepts.
CO5: Deploy the application on Google Play.
CO6: How to use various Layouts and Widgets in Android Applications.
CO7: How to create applications using SQLite database.

Topic/Contents

Unit 1:   **Introduction to Android**   (04L)
        1.1. Overview
        1.2. History
        1.3. Features of Android
        1.4. Architecture of Android
         1.4.1 Overview of Stack
         1.4.2 Linux Kernel
         1.4.3 Native Libraries
         1.4.4 Android Runtime
         1.4.5 Application Framework
         1.4.6 Applications
        1.5. SDK Overview
         1.5.1 Platforms
         1.5.2 Tools – (JDK, SDK, Eclipse/Android Studio,
        ADT, AVD, Android Emulator)
         1.5.3 Versions
       1.6. Creating your first Android Application.

Unit 2:   **Activities, Fragments and Intents**   (05L)
        2.1. Introduction to Activities
        2.2. Activity Lifecycle
        2.3. Introduction to Intents
        2.4. Linking Activities using Intents
        2.5. Calling built-in applications using Intents
        2.6. Introduction to Fragments
        2.7. Adding Fragments Dynamically
        2.8. Lifecycle of Fragment
        2.9. Interaction between Fragments

Unit 3:   **Android User Interface**   (08L)
        3.1. Understanding the Components of a Screen
        3.1.1 Views and ViewGroups
        3.1.2 LinearLayout
        3.1.3 AbsoluteLayout
        3.1.4 TableLayout
        3.1.5 RelativeLayout
        3.1.6 FrameLayout
        3.1.7 ScrollLayout
        3.1.8 ScrollView
        3.2. Adapting to Display Orientation
         3.2.1 Anchoring Views
         3.2.2 Resizing and Repositioning
        3.2. Managing Changes to Screen Orientation
         3.2.1 Persisting State Information during Changes in
        Configuration
         3.2.2 Detecting Orientation Changes
         3.2.3 Controlling the Orientation of the Activity
        3.3. Utilizing Action Bar
        3.3.1 Adding Action Items to the Action Bar
      3.3.2 Customizing the Action Items and Application Icon

Unit 4: **Designing Your User Interface with Views** (10L)

    4.1. Using Basic Views
      4.1.1 Text View
      4.1.2 Button, Image Button, Edit Text, Check Box
      4.1.3 Toggle Button, Radio Button, and Radio Group
          Views
      4.1.4 Progress Bar View
      4.1.5 Auto Complete Text View
    4.2. Using Picker Views
      4.2.1 Time Picker View
      4.2.2 Date Picker View
    4.3. Using List Views to Display Long Lists
      4.3.1 List View
      4.3.2 Using the Spinner View
    4.4. Understanding Specialized Fragments
      4.4.1 Using a List Fragment
      4.4.2 Using a Dialog Fragment
      4.4.3 Using a Preference Fragment

Unit 5: **Displaying Pictures and Menus** (06L)

    5.1. Using Image Views to Display Pictures
      5.1.1 Gallery and ImageView views
      5.1.2 Image Switcher
      5.1.3 Grid View
    5.2. Using Menus with Views
      5.2.1 Creating the helper methods
      5.2.2 Options Menu
      5.2.3 Context Menu

Unit 6: **Databases – SQLite** (04L)

    6.1. Introduction to SQLite
    6.2. SQLiteOpenHelper and SQLite Database
    6.3. Creating , Opening and Closing database
    6.4. Working with Cursors, Insert, Update, Delete
    6.5. Building and Executing queries

Unit 7: **Messaging and E-mail** (03L)

    7.1. SMS Messaging
      7.1.1 Sending SMS Messages Programmatically
      7.1.2 Getting Feedback after Sending a Message
      7.1.3 Sending SMS Messages using Intent
      7.1.4 Receiving SMS Messages
      7.1.5 Caveats and Warnings
    7.2. Sending E-mail

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.co

Class: TYBBA (C.A) (Sem V) **Subject**: BBA (C.A)
Course: Android Application Programming **Course Code**: UBCA351

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

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1	3										
CO 2	3	2									
CO 3				2							
CO 4			3		3						
CO 5				3				3			
CO 6											
CO 7	3								2		2

PO1. **Knowledge:**

CO1 CO2 and CO7 contribute to the development of students' disciplinary knowledge in in android Application development.
CO1 CO2 and CO7 Strongly mapped as the student will develop the deep understanding of basic concept in Android Application programming

PO2. **Problem Analysis:**

CO2 Contribute to the development of students' problem analysis, thinking skills and problem-solving skills. it is Moderately mapped as the students will apply their knowledge to understand the role of SDK in development

PO3. **Design and Development:**

CO4 Strongly mapped as the students will be able to develop and android applications or design the GUI through android programming.

*PO4.***Conduct investigations of complex problems:**

CO5 strongly mapped as student will be able to conduct the investigation and of real word data and design and develop user interfaces for mobile apps using basic building blocks, UI components CO3 Moderately mapped as the students will apply and manipulate the data using database

PO5. **Modern Tool Usage:**

CO4 strongly mapped student will create mobile applications Using android SDK as modern computing tool

PO8. **Life-Long Learning:**

CO5 strongly mapped as it contributes to the development of students' ability to engage in life-long learning as real life data management and application are build using Android

PO9. Project Management:

CO7 moderately mapped as student can create software in android and manage Android projects.

*PO11***. Innovation, employability, and Entrepreneurial skills:**

CO7 moderately relate to employability skills as students are able to analyse and design Android Application Software in professional development.

Class   : T.Y.BBA (C.A.) (Semester - V)
Paper Code   : UBCA352
Title of Paper: .Net Programming
Credit: 3   **No. of. Lectures: 48**

A] Course Objectives:

1. To introduce visual programming and event driven programming practically.
2. To enhance applications development skill of the student.
3. Understanding .NET Framework:
4. Perform basic database operations such as querying and updating data.
5. Integrate .NET applications with other technologies and platforms.
6. To develop websites and applications.

B] Course Outcome:

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

CO1. Implement control flow structures (if statements, loops) in .NET applications.
CO2. Explain the components and architecture of the .NET Framework.
CO3. Develop Desktop and Web Application.
CO4. Demonstrate proficiency in the syntax and basic programming constructs of the .NET programming language
CO5. Connect to databases using ADO.NET and Execute SQL queries and manipulate data in a database.
CO6. Design and Implement database connectivity using ADO.NET for VB, C# and ASP.
CO7. Develop a mindset for continuous learning to keep up with updates and new features in the .NET ecosystem.

Topic/Contents

Unit 1:   **Introduction to .Net Framework**   (06L)

1.1 IDE (Integrated Development Environment)

1.2 Event Driven Programming

1.3 NET Framework

1.4 Architecture of .Net

1.5 Execution Process of .Net Application

1.6 Features of .Net

1.7 Advantages of .Net

1.8 Develop simple .Net Application

Unit 2:   Introduction to VB.Net   (10L)

2.1 Basics of VB.Net
2.2 Operators
2.3 Data Types
2.4 Control Structures
2.5 Build Windows Applications Controls: Form, TextBox, Button, Label,
   CheckBox, ListBox,ComboBox, RadioButton, DateTimePicker,
   MonthCalender, Timer, Progressbar,Scrollbar, PictureBox,
   ImageBox,ImageList, TreeView, ListView, Toolbar, StatusBar,
   Datagridview
2.6 Menus and PopUp Menu
2.7 Predefined Dialog controls: Color,Save,File,Open, Font
2.8 DialogBox - InputBox(), MessageBox, MsgBox()

Unit 3: Introduction to C#   (06L)

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

   3.2.1Defining classes and Objects
   3.2.2Access modifiers
   3.2.4 Constructors
   3.2.5Inheritance
   3.2.6 Interface
   3.2.7Abstract Class
   3.2.8 Method Overloading and Overriding
   3.2.9 Delegates

Unit 4:   Architecture of ADO.Net   (10L)

4.1 Basics of Ado.net
   4.1.1Connection Object
   4.1.2Command Object
   4.1.3Dataset
   4.1.4Data Table
   4.1.5Data Reader Object
   4.1.6 Data Adapter Object
   4.1.7 Data grid view & Data Binding: Insert, Update, Delete records
   4.1.8 Navigation Using Data Source
   4.1.9 Data Validation

Crystal Report (08L)

   5.1 Connection to Database, Table, Queries,

   5.2 Building Report, Modifying Report, Formatting Fields and
      Object Header, Footer, Working with Formula Fields, Parameter
      Fields, Special Fields

   5.3 Working with Multiple Tables..

ASP.Net Web Forms (08L)

   6.1 Introducing ASP.NET web forms: The Role of HTTP, The Role of
      HTML, The Role of Client Side Scripting, Posting Back to the Web
      Server, Interacting with the Incoming HTTP Request, Interacting
      with the Outgoing HTTP Response,

   6.2 The Life Cycle of an ASP.NET Web Page, ASP.NET Web Controls,
      Master Pages, and Themes: Understanding the Nature of Web
      Controls,

   6.3 Building the ASP.NET Cars Web Site, The Role of the
      Validation Controls, Working with Themes

Reference Books:

1. Programming Microsoft Visual Basic.NET – Francesco Balena

2. The Complete Reference -Visual Basic .NET – Jefrey R.

Shapiro 3· Murach's VB.NET database programming with

ADO.NET -Anne

  Prince and Doug Lowe

4· The Visual Basic.NET COACH

5· Visual Basic .NET 2003 in 21 Days. – Steven

  Holzner, SAMS Publications.

6· Mastering Crystal Report - BPB Publication

7· Crystal Report – The Complete Reference:- Tata McGraw Hill

Class: TYBBA (C.A) (Sem V) **Subject**: BBA (C.A)
Course: .NET programming **Course Code**: UBCA352

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

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1			3								
CO 2	3										
CO 3			3								
CO 4	2	2									
CO 5			3	2							
CO 6	3	2	3					2			2
CO7								2			2

PO1. Knowledge:

CO2 CO6 strongly mapped as student will able to understand and Explain the components and architecture of the .NET Framework and MVC architecture.CO4 moderately mapped as Student will able to demonstrate basic concepts of .net programming.

PO2. Problem Analysis:

CO6 CO4 moderately mapped as Student will able apply their knowledge to evaluate .net programs.

PO3. Design and Development:

CO1, CO3, CO5, CO6 Strongly mapped as the students will be able to develop and implement controls in .NET programming and design applications or design the GUI through .NET programming using multiple language like C#, VB and ASP. Student will be able to design and develop windows and web application.

PO4. Conduct investigations of complex problems:

CO5 moderately mapped as student will be able to conduct the investigation and of real word data and design and develop user interfaces using .Net programming.

PO8. Life-Long Learning:

CO6 and CO7 partially mapped as student understand, design and develop the Software using .NET so it contributes to the development of students' ability to engage in life-long learning as real life data management and application are build.

PO11. Innovation, employability, and Entrepreneurial skills:

CO6 CO7 moderately relate to employability skills as students are able to design .net Application inprofessional development

SYLLABUS (CBCS) FOR T.Y.BBA (C.A.) ((w. e. from June, 2024)
Academic Year 2024-2025

Class   : T.Y.BBA (C.A.) (Semester - V)
Paper Code   : UBCA353A
Title of Paper: Cloud Computing
Credit: 3   **No. of. Lectures: 48**

A] Course Objectives:

1. To understand Evolution of Cloud Computing.
2. To learn and apply the Concept of Virtualization.
3. To analyze different Cloud Computing Architectures and Methods.
4. To evaluate the role of SOA and distributed Computing.
5. To learn to create applications using Parallel and Distributed Programming Concepts.

B] Course Outcome:

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

CO1. Apply Virtualization Techniques.
CO2. Analyze the different Architectures followed in Cloud Computing
CO3. Evaluate the use of SOA and Distributed Computing.
CO4. Develop applications using Parallel & Distributed Programming.
CO5. Able to understand basic concepts, principles and paradigm of Cloud Computing
CO6. Able to interpret various Cloud computing models and services.
CO7. Able to understand the need of security in Cloud computing.
CO8. Understand the concept SOA and cloud based storage in Cloud computing.

Topic/Contents

Unit 1: Introduction to Cloud   (09L)
    1.1 Scalable Computing over the Internet
    1.2 Technologies for Network Based Systems
    1.3 System Models for Distributed and Cloud Computing
    1.4 Software Environments for Distributed Systems and Cloud
    1.5 Performance, Security and Energy Efficiency
    1.6 Clustering for Massive Parallelism
    1.7 Computer Clusters and MPP Architecture
    1.8 Design principles of Computer Clusters.

Unit 2: Virtualization   (09L)
    2.1 Implementation Levels of Virtualization
    2.2 Virtualization Structures
    2.3 Tools and Mechanisms
    2.4 Virtualization of CPU, Memory, I/O Devices
    2.5 Virtual Clusters and Resource Management
    2.6 Virtualization for Data-Center Automation.

Cloud Architecture (10L)

        3.1 Cloud Computing and Service Models
        3.2 Data centered Design and Interconnection Networks
        3.3 Architectural Design of Compute and Storage Clouds
        3.4 Public Cloud Platforms
        3.5 Inter Cloud Resource Management
        3.6 Cloud Security and Trust Management..

Unit 4:   **SOA for Distributed Computing** (10L)

        4.1 Services and SOA
        4.2 Message Oriented Middleware
        4.3 Portals and Science Gateways
        4.4 UDDI and Service Registries
        4.5 Publish-Subscribe ,Metadata ,Semantic Web and Grid
        4.6 Basic Workflow–Workflow Standards,
Architecture, Specification Workflow Execution Engine.

Unit 5:   **Programming Model** (10L)

        5.1 Parallel and Distributed Programming Paradigms
        5.2 MapReduce , Twister and Iterative MapReduce
        5.3 Hadoop Library from Apache
        5.4 Mapping Applications
        5.5 Programming Support
        5.6 Google App Engine, Amazon AWS
        5.7 Microsoft Azure– Eucalyptus –Nimbus - Open
Nebula, OpenStack.
        5.8 CloudSim –Architecture, Cloudlets, VM creation, Broker,
          VM allocation, Hosts, Datacenter.

Reference Book:

1. RonaldL.Krutz, Russell DeanVines, "CloudSecurity –Acomprehensive Guide to Secure Cloud Computing", Wiley –India, 2010.
2. John W. Rittinghouse and James F. Ransome, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010.
3. George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud", O'Reilly, 2009.
4. RajkumarBuyya,Christian Vecchiola,S.Tamarai Selvi,"MasteringCloudComputing",TMH, 2013.
5. James E. Smith, Ravi Nair, "Virtual Machines: VersatilePlatforms for Systems and Processes", Elsevier/Morgan Kaufmann, 2005.
6. William von Hagen,"Professional Xen Virtualization",WroxPublications,2008.
  Frank PCoyle,"XML,WebServicesandtheDataRevolution",PearsonEducation,2007.

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

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1		3							2		
CO 2											
CO 3			3								
CO 4			3								
CO 5	3										
CO 6				3	2						
CO7	3							3			
CO8	3										2

PO1. **Knowledge:**

 CO5 CO7, CO8 Strongly mapped as the student will develop the deep understanding of basicconcept of Cloud Computing and storage, security in cloud

PO2. **Problem Analysis:**

CO1 strongly Contribute to the development of students' problem analysis as student will able to analyse different cloud architecture.

PO3. **Design and Development:**

CO3, CO4 Strongly mapped as the students will be able to design, develop and evaluate applicationsbased on cloud

*PO4.***Conduct investigations of complex problems:**

CO6 strongly mapped as student will be able to conduct the investigation and of real word huge amount of data and interpret various Cloud computing models and services.

PO5. **Modern Tool Usage:**

CO6 moderately mapped student will use different modern tools to compute data.

PO8. **Life-Long Learning:**

CO7 strongly mapped as it contributes to the development of students' ability to engage in life-longlearning as real life data management and application using Cloud technologies.

PO9. Project Management:

CO1 moderately mapped as student can create virtualization and use different services provided bycloud in project management.

*PO11***. Innovation, employability, and Entrepreneurial skills:**

CO8 moderately relate to employability skills as students are able to use different cloud based technologies and SOA architecture in professional development

Class: T.Y.BBA (C.A.) (Semester - V)
Paper Code: UBCA353B
Title of Paper: Internet of Things
Credit: 3   **No. of. Lectures: 48**

A] Course Objectives:

1. To understand Smart Objects and IoT Architectures
2. To learn about various IoT-related Protocols
3. To build simple IoT Systems using Arduino and Raspberry Pi.
4. To understand Data Analytics and Cloud in the context of IoT
5. To develop IoT Infrastructure for popular Applications

B] Course Outcome:

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

CO1. Identify the Components that forms part of IoT Architecture.

CO2. Understand the role of sensors, actuators, and communication protocols in IoT.

CO3. Determine the most appropriate IoT Devices and Sensors based on Case Studies.

CO4. Setup the connections between the Devices and Sensors.

CO5. Evaluate the appropriate Protocol for Communication between IoT.

CO6. Analyze the Communication Protocols for IoT.

CO7. Diagnose and troubleshoot issues in IoT systems.

Topic/Contents

Unit 1   Fundaments of IOT   (09L)
    1.1 Evolution of Internet of Things
    1.2 Enabling Technologies
    1.3 IoT Architectures: oneM2M, IoTWorldForum(IoT WF)and Alternative
       IoT models
    1.4 Simplified IoT Architecture and Core IoT Functional Stack
    1.5 Fog, Edge and Cloud in IoT
    1.6 Functional Blocks of an IoT Ecosystem
    1.7 Sensors, Actuators, Smart Objects and Connecting Smart Objects
    1.8 Security Concerns and Challenges

Unit 2:   IOT Protocols   (09L)
    2.1 IOT Access Technologies: Physical and MAC layers, Topology
    and Security of IEEE 802.15.4, 802.15.4g, 802.15.4e,1901.2a,
    802.11ah and Lora WAN
    2.2 Network Layer: IP versions, Constrained Nodes and
    Constrained Networks
    2.3 Optimizing IP for IoT: From 6LoWPANto 6Lo, Routing over
    Low Power and Lossy Networks
    2.4 Application Transport Methods: Supervisory Control and Data
    Acquisition
    2.5 Application Layer Protocols: CoAP and MQTT

Unit 3:   **Design & Development**   (09L)

       3.1 Design Methodology
       3.2 Embedded Computing Logic
       3.3 Micro-Controller, System on Chips
       3.4 IOT system Building blocks
       3.5 Arduino
       3.6 Board details, IDE Programming
       3.7 Raspberry Pi
       3.8 Interfaces and RaspberryPi with Python Programming.

Unit 4:   **Data Analytics And Supporting Services**   (09L)

       4.1 Structured Vs Unstructured Data
       4.2 Data in Motion Vs Data in Rest
       4.3 Role of Machine Learning
       4.4 No SQL Databases
       4.5 Hadoop Ecosystem
       4.6 Apache Kafka, Apache Spark
       4.7 Edge Streaming Analytics and Network Analytics
       4.8 Xi vely Cloud for IoT, Python Web Application Framework
       4.9 Django
       4.10 AWS for IOT
       4.11 System Management with NETCONF
       4.12 YANG

Unit 5:   **Case Studies/ Industrial Applications**   (12L)

       5.1 Cisco IOT System
       5.2 IBM Watson IOT Platform
       5.3 Manufacturing
       5.4 Converged Plant wide Ethernet Model (CPwE)
       5.5 Power Utility Industry
       5.6 Grid Blocks Reference Model
       5.7 Smart and Connected Cities: Layered Architecture, Smart Lighting,
          Smart Parking Architecture and Smart Traffic Control

Reference Books:

1. Arshdeep Bahga,VijayMadisetti,―Internet of Things–Ahands-on approach, Universities Press,2015
2. Olivier Hersent,David Boswarthick,OmarElloumi ,―TheInternetof Things–Key applications and Protocols, Wiley, 2012 (for Unit 2).
3. Jan Ho¨ller, VlasiosTsiatsis,CatherineMulligan,Stamatis , Karnouskos, Stefan Avesand. David Boyle, "From Machine-to-Machine tothe Internet of Things –Introductiontoa New Ageof Intelligence",Elsevier,2014.
4. Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), ―Architecting the Internet of Things, Springer, 2011
5. Michael Margolis, Arduino Cookbook, Recipes to Begin, Expand, and Enhance Your Projects, 2 nd Edi tion, O'ReillyMedia, 2011.
6. Dieter Uckelmann, Mark Harrison, Florian Michahelles, Architecting the Internet of Things, Springer publications.
7. Marco Schwatrz, Internet of Things with Arduino Cookbook, Packt Publications.
8. 1Internet of Things and Data Analytics, Wiley Publications.

Class: TYBBA (C.A) (Sem V)   **Subject**: BBA (C.A)
Course: Internet of Things   **Course Code**: UBCA353B
Weightage: 1= weak or low relation, 2= moderate or partial relation, 3= strong or direct relation

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1	3										
CO 2	3										
CO 3				3							
CO 4			3								
CO 5				3				2		1	
CO 6		3									
CO7				3							2

PO1. **Knowledge:**

 CO1 CO2 strongly contribute to the development of students' disciplinary knowledge in the field ofIoT as student will able to understand and different components and architecture.

PO2. **Problem Analysis:**

CO6 strongly mapped as the Students will able to analyze the Communication Protocols for IoT.

PO3. **Design and Development:**

CO4 Strongly mapped as the students will be able to design, develop and establish the connectionsbetween the Devices and Sensors.

*PO4.***Conduct investigations of complex problems:**

CO3, CO5, CO7 strongly mapped as student will be able to conduct the investigation Determine themost appropriate IoT devices and Sensors and Diagnose and troubleshoot issues in IoT systems.

PO8. **Life-Long Learning:**

CO5 moderately mapped as it contributes to the development of students' ability to engage in life-long learning as they understand different IoT devices, Protocol, sensors for Communication between IoT.

PO10. **Communication:**

CO5.weakly relate as it performs evaluation of appropriate Protocol for Communication between IoT.

*PO11***. Innovation, employability, and Entrepreneurial skills:**

CO7 moderately relate to employability skills as students can able to diagnose and troubleshoot issues in IoT systems

SYLLABUS (CBCS) FOR T.Y.BBA (C.A.) ((w. e. from June, 2024)
Academic Year 2024-2025

Class: T.Y.BBA (C.A.) (Semester - V)

Paper Code: UBCA354A

Title of Paper: Digital Marketing

Credit: 3 **No. of. Lectures: 48**

A] Course Objectives:

1. To give knowledge about using Digital Marketing in and as Business.

2. To make SWOT Analysis, SEO Optimization and use of various Digital Marketing tools

3. To create a Measurable and Goal Oriented Website or Marketing Plan.

4. to equip students with the ability to understand and subsequently create strategic and targeted campaigns using digital media tools.

B] Course Outcome:

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

CO1. Explain why we get a huge list of Webpages as a result of a Search.
CO2. Examine why a certain Webpage is ranked higher compared to others.
CO3. Organize how we can ethically boost the ranking of our Webpage.
CO4. Describe some of the latest Technologies used in Digital Marketing.
CO5. Conduct market research using digital tools and techniques.
CO6. Develop and implement a content marketing strategy.
CO7. Effectively communicate digital marketing strategies and results.

Topic/Contents

Unit 1: **Introduction** (04L)
     1.1 Understanding Internet Marketing
     1.2 Search Engine Optimization
     1.3 Search Engine Marketing
     1.4 Email Marketing
     1.5 Digital Display Marketing

Unit 2: **Introduction to New Age Media (Digital) Marketing** (04L)
     2.1 What is Digital Marketing
     2.2 Digital vs. Real Marketing
     2.3 Fundamentals of Digital marketing & Its Significance
     2.4 Skills in Digital Marketing, Digital marketing Plan.
     2.5 Digital Marketing Channels
     2.6 Types of Digital Marketing(Overview)-Internet Marketing ,
        Social Media Marketing, Fundamentals of Social Media
        Marketing and its significance Mobile Marketing, Email
        Marketing

Unit 3: **Creating Initial Digital Marketing Plan** (04L)
    3.1 Content Management
    3.2 SWOT Analysis: Strengths, Weaknesses, Opportunities, and
        Threats
    3.3 Target Group Analysis EXERCISE: Define a Target Group

Unit 4: **Marketing using Web Sites** (04L)
    4.1 Website Planning & Development- Website, Types of
        Websites, Phases of website development
    4.2 Web Design
    4.3 Optimization of Web sites
    4.4 MS Expression Web EXERCISE: Creating web sites,
        MS Expression

Unit 5: **Search Engine Optimization** (04L)

    5.1 Introduction to SEO, How Search engine works, SEO Phases,
        History Of SEO, Types Of SEO technique, Keywords
        Planner tools
    5.2 SEO Optimization
    5.3 Writing the SEO Content EXERCISE: Writing the
        SEO Content

Unit 6: **Customer Relationship Management**
    6.1 Introduction to CRM (04L)
    6.2 Types of CRM (Analytical, Operational, Communicational,
        Collaborative)
    6.3 CRM platform
    6.4 CRM models EXERCISE: CRM Strategy

Unit 7: **Social Media Marketing**
    7.1 Understanding Social Media Marketing (20L)
    7.2 Social Networking (Facebook, Linkedin, Twitter, etc.)
    Social Media (Blogging, Video Sharing - Youtube, Photosharing
    Instagram, Podcasts)
    7.3 Web Analytics - levels
    7.4 Modes of Social Media Marketing
    7.4.1 Creating a Facebook page Visual identity of a Facebook
    page , Types of publications, Facebook Ads ,Creating Facebook
    Ads , Ads Visibility
    7.4.2 Business opportunities and Instagram options
    Optimization of Instagram profiles , Integrating Instagram
    with a Web Site and other social Networks ,Keeping up
    with posts
    7.4.3 Business tools on LinkedIn Creating Campaigns
    on LinkedIn , Analysing Visitation on LinkedIn
    7.4.4 Creating Business accounts on YouTube,
    YouTube- Advertising , YouTube Analytics
    7.4.5 E-mail Marketing E-mail Marketing plan , E-
    mail Marketing Campaign Analysis , Keeping
    up with Conversions

7.5 Digital Marketing tools: Google Ads, FaceBook Ads,
Google Analytic, Zapier, Google Keyword Planner
EXERCISE:
Social Media Marketing plan. EXERCISE:
Making a Facebook page and Google Ads

Unit 8:   **Digital Marketing Budgeting**   (04L)
8.1 Resource Planning
8.2 Cost Estimating
8.3 Cost Budgeting
8.4 Cost Control

Reference Books:

1) Digital Marketing for Dummies By Ryan Deiss and Russ Hennesberry

2) Advertising and Promotion: An Integrated Marketing Communications Perspective,

   George Belch, San Diego University Michael Belch, San Diego University

3) Advertising Management: Rajeev Batra, John G. Myers, David A. Aaker

4) Belch: Advertising & Promotions (TMH) 5) The Social Media Bible: Tactics,

   Tools, & Strategies for Business Success by Lon Safko 6) Web Analytics 2.0 –

   Avinash Kaushik.

Class: TYBBA (C.A) (Sem V) **Subject**: BBA (C.A)
Course: Digital Marketing **Course Code**: UBCA354A

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

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1	2							1			
CO 2		3		3							
CO 3			2								
CO 4	3										
CO 5				3			1				
CO 6			3		3						2
CO7										2	

PO1. **Knowledge:**
CO4 strongly mapped as student will get the knowledge of digital marketing and learn different latest technologies.CO1 moderately mapped as the student will develop the deep understanding of concept of digital marketing and Explain SEO working for web search.

PO2. **Problem Analysis:**
CO2 strongly Contribute to the development of students' problem analysis, thinking skills in Search engines and able to trace how certain Webpage is ranked higher compared to others.

PO3. **Design and Development:**
CO6 Strongly mapped as the students will be able to develop different digital marketing websites.CO3 moderately mapped as student will able to organize how to boost the ranking of webpage and implement according.

PO4. **Conduct investigations of complex problems:**
CO2 and CO5 strongly mapped as student will be able to conduct the investigation related to digitalmarketing strategies and recent technologies also conduct market research using digital tools.

PO5. **Modern Tool Usage:**
CO6 strongly mapped student will able to use different modern digital tool for Developing and implementing a content marketing strategy.

PO7. **Individual and Team Work:**
CO5 weakly mapped as in digital marketing student will have Ability to work effectively as an individual, and as a member or leader as per need in, multidisciplinary teams.

PO8. **Life-Long Learning:**
CO1 weakly mapped as it contributes to the development of students' ability to engage in life-longlearning in SEO and digital marketing technologies.

PO10. Communication:
CO7modarately mapped as student will able to use interpersonal skills and communicate effectively with the professionals and with society to convey business information effectively using digital marketing strategies.

PO11. **Innovation, employability, and Entrepreneurial skills:**
CO6 moderately relate to employability skills as students are able to Develop and implement a content marketing strategy in professional development and get the employability.

SYLLABUS (CBCS) FOR T.Y.BBA (C.A.) ((w. e. from June, 2024)
Academic Year 2024-2025

Class: T.Y.BBA (C.A.) (Semester - V)
Paper Code: UBCA354B
Title of Paper: Machine Learning
Credit: 3   **No. of. Lectures: 48**

A] Course Objectives:

1. To study the basics of Machine Learning.
2. To learn Linear Models.
3. To understand distance-Based Clustering Techniques.
4. To know about Tree and Rule-Based Models.
5. To understand Ensemble Learning.

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

CO1. Understand the Concepts of Machine Learning
CO2. Apply the Linear Modelling Techniques to solve a Problem
CO3. Understand Distance-Based Clustering Techniques
CO4. Design Tree and Rule-Based Models
CO5. Apply machine learning techniques to real-world problems.
CO6. Describe and compare various machine learning algorithms, such as linear regression, decision trees, support vector machines, and neural networks.
CO7. Understand the strengths and weaknesses of different algorithms in different contexts.

Topic/Contents

Unit 1:   **Introduction to Machine Learning**   (09L)
1.1 Task: Problems solved with Machine Learning,
Looking for Structure, Performance Evaluation -
1.2 Models: Geometric Models, Probabilistic Models,
Logical Models, Grouping and Grading
1.3 Features
1.4 Binary Classification: Classification, Scoring and Ranking,
Class Probability Estimation
1.5 Handling more than Two Classes
1.6 Regression-Movie genre Identification and Rating
System

Unit **2:**   **Linear Models**   (09L)
2.1 Concepts: Supervised, Unsupervised and DescriptiveLearning
2.2Hypothesis Space
2.3 Linear Classification
2.3.1 Univariate Linear Regression
2.3.2 Multivariate Linear Regression
2.3.3 Logistic Regression
2.4 Perceptron
2.5 Multilayer Neural Networks
2.6 Learning Neural Networks Structures
2.7 Support Vector Machines
2.8 Credit Card Approval System

Unit **3:** **Distance Based Models** (10L)

    3.1 Distance and Measure

    3.2 Neighbors and Examples

    3.3 Nearest Neighbor Classification

    3.4 Distance Based Clustering: K-means Algorithm, Clustering around Medoids

    3.5 Clustering using Kernels

    3.5.1 Silhouettes

    3.5.2 Hierarchical Clustering

    3.5.3 Document Clustering

Unit **4:** **Tree & Rule Models** (10L)

    4.1 Decision Trees

    4.2 Ranking and Probability Estimation Trees

    4.3 Regression Trees

    4.4 Clustering Trees

    4.5 Ordered Rule lists

    4.6 Unordered Rulelists

    4.7 Descriptive Rule

    4.8 First- order Rule

    4.9 Spam Filtering

Unit **5:** **Model Ensembles** (10L)

    5.1 Features

    5.1.1 Kinds of Feature

    5.1.2 Feature Transformation

    5.1.3 Feature Construction and Selection

    5.2 Ensemble Learning: Bagging and Random Forests

    5.3 Boosting: Boosted Rule Learning

    5.4 Mapping the Ensemble Landscape : Bias, Variance, Margin, other ensemble Methods

    5.5 Meta Learning-Diabetes Diagnosis System.

Reference Book:

1. Brink Henrik, Richards Joseph W & Fetherolf Mark, "Real-World Machine Learning", 2nd Edition, Drea mtech Press, 2017

2. Manaranjan Pradhanand Dinesh KumarU.,"Machine LearningusingPython",Wiley India Pvt.Ltd.,2019.

3. K.P. Murphy,"MachineLearning:Aprobabilistic perspective",MITPress,2012.

4. C. M.Bishop,"Pattern Recognitionand MachineLearning",Springer, 2007.M.Mohri,A. Rostamizadeh,andA.Talwalkar,"FoundationsofMachineLearning",MITPress,2012.

5. Peter Flach ,Machine Learning-The Art and Science of Algorithms that make sense

Class: TYBBA (C.A) (Sem V) **Subject**: BBA (C.A)
Course: Machine Learning **Course Code**: UBCA354B

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

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1	3										
CO 2	2				3						
CO 3	3										
CO 4			3								
CO 5					3						
CO 6	3	2						2			2
CO7								2			

PO1. **Knowledge:**

 CO1, CO2, CO3 and CO6 Strongly mapped as the student will develop the deep understanding of basic concept in Machine learning, learn different modelling techniques and algorithms in Machine learning.

PO2. **Problem Analysis:**

CO2 Moderately mapped as the students will apply their knowledge to problem analysis problem solving on different datasets of ML.

PO3. **Design and Development:**

CO4 Strongly mapped as the students will be able to develop different ML models using machine learning techniques to real-world problems.

PO5. **Modern Tool Usage:**

CO2 and CO5 strongly mapped student will use different tools to build Machine learning models.

PO8. **Life-Long Learning:**

CO6, CO7 moderately as student will get knowledge about different machine learning algorithms, such as linear regression, decision trees, support vector machines, and neural networks. Also know the strengths and weaknesses of different algorithms in different   Contexts as lifelong learning.

PO9. Project Management:

CO7 moderately mapped as student can create software in android and manage Android projects.
PO11. **Innovation, employability, and Entrepreneurial skills:**

CO6 moderately relate to employability skills as students will have different opportunities using machine learning for real life data.

SYLLABUS (CBCS) FOR T.Y.BBA (C.A.) ((w. e. from June, 2024)
Academic Year 2024-2025

Class : T.Y.BBA (C.A.) (Semester - V)
Paper Code : UBCA355
Title of Paper: Project
Credit: 4 No. of. Lectures: 48

A] Course Objectives:

1. To introduced project planning.

2. To examine the stages of project planning: Scoping, Execution estimation, analysisand Designing.

3. To focus on the tools available to a project planner.

4. To discuss project planning and the planning process.

5. To meet all project goals successfully.

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

CO1. Learn project management.
CO2. Become systems thinkers.
CO3. Become explorers.
CO4. Become problem-solvers.
CO5. More engaged in the learning process.
CO6. Learn to take creative risks.
CO7. Students are provided to work on multidisciplinary Problems.
CO8. Students should be able to design and construct a hardware and software system,component, or process to meet desired needs.

Evaluation:

External Evaluation	Marks
Project Report	30
Power Point Presentation	10
Viva	20
Project Logic	20
Project Demonstrations	20
Total	**100**

Class: TYBBA (C.A) (Sem V) **Subject**: BBA (C.A)
Course: Project **Course Code**: UBCA355

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

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1	3		2						3		
CO 2		3	2						3		
CO 3		3	2						3		
CO 4		3	2						3		
CO 5			2		2			3	3		
CO 6			2						3		
CO7			2	3			2		3		
CO8			2		3				3		3

PO1. **Knowledge:**

 CO1 Strongly mapped as the student will develop the deep understanding of flow of System to be designed and developed.

PO2. **Problem Analysis:**

CO2 CO3 CO4 Contribute to the development of students' problem analysis, thinking skills and problem-solving skills. it is Moderately mapped as the Students will apply their knowledge to understand they system and project development

PO3. **Design and Development:**

CO1 CO2, CO3 CO4CO5 CO6 CO7 CO8 moderately mapped as the students will be able to design develop, test and work on multidisciplinary Problems in project development

PO4. **Conduct investigations of complex problems:**

CO7 strongly mapped as student will be able to conduct the investigation and of real word data and design and develop user interfaces for real world scenario.

PO5. **Modern Tool Usage:**

CO 8 strongly mapped student will develop different applications Using modern computing tool and frameworks.CO5 moderately mapped as student will engage themselves in learning of project management

PO8. **Life-Long Learning:**

CO5 strongly mapped as student will engage themselves in learning of project management as it contributes to the development of students' ability to engage in life-long learning as real life data management

PO9. Project Management:

CO1 CO2, CO3 CO4CO5 CO6 CO7 CO8 strongly mapped as student can create software's and learnthe complete lifecycle of project management

PO11. **Innovation, employability, and Entrepreneurial skills:**

CO8 strongly relate to employability skills as students should be able to design and construct a hardware and software system, component, or process to meet desired.

SYLLABUS (CBCS) FOR T.Y.BBA (C.A.) ((w. e. from June, 2024)
Academic Year 2024-2025

Class   : T.Y.BBA (C.A.) (Semester - V)
Paper Code: UBCA356
Title of Paper: Computer Laboratory I (based on UBCA351)
Credit: 2   **No. of. Lectures: 48**

Course Objective:

1. Creating robust mobile applications and learn how to integrate them with other services
2. Creating intuitive, reliable mobile apps using the android services and components
3. Create a seamless user interface that works with different mobile screens
4. Create an Android application for data storage using SQLite.

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

CO1. Build enterprise level mobile applications with Java on Android.

CO2. Understand both the basic and advanced concepts of Java.

CO3. Understanding and implementing the lifecycle methods of an Android activity.

CO4. Install and configure Android Studio.

CO5. Explain and use key Android programming concepts.

CO6. Using intents for inter-component communication.

CO7. Deploy the application on SQLite Database, Activity, Views, and View Groups.

Topics/Content

1. Create application using linear layout for addition of two number and display result by usingtoast.
2. Create a Simple Application Which Send ―Hello‖ message from one activity to another withhelp of Button (Use Intent).
3. Create application using linear layout for multiplication of two number and display result byusing toast.
4. Create a Simple Application, which read a positive number from the user and display its factorial value in another activity
5. Create following Vertical Scroll View in Android.
6. Create an application to create Login Form using LinearLayout
7. Create an Android Application that Demonstrate ContextMenu for a Button having menu items file ,edit, view.
8. Design a Registration form having name, surname, sex, address, phone number. Use appropriate widget.
9. Create a application of basic arithmetic operations
10. Create an app that uses radiobutton group of all courses in your college. On selecting one of the buttons, the selected of that course should be displayed in a textview control at the bottomof the screen.

11. Create an application that takes the name from a text box and shows hello message along with

    the name entered in text box, when the user clicks the OK button.
12. Create a screen that has input boxes for User Name, Password, Address, Gender(radio buttons for male and female), Age (numeric) and a Submit button. On clicking the submit button, print all the data below the Submit Button
13. Create an application to accept Movie details like Name, Release Year, Collection and display the same information on the next activity using TableLayout.
14. Use linear layout to create a simple application that will take the contents of a predefined textview and use a button to cause the application to take that text, convert it to uppercase, and display it in an edittext field
15. Create an Android Application that Demonstrate ContextMenu
16. Create a spinner application with strings taken from resource directory res/values/strings.xml and on changing the spinner value, image will change. Image is saved in the drawable directory.
17. Design an application to accept temperature in Fahrenheit and convert into Celsius. Use TableLayout
18. Create an Android Application that Demonstrate Custom ListView which shows the BookName and Author Name
19. Construct an Android Application to accept a number and calculate Factorial and Sum of Digits of a given number using Context Menu.
20. Create an Android App, it reads the Students Details (Name, Surname, Class, Gender, Hobbies, Marks) and Display the all information in another activity in table format on click ofSubmit button
21. Create an Android App with Login Screen. On successful login, gives message go to next Activity (Without Using Database& use Table Layout).
22. Design Screens Using RadioButtons & CheckBoxes. Display the selected text using Toast
23. Construct an application to accept a number and calculate Palindrome and Reverse and Reverse of a number using Menu.
24. Create First Activity to accept information of Employee First Name, Middle Name, Last Name, Date of birth, Address, Email ID and display all information on Second Activity whenuser click on Submit button.
25. Create an Android application to demonstrate phone call using Implicit Intent.

Class: TYBBA (C.A) (Sem V) **Subject**: BBA (C.A)
Course: Computer Laboratory I (based on UBCA351) **Course Code**: UBCA356

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

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1			3		3				3		
CO 2	3										
CO 3	3	1	3								
CO 4								3			
CO 5	2										
CO 6										2	
CO7											3

PO1. **Knowledge:**

 CO2 CO3 strongly contribute to the development of students' disciplinary knowledge in in android Application development.
 CO5 moderately mapped as the student will develop understanding of basic concept in Android Application programming

PO2. **Problem Analysis:**

CO3 weakly Contribute to the development of students' problem analysis, thinking skills and problem-solving skills as the Students will apply their knowledge to understand the role of android SDK.

PO3. **Design and Development:**

CO1, CO3 Strongly mapped as the students will be able to develop and android applications or design the GUI through android programming.

PO5. Modern Tool Usage:

CO1 strongly mapped student will create mobile applications Using android SDK as modern computing tool

PO8. **Life-Long Learning:**

CO4 strongly mapped as it contributes to the development of students' ability to engage in life-long learning as real life data management and application are build using Android

PO9. Project Management:

CO1 Strongly mapped as student can create software in android and manage Android projects.

PSO10. Communication:

CO6 moderately mapped as intents are used for inter-component communication.

PO11. **Innovation, employability, and Entrepreneurial skills:**

CO7 strongly relate to employability skills as students are able to analyse and design Android Application Software in professional development.

Academic Year 2021-2022

Class   **: T.Y.BBA (C.A.) (Semester - V)**

Paper Code   **: UBCA357**

Title of Paper: Computer Laboratory based on (UBCA352)

Credit: 2   **No. of. Lectures: 48**

     A]   **Course Objectives:**
  1. Explain the architecture of Dot Net Technology.
  2. Develop form based simple Net applications using basic and advanced control
  3. Develop multiple form and menu based .Net applications
  4. Develop ADO.Net based database
  5. Implement and trouble shoot simple .Net Applications

     B]   **Course Outcome:**

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

CO1. Set up and configure a .NET development environment, including the installation of Visual Studio or Visual Studio Code.

CO2. Use Visual Studio IDE to design application.

CO3. Develop GUI Application using Form Controls and its events.

CO4. Apply Object Oriented concepts in GUI Application.

CO5. Use Data access controls to store data in Database and retrieve it.

CO6. Use Data Binding in GUI Application

CO7. Understand deployment considerations for different types of .NET applications..

Topic/Contents

1. Write a Vb.net program to check whether entered string is palindrome or not.
2. Write a Vb.net program for blinking an image.
3. Write a Vb.Net program to move the Text "TC College" continuously from Left to Right.
4. Write a Vb.net program to accept a number from an user through InputBox and display its multiplication table into the ListBox.
5. Write a Vb.net program to accept n numbers through InputBox and count the number of Armstrong and Perfect numbers among them and display their count by using messagebox
6. Write a Vb.net program to add two TextBoxes, two Labels and one button at runtime. Accepttwo numbers in textboxes and handle DivideByZeroException.
7. Write a Vb.net program to design following screen, accept the details from the user. Clicking on Submit button Net Salary should be calculated and displayed into the TextBox. Display theMessageBox informing the Name and Net Salary of employee.

8. Write a Vb.net program to accept number from user into the TextBox. Calculate the square root of that number also convert the entered number into binary number and display result intothe Message Box

9. Design a Vb.net form to pick a date from DateTimePicker Control and display day, month andyear in separate text boxes.

10. Write a Vb.net program to accept a character from keyboard and check whether it is vowel or not. Also display the case of that character.

11. Write a Vb.net program to accept sentences in text box and count the number of words and display the count in message box.

12. Write a Vb.net program to design the following form, accept the numbers through textbox and add them into the ListBoxe1 by clicking on Add button. When user click on Prime button then all the prime numbers from ListBox1 should get added into ListBox2.

13. Write a Vb.net program to design the following form, allow the user to select radio buttons from Gender and Age Panel. After Selection appropriate CheckBox from Right Panel should be selected automatically. Display appropriate message into the MessageBox by clicking on Ok button.

14. Write a Vb.net program to design the following form, select the question number from combo box that question will be displayed into textbox and the options for that question will be displayed on four radio buttons, select option and click on submit button result should be

displayed in another textbox.
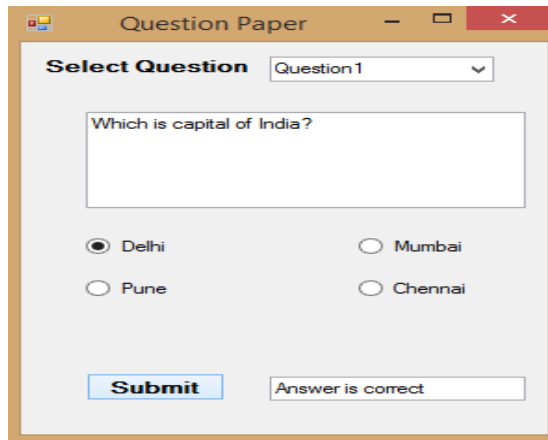
15. Write a Vb.net program to generate Sample TreeView control shown in following form:
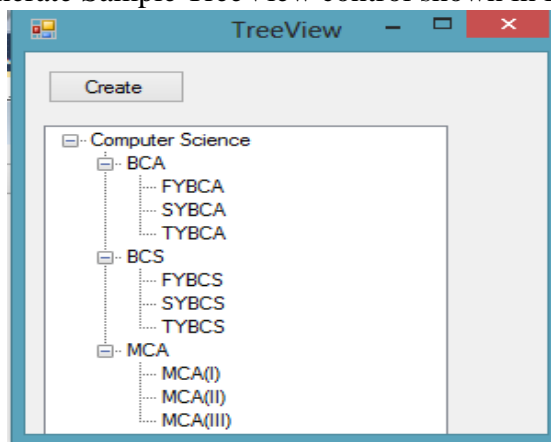
16. Write a Vb.net program to design the following form, it contains the three menus Color (Red,Blue,Green) ,Window(Maximize, Minimize, Restore) and Exit. On Selection of any menu or submenu result should affect the form control(for example if user selected Red color from Color menu back color of form should get changed to Red and if user selected Maximize from Window Menu then form should get maximized).
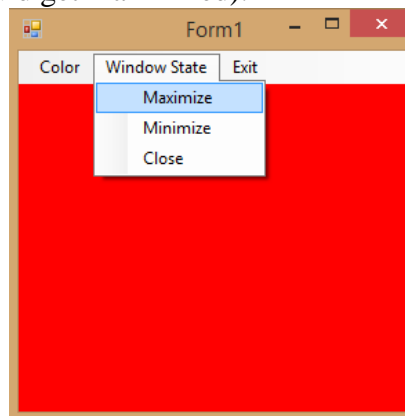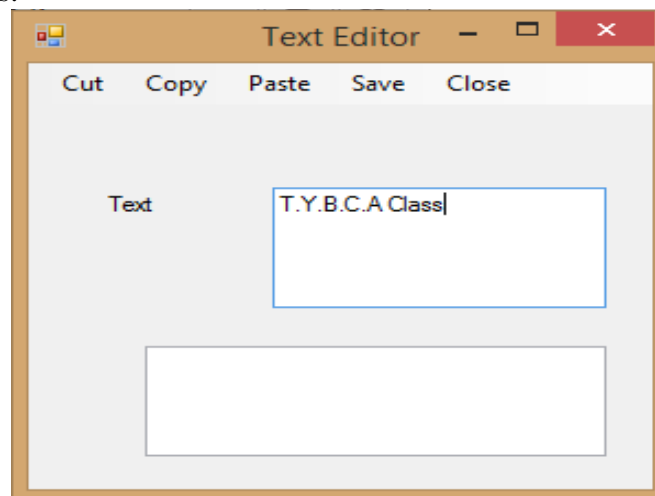

17. Write a Vb.net program to design the following form, this program shows the details of students in the form of form (use split container or Groupbox control to separate the input andoutput session).
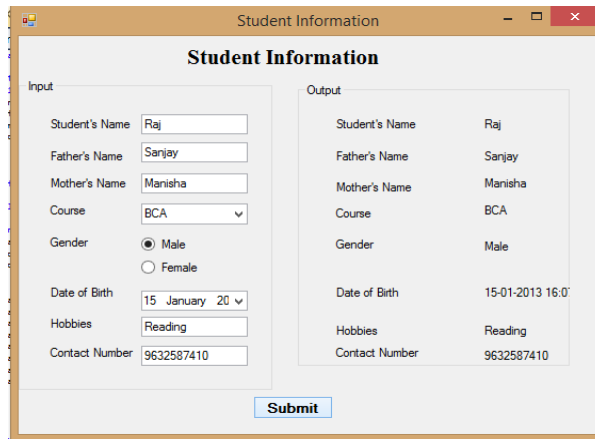
18. Write a Vb.net program to design the following form, accept all details from user and display the details through message box.
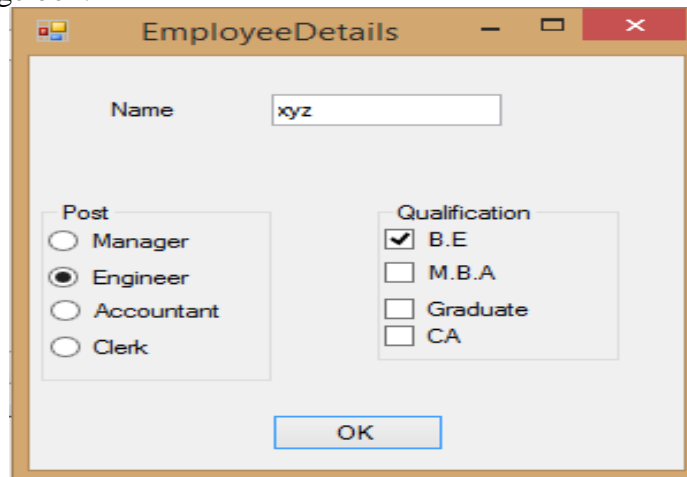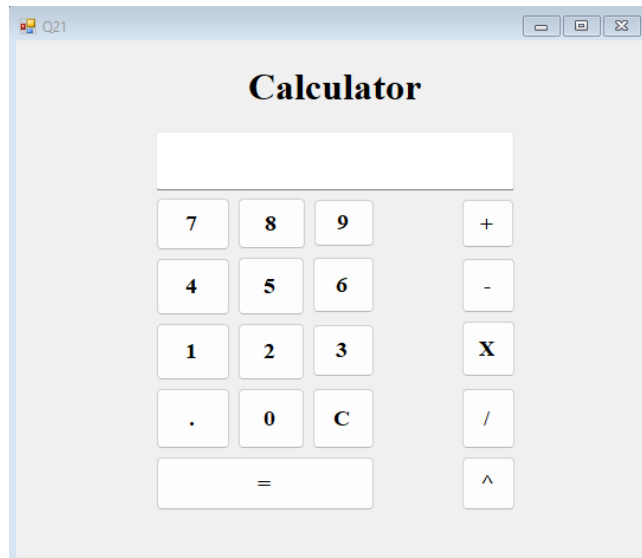

19. Develop the menu based Vb.net application to implement a text editor with cut, copy, paste, save, close operations.
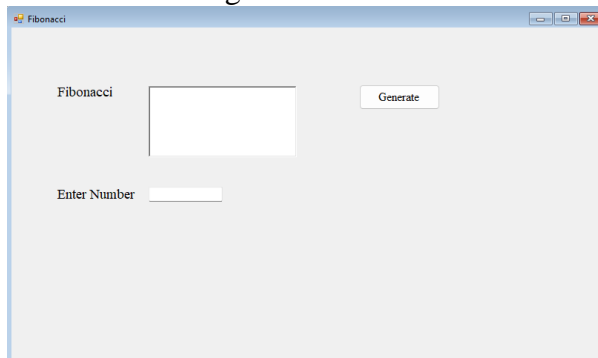

20. Write a VB.NET program to do the following operations on RichTextBox values
    i) Font Style
    ii) Font Color
    iii) Save
    iv) Open

21. Create a project to design a calculator using control array

22. Write a program, using recursive function to generate Fibonacci Series.

23. Write a program to calculate pay that takes two parameters hours and wages and display the total pay of an employee.
24. Write a program to print first n square less than 50 and print the sum of the all the square of the n number
25. Create a project for book sales. Make text boxes for quantity, title and price with labels. Calculate total price, discount (15%) and discounted price.
26. Create a text editor application. It should perform operation like cut, copy, paste and change in font, color of the selected text. Also implement new open and save-file menuoption. Writea program to implement the concept of function overloading.
27. Using exception handling write a program to divide two numbers
28. Currency Conversion
29. Write a VB.NET program to create a table Patient (Pid, PName, Contact_No, Disease). Insert records into table and display appropriate message in message box. (Use MS Access to create db)
30. Write a VB.NET program to create a table Employee (Eid, EName, Designation, doj). Insert records into table and display it in GridView. (Use SQLServer to create db)
31. Write a VB.NET program to create a table student (RollNo ,SName, Class). Insert the records (Max: 5). Update class of students to 'TYBCA' whose class is 'SYBCA' and display updated records in GridView. (Use MS Access to create db)
32. Write a VB.NET program to create teacher table (Tid ,TName, subject). Insert the records (Max : 5). Search record of a teacher who teaches "VB.NET" subject and display result in GridView. (Use SQL to create db).

33. Write a VB.NET program to accept the details of product (pid, pname, expiry_date, price). Store it into the database and display it on the Crystal Report. (Use SQL Server)
34. Write a VB.NET program to accept the details Supplier (SupId, SupName, Phone_No, Address) store it into the database and display it. (Use Crystal Report)
35. Write a VB.NET program to create player table (Pid,PName,Game, no_of_matches). Insert records and update number of matches of 'Sachin Tendulkar' and display result in Crystal Report. (Use SQL to create db)

- **Programs on C# and ASP.Net**

1. Write a program to C# to find the smallest single digit factor for a given value.
2. Write a program in C# to print a number if it is prime; otherwise display the largest factor of that number.
3. Write a C# program for addition and multiplication of two matrices.
4. Write a C# program to display the digits of an integer in words.
5. Write a C# program to which reads a set of strings into the rows a two dimensional array and then prints the string having more number of vowels.
6. Write a C# programs to demonstrate the concepts of Label, Text Box and Button controls.
7. Write a C# programs to demonstrate the concepts of Combo Box and List Box controls.
8. Create a ADO.NET application in C# to verify if the connection is established with OLEDB and MS-ACCESS.
9. Create a ADO.NET applications in C# to demonstrate the Data Reader, Data Set, Data Adapter and Data View Objects.
10. Design an ASP.NET Webpage to demonstrate the Label, Button and Textbox controls.
11. Design an ASP.NET Webpage to work with Dropdown list and ListBox controls.
12. Develop a Registration Form with all Validation Controls.
13. Create a Web Service for all Arithmetic operations.

Class: TYBBA (C.A) (Sem V) **Subject**: BBA (C.A)
Course: Computer Laboratory II (based on UBCA352) **Course Code**: UBCA357

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

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1			3								
CO 2	3								3		
CO 3			3								
CO 4	2	2									
CO 5			3	2							
CO 6	3							2			
CO7	3							2			2

PO1. **Knowledge:**

CO2 CO6 CO7 strongly mapped as student will able to understand and Explain the components and architecture of the .NET Framework and MVC architecture.

CO4 moderately mapped as Student will able to demonstrate basic concepts of .net programming

PO2. **Problem Analysis:**

 CO4 moderately mapped as Student will able apply their knowledge to evaluate .net programs.

PO3. **Design and Development:**

CO1, CO3, CO5 Strongly mapped as the students will be able to develop and implement controls in .NET programming and design applications or design the GUI through .NET programming.

*PO4.***Conduct investigations of complex problems:**

CO5 moderately mapped as student will be able to conduct the investigation and of real word data and design and develop user interfaces using .Net programming.

PO8. **Life-Long Learning:**

CO6 and CO7 partially mapped as student understand, design and develop the Software using .NET so it contributes to the development of students' ability to engage in life-long learning as real life datamanagement and application are build.

PO9. Project Management:

CO2 Strongly mapped as student can create software's using .NET technology.

PO11. **Innovation, employability, and Entrepreneurial skills:**

CO7 moderately relate to employability skills as students are able to design .net Application in professional development.

Academic Year 2021-2022

Class   : T.Y.BBA (C.A.) (Semester - V)
Paper Code   : UBCA358
Title of Paper: Computer Laboratory III (based on UBA353A)
Credit: 2   No. of. Lectures: 48

A] Course Objectives:
1. To implement Client Server communication model using TCP.
2. To implement Web Service.
3. To understand Basics of cloud computing and different Cloud computing services.
4. To compare and contrast different types of Clouds.
5. To build Private Cloud and broadly educate to know the impact of engineering on legal and societal issues involved.
6. To learn how to use Cloud Services.

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

   CO1. Understand the basic concepts and services offered by major cloud platforms such as Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP).
   CO2. Create and manage user accounts, permissions, and access controls within a cloud platform.
   CO3. Deploy virtual machines (VMs) and containers on cloud infrastructure.
   CO4. Implement security best practices, including encryption, identity and access management, and network security.
   CO5. Analyze real-world case studies and scenarios involving cloud computing.
   CO6. Identify core concepts of the cloud computing paradigm, the characteristics, advantages and challenges brought about by the various models and services in cloudcomputing.
   CO7. Utilize cloud storage services for object storage, block storage, and file storage.
   CO8. Implement data backups and versioning.

Topic/Contents
1. To study of cloud computing & its architecture
2. To study the storage as a service using Google [GSP]
3. Create a word document of your class timetable & store locally & upload on cloud with doc & pdfFormat.
4. Create a spreadsheet which contain employee salary information & calculate gross & total salaryusing formula using google cloud. [SaaS]
5. Prepare a PPT on Cloud Computing models services & architecture. PPT should contain explanation, images & at least 15 slides using Google Service Provider [SaaS].
6. Create your resume in a neat format using Google Cloud Programs.
7. Using SaaS by google create a form & share it using cloud.
8. To study installation of virtual machine using VMware & find procedure to install VMware Workstation with different flavors of Linux or windows OS.
9. Create a virtual machine using oracle virtual box.
10. Creating an AWS account & study of S3 Service.
11. Creating bucket & setting permissions for general users to access that bucket using S3.
12. Creating Bucket & implementing bucket versioning & deletion of object & bucket in S3.
13. Using AWS S3 hosting static website.
14. Creating Account of Microsoft 365.
15.Installation & Configure of Dropbox [Storage as a service].   37

Class: TYBBA (C.A) (Sem V) **Subject**: BBA (C.A)
Course: Computer Laboratory III (based on UBCA353A)   **Course Code**: UBCA358

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

Course Outcomes	Programme Outcomes (POs)										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1	3										
CO 2			3								
CO 3			3						2		
CO 4		2		2							
CO 5		3									
CO 6		2									
CO7					2			3	2		3

PO1. **Knowledge:**

 CO1 Strongly mapped as the student will develop the deep understanding of basic concept of Cloud Computing and storage, security in cloud

PO2. **Problem Analysis:**

CO4 CO6 moderately mapped Contribute to the development of students' problem analysis as student will able to identify and implement different core concepts of the cloud computing paradigm.CO5 strongly mapped as Analyze real-world case studies and scenarios involving cloud computing.

PO3. **Design and Development:**

CO2, CO3 Strongly mapped as the students will be able to design, develop and evaluate applications based on cloud

*PO4.***Conduct investigations of complex problems:**

CO4 moderately mapped as student will be able to conduct the investigation and of real word huge amount of data and interpret various Cloud computing models and services.

PO5. **Modern Tool Usage:**

CO7 moderately mapped student will use different modern tools to compute data.

PO8. **Life-Long Learning:**

CO7 strongly mapped as it contributes to the development of students' ability to engage in life-longlearning as real life data management and application using Cloud technologies.

PO9. Project Management:

CO3, CO7 moderately mapped as student can create virtualization and use different services provided by cloud in project management.

*PO11***. Innovation, employability, and Entrepreneurial skills:**

CO7 moderately relate to employability skills as students are able to use different cloud-based technologies and SOA architecture in professional development