DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY
Chhatrapati Sambhajinagar.

NAAC- 'A^{+}' Grade

CIRCULAR /SU/CM/Revised Syllabus/NEP/81/2026

It is hereby inform to all concerned that, on the recommendation of the Dean, Faculty of Commerce & Management; ***the Academic Council at its meeting held on 02 Jun, 2026 has been accepted the following "Revised Syllabus of Under Graduate Level as per the National Education Policy-2020*** under the Faculty of Commerce & Management run at all Affiliated Colleges, Dr. Babasaheb Ambedkar Marathwada University.

Sr.No.	Courses	Semester
1.	B.Com	V & VI
2.	B.Com (E-Commerce)	V & VI
3.	B.B.A	V & VI
4.	B.C.A	V & VI
5.	B.C.M	V & VI

This is effective from the Academic Year 2026-27 and Onwards as per appended herewith.

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University Campus,
Chhatrapati Sambhajinagar
-431 004.
REF.NO. SU/COM/2026-27/4471-73
Date:- 05/ 06 /2026.

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Deputy Registrar,
Syllabus Section.

Copy forwarded with to Information and Necessary Action:-

1] **The Principal of all concerned affiliated colleges, Dr. Babasaheb Ambedkar Marathwada University. Chhatrapati Sambhajinagar**
2] The Director, Board of Examination & Evaluation,
3] The Director, University Network & Information Centre, UNIC, with a **request to upload this Circular on University Website.** Dr.Babasaheb Ambedkar Marathwada University **Chhatrapati Sambhajinagar.**

Dr. Babasaheb Ambedkar Marathwada UniversityChhatrapati Sambhajinagar- 431001

Three Years B.C.A ,
Four Years B.C.A. (Honours)
And

(Four Years B.C.A. (Honours with Research) Degree Program in Affiliated Colleges to Dr. Babasaheb Ambedkar Marathwada University

Under Faculty of Commerce & Management

Course Structure

(Revised)

(AS PER NEP-2020)

BCA Vth & VIth Semester Syllabus

Subject Computer Applications / Commerce / Management Science

Effective from 2026-27

DSC : Discipline Specific Core					
Subject Title		Basic of Android			
Subject Ref. No.		**BCA 501 T**	**No. of Credits**		2
			No. of Periods / Week		30/2
			Assignments / Sessional		20
			Semester Examination		30

Course Outcomes (COs)

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

CO-1	Understand the concept of Android with different layouts, Services, components, activities & Views
CO-2	Create an dynamic application using SQLite
CO-3	Apply the various facilities of Bluetooth, camera, GPS services
CO-4	Design Android applications.

Prerequisite :	Experience in Object Oriented programming language, Knowledge in XML format
Unit –I :	Introduction Android : I. History Behind Android Development, What is Android? Brief introduction of Java Programming. Android Architecture with applications , Linux Kernel, Libraries , Android Runtime, Application Framework, Dalvik VM. Installing Android Machine
Unit –II :	**Creating First Android Application, Android Components :** Activities, Services Broadcast Receivers, Content Providers, Creating your first project, The manifest file, Layout resource, Running your app on Emulator, Activities Views, layouts and Common UI components, Creating UI through code and XML, Activity lifecycle, Intents, Activities, Notifications, Menus
Unit –III :	**Working with Database** using SQLite, Introducing SQLite , SQLiteOpenHelper and creating a database, Opening and closing a database, Working with Inserts, updates, and deletes operations, configuring Camera, Bluetooth & GPS

Reference Books :	1. Android Application Development All-In-One for Dummies, 2ed 2015 by Barry Burd 2. Android Application Development (With Kitkat Support), Black Book 2014 by Pradeep Kothari and Kogent Learning Solutions Inc. 3. Head First Android Development: A Brain-Friendly Guide, 2nd Edition by Dawn Griffiths and David Griffiths

Subject Title		Basic of Android Lab		
Subject Ref. No.		**BCA 502 P**	**No. of Credits**	2
			No. of Periods / Week	4 hrs
			Assignments / Sessional	20
			Semester Examination	30

Course Outcomes (COs)

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

CO-1	Understand the concept of Android with different layouts, Services, components, activities & Views
CO-2	Create an dynamic application using SQLite
CO-3	Apply the various facilities of Bluetooth, camera, GPS services
CO-4	Design Android applications.

LAB work

1. Introduction to Android
   - Android Studio installation, setup, and directory structure exploration.
   - Creating the fundamental "Hello World" application. []
2. Activities, Fragments, and Intents
   - Programs demonstrating the Activity Lifecycle (onCreate, onStart, onResume, etc.).
   - Passing data between activities using Intents.
   - Implementing Implicit and Explicit Intents (e.g., launching a phone call or opening a browser).
   - Creating UI layouts using Fragments.
3. User Interface and Event Handling
   - Designing user interfaces using basic Views (TextView, EditText, Button).
   - Event handling (e.g., button clicks, touch listeners).
   - Utilizing advanced UI components (Checkboxes, Radio Buttons, Spinners, and ListViews).
   - Creating Progress Dialogs and Alert Dialogs
4. Designing User Interface with Views, Pictures & Menus []
   - Implementing ImageViews and integrating audio/media playback.
   - Designing Option Menus and Context Menus.
5. Databases
   - Performing CRUD operations (Create, Read, Update, Delete) using SQLite databases.
   - Sending SMS and emails using built-in Android intents
6. Camera , Bluetooth & Location-Based Services and Google Maps
   - Integrating Google Maps into Android applications.
   - Fetching and displaying the current location (Latitude, Longitude, and Geocoding)

Subject Title		Management Accounting			
Subject Reference No		DSC-15 & 16	**No of Credit**		4
Course Code		BCA503T	**No of period per week**		4
			Assignment / Sessional		40
			Semester Examination		60

Course Objectives

1	To understand the basic concepts ,importance and applications of Management Accounting from thein Business decision-making.
2	To develop ability to analyze financial statements using tools and techniques using Ms-Excel.
3	To apply basic tools like ratio analysis, marginal costing, and budgeting using Ms-Excel.
4	Analyse the importance of cash flow statement in business decision.
5	Evaluate new introduced emerging accounting tools and software's.

Pre-requisite: Basic knowledge of Financial and cost Accounting, Understanding of Business Mathematics and Statistics, Fundamental computer skills (MS Excel preferred)

Unit	Content	Number of Lectures required
Unit I	**Introduction to Management Accounting:** Meaning, Scope, Objectives , Importance and Functions of Management Accounting, Difference between: Financial Accounting and Management Accounting, Cost Accounting and Management Accounting, Tools of Management Accounting (overview). Role of Management Accountant. **Practical Activity:** Identify Accounting as a data system (Input-Process-Output) for any one management decision area.	10
Unit II	**Analysis and Interpretation of Financial Statement:** Meaning, Definition as pe AS, Objectives, Scope and characteristics of Financial Statement, Tools and Techniques of financial statement analysis Overview (Using Excel) - Comparative Financial Statements, Common Size Statements, Trend Analysis. Ratio Analysis- Basic calculation for Liquidity Ratios (Current Ratio, Quick Ratio) and Profitability Ratios (Gross Profit Ratio, Net Profit Ratio)	14
Unit III	**Marginal Costing & Decision Making (Basic)** : Meaning ,Concept and applications of Marginal Costing. Definition and concept of terms Fixed Cost, Variable Cost, Semi-variable Cost, Contribution and P/V Ratio, Break Even Point (BEP) ,Margin of Safety . Simple Decision-Making (Conceptual overview) : Make or Buy Decision (basic) , Pricing decisions (introductory) . Basic Numerical for BEP Calculation. **Practical Activity:** A study report preparation of existing Pricing App models.	14

Unit IV	Budgetary Control: Meaning of Budget and Budgetary Control , Objectives and Advantages. Types of Budgets (theory) Sales Budget Cash Budget, Production Budget (basic idea), Master Budget, Zero based budget. **Practical Activity:** Prepare any one type of budget planning in excel.	10
Unit V	Cash Flow & Emerging Accounting Tools: Cash Flow Statement – Meaning , definition as per AS and Importance , Simple format of Cash Flow Emerging Accounting Tools (Basics theory introduction) : Introduction to ERP & cloud accounting ERP systems. Cloud accounting tools , Financial data analytics , Role of accounting in e-commerce platforms, API-based billing systems. **Practical Activity:** A report Presentation on any one existing emerging accounting tools details in current scenario.	12

Note : Inclusion of mini case studies, current accounting software introduction and corporate examples are expected to include in teaching.

Text Books and references:

1. **Maheshwari, S.N. ,** Principles of Management Accounting, 15th Edition, Sultan Chand & Sons, New Delhi
2. **Pandey, I.M. ,** Management Accounting, 6th Edition, Vikas Publishing House Pvt. Ltd.
3. **Khan, M.Y. & Jain, P.K. ,** Management Accounting, 7th Edition, McGraw Hill Education (India) Pvt. Ltd.
4. **Arora, M.N.** Cost and Management Accounting, 11th Edition, Vikas Publishing House
5. **Romney, Marshall B. & Steinbart, Paul J.** Accounting Information Systems, 14th Edition, Pearson Education
6. **Monk, Ellen & Wagner, Bret** , Concepts in Enterprise Resource Planning, 4th Edition, Cengage Learning
7. **Hall, James A.** *Accounting Information Systems*, 9th Edition, Cengage Learning
8. **ICAI (Institute of Chartered Accountants of India)**
   Financial Management & Economics for Finance (Cash Flow Sections), Latest Edition, ICAI Publication
9. **Kejriwal, Satya & Verma, Anand Singh,** *Financial Accounting with Microsoft Dynamics 365 ERP*, 1st Edition, BPB Publications

DSE: Discipline Specific Elective				
Subject Title	**Sensor Technology DSE I (A)**			
Subject Ref. No.	**BCA504T**	**Total Hours/Per Week**		**30/2**
		No. of Credits	**:**	**2**
		Assignments / Sessional	**:**	**20**
		Semester Examination	**:**	**30**

Course Objective

1. To know the various stimuli that are to be measured in real life instrumentation.
2. Able to select the right process or phenomena on which the sensor should depends.
3. Aware of the various sensors available for measurement and control applications.
4. Working of different types and classification of sensors and transducers

Course Outcome

1. At the end of the course the student will be able to:
2. Understand different types of sensors and transducers for electrical quantities.
3. Apply suitable technology, related to various sensors and transducers
4. Analyze the Measurement of Non-electrical quantities

Prerequisites:- Basic knowledge of Electronics

Unit I Sensors and transducers (10 Hours)

Introduction to sensors and transducers. Need for sensors in the modern world. Different fields of sensors based on the stimuli - various schematics for active and passive sensors. Classification of Transducers. Advantages& Disadvantages of Electrical Transducers. Strain Gauges-types, Load Cells, Proximity Sensors, Pneumatic Sensors, Light Sensors, Smart Sensors, Fiber Optic Transducers, Digital Transducers- Digital Pressure transducers, Smart Pressure Transmitters.

Unit II Measurement of Non – Electrical Quantities (10 Hours)

Temperature Measurement- RTD, Thermistors, Thermocouple thermometers, Radiation pyrometers, Optical pyrometers. Wire Anemometers. liquid flow meters, Measurement of Displacement,

Measurement of Velocity/Speed, Measurement of Acceleration- Piezoelectric accelerometer, LVDT, Measurement of Torque, Measurement of Shaft Power, Measurement of Humidity, Gas analyzers.

Unit III Recent Technologies (10 Hours)

Film sensors, Micro-electromechanical sensors, Nano-sensors. Applications of Sensors–On-board Automobile sensors, home appliance sensors, Aerospace sensors, Sensors for manufacturing, medical diagnostic sensors, Sensors for Environmental Monitoring

Test Books

1. Electrical and Electronic Measurements and instrumentation R.KRajput S. Chand 3rdEdition, 2013
2. Sensors and Transducers, DPatranabis PHI Learning SecondEdition, May 2015

Reference Books

1. Sensors for safety and process control in hydrogen technologies. Hübert, Thomas, Lois Boon-Brett, and William Buttner CRC Press 2018
2. A Course in Electrical and Electronic Measurements and InstrumentationJohn .P. Uyemura, John Wiley A. K. Sawhney- Dhanpat Rai& Co., Delhi 2018 reprint

Subject Title :	SOFTWARE ENGINEERING			
Subject Ref. No.	BCA504T	No. of Credits	:	02
		No. of Periods/Week	:	02
		Assignments/Sessional	:	20
		External Assessment	:	30
Course Objective	The purpose of this course is to understand the Software Engineering process, DFD, ERD, Software Inspection process, different design methods, maintenance.			
	CO-1 Understand basics concepts related with software engineering CO-2 Understand object oriented methodologies. CO-3 Understand different models of software development. CO-4 Design the SRS for software.			
Prerequisite :	Emergence of Software Engineering, Different software life cycle models.			
Unit –I :	**Current trends in Software Engineering** 1.1 Software Engineering for projects & products. 1.2 Introduction to Web Engineering and Agile process **Models:** Waterfall, Prototyping, Spiral (including WIN-WIN Spiral), RAD ,Group Based Approach: JAD, Object Oriented methodology			
Unit –II :	**Activities in Requirements Determination** a) Requirements Anticipation b) Requirements Investigation c) Requirements Specifications Software requirement Specification (SRS) 1] Structure and contents of the requirements specification analysis modeling, types of requirements - functional and non-functional , Quality criteria, requirements definition, SRS format, Fundamental problems in defining requirements 2] Structure and standards followed for SRS 3] characteristics of good SRS – Unambiguous , complete , verifiable , consistent , modifiable , traceable, usable during maintenance Feasibility Study : economical, operational, social, technical			
Unit –III:	**Maintenance** 3.1 Types of Maintenance 3.2 Maintenance Cost 3.3 Reverse Engineering 3.4 Introduction to legacy systems			

	Documentation 3.5 Types 3.6 Role of documentation in maintenance
Text Books:	1. Software Engineering by Pressman 2. Design Object- Oriented Software - Rebecea Wrifs - Brock. Brian Wilkerson, Lauren Wiener
Reference Books :	1. System Analysis and Design by Jalote 2. Software Engineering by Sommerville 3. Software Engineering - W S Jawadekar

Subject Title	**Sensor Technology DSE 2 (A)**			
Subject Ref. No.	**BCA505P**	**Total Hours/Per Week**		60/4
		No. of Credits	:	2
		Assignments / Sessional	:	20
		Semester Examination	:	30

List of Practical's: -

1) Study of different types meters & there calibiration.
2) Study and identification of different types of sensors
3) Study and identification of different types of transducers
4) Study of multi-meter and measure voltage, Current & resistance
5) Study of CRO & check measure voltage & frequency of sine wave
6) Study of Characteristics of thermistor
7) Study of Characteristics of thermocouple
8) Study of Characteristics of LVDT
9) Measurement of Strain and Load using Strain Gauge.
10) Study of Characteristics of Optical transducer – LDR
11) Study of different Non – Electrical sensors
12) Study of different recent Sensors.

Subject Title :	SOFTWARE ENGINEERING LAB			
Subject Ref. No.	BCA505P	No. of Credits	:	02
		No. of Periods/Week	:	04
		Assignments/Sessional	:	20
		External Assessment	:	30
Course Objective	To apply software engineering principles in software development. To prepare software requirement and design documents. To develop software models using structured and object-oriented approaches. To understand software documentation and maintenance activities.			
	CO1: Analyze and document software requirements. **CO2:** Prepare feasibility and SRS documents for software projects. **CO3:** Design software systems using DFD, ERD, and UML diagrams. **CO4:** Apply software documentation, testing, and maintenance techniques.			
Prerequisite :	Emergence of Software Engineering, Different software life cycle models.			
Unit –I :	**Unit – I : Requirements Engineering and Feasibility Analysis** 1. Study of Software Development Life Cycle (SDLC) Models: ○ Waterfall ○ Prototype ○ Spiral ○ RAD ○ Agile 2. Problem Identification and Requirement Gathering for a selected software project. 3. Requirements Analysis and Classification: ○ Functional Requirements ○ Non-Functional Requirements 4. Preparation of Feasibility Study Report: ○ Technical Feasibility ○ Economic Feasibility ○ Operational Feasibility ○ Social Feasibility 5. Preparation of Software Requirement Specification (SRS) Document as per			

	standard format.
Unit –II :	**Unit – II : Software Modeling and Design** 1. Design of Context Diagram and Data Flow Diagrams (DFD): ○ Context Level ○ Level–1 ○ Level–2 2. Design of Entity Relationship Diagram (ERD). 3. Software Project Planning: ○ Work Breakdown Structure (WBS) ○ Project Scheduling ○ Gantt Chart 4. Preparation of Software Design Documentation.
Unit –III:	**Unit – III : Testing, Documentation and Maintenance** 1. Preparation of Software Testing Documents: ○ Test Plan ○ Test Cases ○ Test Data ○ Defect Report 2. Preparation of User Documentation and Technical Documentation. 3. Reverse Engineering Study of an Existing Software System. 4. Study of Software Maintenance Activities: ○ Corrective Maintenance ○ Adaptive Maintenance ○ Perfective Maintenance ○ Preventive Maintenance 5. Maintenance Cost Analysis and Change Request Documentation. 6. Mini Project: Development of complete software engineering documentation including: ○ Feasibility Study ○ SRS ○ DFD ○ ERD ○ Test Cases ○ User Documentation ○ Maintenance Plan
	Suggested Software Tools • Draw.io • StarUML • Visual Paradigm Community Edition • Lucidchart • Microsoft Project / OpenProject • MS Word or Google Docs

Minor (Choose any one from each pool of cource)			
Semester V		**BCA506T**	**Digital Marketing**
2 credits		**LTP: 1:1:0**	**MN-5**
Course Objective: To introduce students to the fundamentals of digital marketing, online promotion tools and digital communication strategies used by organizations.			
CO #	Cognitive Level(BTL)	Course Outcomes	
CO1	Understanding	Explain key concepts, importance and components of digital marketing.	
CO2	Applying	Apply basic digital marketing tools and techniques for online promotion.	
CO3	Analyzing	Analyze digital marketing channels and campaign effectiveness.	

Unit 1	Introduction to Digital Marketing : (Outcome focus: Conceptual clarity + structure) Meaning, Nature and Scope of Digital Marketing Traditional Marketing vs Digital Marketing Benefits and Limitations of Digital Marketing Digital Marketing Ecosystem Online Consumer Behaviour Introduction to Digital Marketing Channels
Unit 2	Digital Marketing Tools and Platforms : (Outcome focus: Application without complexity) Website and Blog Basics Introduction to Search Engine Optimization (SEO) Social Media Marketing Concepts Email Marketing Fundamentals Content Marketing Basics Online Advertising Overview
Unit 3	Digital Marketing Strategy and Performance : (Outcome focus: Analytical thinking) Digital Marketing Planning Process

	Introduction to Online Branding Customer Engagement through Digital Platforms Basic Web Analytics and Performance Measurement Key Performance Indicators (KPIs) Ethical and Legal Issues in Digital Marketing

Suggested Readings:
Seema Gupta – Digital Marketing
Puneet Singh Bhatia – Fundamentals of Digital Marketing
Vandana Ahuja – Digital Marketing
Sanjay Mohapatra – Digital Marketing
Nitin C. Kamat & Chinmay N. Kamat – Digital Marketing

Reference Books:
U.C. Mathur – Marketing Management
P.K. Agarwal – E-Commerce and Digital Marketing
Government of India – Digital India Learning Resources
NPTEL Digital Marketing Course Material
AICTE Student Learning Resources on Digital Marketing

Subject Title		Fundamentals of Insurance			
Subject Reference No		MN-5	**No of Credit**		2
Course Code		BCA506T	**No of period per week**		2
			Assignment / Sessional		20
			Semester Examination		30

Course Objectives	
1	Explain basic concepts, principles, and terminology of insurance and risk to understand insurance as an Information system.
2	Apply knowledge of insurance products in real-life and IT-enabled environments such as online platforms and apps.
3	Demonstrate how insurance processes (policy issuance, premium calculation, claims) are implemented using computer-based systems.
4	Examine insurance processes like underwriting, claims, and policy selection, regulatory aspect.
5	Recognize the role of digital platforms in insurance services.

Pre-requisite:

Unit	**Content**	**Number of Lectures required**
Unit I	**Insurance & Risk Basics:** Meaning and importance of insurance, Basic concept of risk and types of risk , Principles of insurance (simple explanation with examples) , Need and benefits of insurance in daily life . Overview of insurance sector in India .	10

	Insurance as an Information System (Input–Process–Output model) , Basic introduction to insurance databases (policyholder data, risk data).	
Unit II	**Insurance Products & Digital Policy Management:** Types of Insurance policies (only introduction). Life Insurance: Meaning, types (term, endowment, ULIP). General Insurance: Fire, Marine, Health, Motor ,Policy structure: Proposal form, premium, policy conditions Claim settlement process. **Practical Activity:** Viewing policies and claims through websites/apps . Basic understanding of digital forms and records	10
Unit III	Insurance Operations, Technology & Recent Trends: Insurance intermediaries: Agents, brokers, bancassurance, Underwriting and risk assessment basics ,Regulatory framework (IRDAI) , Digital Insurance: InsurTech, AI, Chatbots, Mobile Apps Cyber Insurance & Data Security	10

Text Books and references:

1. M. N. Mishra, "Insurance Principles and Practice", Latest Edition, S. Chand Publications
2. C. S. Satyadevi, "Fundamentals of Insurance", Latest Edition, S. Chand Publications
3. Dr. P. Periasamy, "Principles and Practice of Insurance", Latest Edition, Himalaya Publishing House
4. Nalini Prava Tripathy & Prabir Pal, "Insurance: Theory and Practice", Latest Edition, PHI Learnin

Semester V	BCA507T	A) Fundamentals of Banking
2 credits	LTP: 1:1:0	Minor (MN-06)

Course Objective: To provide students with fundamental knowledge & understanding of banking concepts, operations and digital banking systems in the modern financial environment.

CO #	Cognitive Level (BTL)	Course Outcomes
CO1	Understanding	Explain the structure, functions, and role of banks in the financial system.
CO2	Applying	Apply basic banking procedures and services in real-world scenarios.
CO3	Analyzing	Analyze modern banking trends including digital banking and financial inclusion.

Unit

Introduction to Banking & Banking System

- Meaning and Definition of Banking
- Evolution and History of Banking (India focus)
- Structure of Banking System:
  - Central Bank
  - Commercial Banks
  - Cooperative Banks
  - Regional Rural Banks (RRBs)
- Functions of Banks:
  - Primary Functions (Accepting Deposits, Lending)
  - Secondary Functions (Agency & Utility services)
- Role of Banks in Economic Development

Unit	**Banking Operations and Services**
	• Types of Bank Accounts: Savings, Current, Fixed Deposit, Recurring Deposit
	• Basic Banking Procedures:
	  ○ Opening and Operating Bank Accounts
	  ○ KYC (Know Your Customer) norms
	• Lending Operations:
	  ○ Types of Loans and Advances
	  ○ Principles of Sound Lending
	• Negotiable Instruments:
	  ○ Cheque, Demand Draft, Bill of Exchange (basic understanding)
	• Customer Services in Banking

Unit	**Digital Banking and Emerging Trends**
	• Introduction to Digital Banking
	• E-Banking Services:
	  ○ ATM, Debit/Credit Cards
	  ○ Internet Banking, Mobile Banking, UPI
	• Electronic Payment Systems in India
	• Cyber Security in Banking: Risks and Precautions
	• Financial Inclusion and Role of Technology
	• Emerging Trends: Fin Tech, Digital Wallets, Neo-banks (introductory level)

Suggested Readings:

1. **Indian Institute of Banking & Finance (IIBF)** – ***Principles & Practices of Banking***
2. **Gordon & Natarajan** – ***Banking Theory, Law and Practice***
3. **Sundaram & Varshney** – ***Banking Theory, Law and Practice***
4. **Padmalatha Suresh & Justin Paul** – ***Management of Banking and Financial Services***

Subject Title		E-Commerce			
Subject Reference No		MN-6	**No of Credit**		2
Course Code		BCA507T	**No of period per week**		2
			Assignment / Sessional		20
			Semester Examination		30

Course Objectives

1. Mechanism of business transactions through electronic media.
2. Payment transactions in a secured network.
3. Different modes of E-Commerce like Electronic data interchange.
4. Web site establishment, electronic publishing and its importance.

CO1	Understand the framework and anatomy of ecommerce applications and analyse ecommerce consumer, organizational applications
CO2	Infer mercantile process models from both merchant's and consumer's view point
CO3	Understand the implementation of Electronic Data Interchange (EDI) in day-to-day life
CO4	Study all the aspects of Intra-Organizational electronic commerce including supply chain management

CO5	Analyse different consumer, information searching methods and resource discovery and information retrieval techniques

Pre-requisite:

Unit	Content	Number of Lectures required
Unit I	**E-commerce and its Technological Aspects Overview of developments in Information Technology and Defining E-Commerce:** The scope of E commerce, Electronic Market, Electronic Data Interchange, Internet Commerce, Benefits and limitations of E-Commerce, produce a generic framework for E-Commerce, Architectural framework of Electronic Commerce, Web based E Commerce Architecture.	10
Unit II	**Consumer Oriented E Commerce:** Traditional retailing and e retailing, Benefits of e retailing, Key success factors, Models of E- business, Features of E- business. E services: Categories of e-services, Web-enabled services, matchmaking services, Information-selling on the web, e entertainment, Auctions and other specialized services. Business to Business Electronic Commerce **Security in E Commerce Threats in Computer Systems**: Virus, Cyber Crime Network Security: Encryption, Protecting Web server with a Firewall, Firewall and the Security Policy, Network Firewalls and Application Firewalls, Proxy Server.	10
Unit III	**Internet Resources for Commerce**: Introduction, Technologies for web Servers, Internet Tools Relevant to Commerce, Internet Applications for Commerce, Internet Charges.Internet Access and Architecture, Searching the Internet, Advertising on Internet: Issues and Technologies, Advertising on the Web, Marketing creating web site, Electronic Publishing Issues, Approaches and Technologies: EP and web-based EP.	10

Reference Textbooks:

1. Elias. M. Awad, " Electronic Commerce", Prentice-Hall of India Pvt Ltd. and "Electronic Commerce from Vision to Fulfilment", 3rd Edition
2. Efraim Turban, Jae Lee, David King, Michael Chung, "Electronic Commerce–A Managerial Perspective", Addison-Wesley.
3. Daniel Minoli, Emma Minoli, Web Commerce Technology Handbook. TATA McGraw-Hill Edition.
4. Ravi Kalakota, Andrew B. Whinstone, "Electronic Commerce-A Manager's guide", Addison-Wesley.
5. Schneider, Electronic Commerce, Cengage Publications.

VSC: Vocational Skill Courses			
Semester V		**BCA508T**	**ASP.NET Theory**
2 Credits		**LTP: 1:1:0**	**VSC-5**
Course Objective: To introduce students to the fundamentals of ASP.NET web application development and enable them to create simple dynamic web applications.			
CO #	Cognitive Level (BTL)	Course Outcomes	
CO1	Understanding	Explain the basic concepts, architecture and components of ASP.NET.	
CO2	Applying	Develop simple ASP.NET web pages using server controls and validation controls.	
CO3	Analyzing	Analyze and implement basic database connectivity and web application features.	
Unit I	Introduction to ASP.NET : (Outcome focus: Conceptual clarity + fundamentals) • Introduction to .NET Framework • Features of ASP.NET • ASP.NET Architecture		

	• Web Forms and Page Life Cycle (basic idea) • Creating a Simple ASP.NET Application • Introduction to Visual Studio Environment
Unit 2	ASP.NET Controls and Validation : (Outcome focus: Application) • HTML Controls and Server Controls • Common Web Controls (Label, TextBox, Button, CheckBox) • List Controls (DropDownList, RadioButtonList) • Validation Controls • State Management Concepts (ViewState and Session – introduction) • Designing User-Friendly Web Forms
Unit 3	Database Connectivity and Web Applications : (Outcome focus: Analytical thinking) • Introduction to ADO.NET • Database Connectivity using SQL Server • Data Binding Concepts • GridView Control • Simple CRUD Operations (Insert, Update, Delete, Display) • Deployment Basics of ASP.NET Applications

Suggested Readings:
Kogent Learning Solutions Inc. – ASP.NET 4.0 in Simple Steps
V.K. Jain – Web Technology and ASP.NET
Ramesh Bangia – Internet and Web Technologies
Satish Jain & Shashank Jain – ASP.NET Programming
B.M. Harwani – Developing Web Applications with ASP.NET

Reference Books:
Matthew MacDonald – Beginning ASP.NET
Steven Holzner – ASP.NET Programming
Imar Spaanjaars – Beginning ASP.NET
Microsoft ASP.NET Documentation
MCA/UGC Model Curriculum Resources

Subject Title :	**Web Development Using PHP**			
Subject Ref. No.	**BCA508T**	No. of Credits	:	02
Assignments/Sessional	:			20
Semester Exam.	:			30

Course Outcomes (COs)

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

CO-1	Write code for implementing basic concept of PHP as loops, conditions, arrays, strings.
CO-2	Connect the My Sql database with PHP for performing operations such as insert, update, delete, retrieve.

	CO-3	Write the programs using concepts of HTML + JAVASCRIPT + PHP + MYSQL.
	CO-4	Design the Web portals to fulfill the requirements.
Prerequisite :	Students must have knowledge of HTML, JavaScript.	
Unit –I :	**Introduction to PHP** PHP Basics Conditions and Branches Loops Variables and Arrays Strings	
Unit –II :	**Form Handling** Dealing with functions Forms Super global variables Super global array A script to acquire user input Importing user input Accessing user input Combine HTML and PHP code Using hidden fields Redirecting the user File upload and scripts Delete a File	
Unit – III :	**Database Operations with PHP** Built-in Database Functions, Connecting to a MySQL, Selecting a Database, Building and Sending the Query to Database Engine, Retrieving , Updating and Inserting Data in database	
Reference Books :	1. *PHP and MySQL Web Development* by Luke Welling, and Laura Thomson 2. *PHP, MySQL, and JavaScript* by Robin Nixon 3. *PHP 6 and MySQL 5 for Dynamic Web Sites: Visual QuickPro Guide* by Larry Ullman 4. *PHP Cookbook* by Adam Trachtenberg, and David Sklar 5. PHP Object – Oriented Solution by David Powers 6. *Head First PHP & MySQL* by Lynn Beighley, and Michael Morrison 7. *Beginning PHP and MySQL* From Novice to Professional, Third Edition by W.J. Gilmore	

Semester V		**BCA509P**	**ASP.NET Lab**
2 Credits		**LTP: 0:0:4**	**VSC-6**
Course Objective: To provide hands-on experience in developing simple web applications using ASP.NET, web controls, validation controls and database connectivity.			
CO #	Cognitive Level (BTL)	Course Outcomes	
CO1	Applying	Create ASP.NET web pages using basic controls and page design features.	
CO2	Applying	Develop interactive forms using validation controls and state management.	
CO3	Analyzing	Implement database-driven ASP.NET applications using ADO.NET and SQL Server.	
Practical List	1. Installation and familiarization with Visual Studio and ASP.NET environment 2. Create a simple ASP.NET web page 3. Design a registration form using ASP.NET controls		

	4. Demonstrate Label, TextBox, Button and CheckBox controls 5. Implement DropDownList and RadioButtonList controls 6. Develop forms using RequiredFieldValidator and RangeValidator 7. Demonstrate CompareValidator and RegularExpressionValidator 8. Implement Session and ViewState concepts 9. Connect ASP.NET application with SQL Server database 10. Insert records into a database using ADO.NET 11. Display database records using GridView 12. Update and delete records from database tables 13. Create a simple login page 14. Mini Project: Student Information Management System or Employee Information System

Suggested Readings:

Kogent Learning Solutions Inc. – ASP.NET 4.0 in Simple Steps
Satish Jain & Shashank Jain – ASP.NET Programming
B.M. Harwani – Developing Web Applications with ASP.NET
Ramesh Bangia – Internet and Web Technologies
V.K. Jain – Web Technology and ASP.NET

Laboratory Requirements:

Visual Studio IDE
ASP.NET Framework
SQL Server Express Edition
Windows Operating System
Internet Connectivity for Documentation Access

Subject Title :	Web Development Using PHP Lab			
Subject Ref. No.	BCA509P	No. of Credits	:	02
Assignments/Sessional	:			20
Semester Exam.	:			30

Course Outcomes (COs)

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

CO-1	Write code for implementing basic concept of PHP as loops, conditions, arrays, strings.
CO-2	Connect the My Sql database with PHP for performing operations such as insert, update, delete, retrieve.
CO-3	Write the programs using concepts of HTML + JAVASCRIPT + PHP + MYSQL.
CO-4	Design the Web portals to fulfill the requirements.

Prerequisite :	Students must have knowledge of HTML, JavaScript.
Unit –I :	**PHP Basics and Control Structures** Lab Objectives: • Understand PHP syntax and basic programming constructs. • Implement conditions, loops, and arrays in PHP. Lab Exercises: 1. Write a PHP script to display "Hello, World!" using echo and print. 2. Write a PHP program to check if a number is even or odd using conditional statements (if-else). 3. Implement a switch-case statement to display the day of the week based on a number (1-7). 4. Use a for loop to print numbers from 1 to 10. 5. Use a while loop to calculate the factorial of a number. 6. Create an indexed array of colors and display them using a foreach loop. 7. Create an associative array (student names & marks) and display it. 8. Perform string operations: concatenation, length calculation (strlen), and substring extraction (substr). **Based on above objective any other programming exercises can be performed.*
Unit –II :	**Form Handling and File Operations** **Lab Objectives:** • Handle user input via HTML forms. • Work with superglobal variables ($_GET, $_POST, $_FILES). • Upload, read, and delete files using PHP. **Lab Exercises:** 1. Create an **HTML form** (name, email, password) and process it using $_POST. 2. Validate user input (check if email is valid using filter_var()). 3. Use **hidden fields** in a form to pass additional data.

	4. Redirect users to a different page using header("Location: page.php"). 5. Upload a file using PHP ($_FILES) and display its details (name, size, type). 6. Read a text file (fopen(), fread()) and display its content. 7. Delete an uploaded file using unlink(). *Based on above objective any other programming exercises can be performed.*
Unit – III :	**Database Operations with PHP & MySQL** **Lab Objectives:** • Connect PHP to MySQL. • Perform CRUD (Create, Read, Update, Delete) operations. **Lab Exercises:** 1. Establish a **MySQL connection** using mysqli_connect(). 2. Create a database and table (e.g., users with fields: id, name, email). 3. **Insert data** into the table using an HTML form. 4. **Fetch and display** records from the database in an HTML table. 5. Implement a **search functionality** (filter records by name/email). 6. **Update** a user's details using a form. 7. **Delete** a record from the database. 8. Handle MySQL errors using mysqli_error(). *Based on above objective any other programming exercises can be performed.*
Reference Books :	1. *PHP and MySQL Web Development* by Luke Welling, and Laura Thomson 2. *PHP, MySQL, and JavaScript* by Robin Nixon 3. *PHP 6 and MySQL 5 for Dynamic Web Sites: Visual QuickPro Guide* by Larry Ullman 4. *PHP Cookbook* by Adam Trachtenberg, and David Sklar 5. PHP Object – Oriented Solution by David Powers 6. *Head First PHP & MySQL* by Lynn Beighley, and Michael Morrison 7. *Beginning PHP and MySQL* From Novice to Professional, Third Edition by W.J. Gilmore

BCA VI SEM

Subject Title	Python Programming	
Course Code	BCA601T	
		No Of Credits: 02
		No of Periods /Week: 2
		Assignment /Sessional :20
		Semester Examination :30

Course

1. To introduce students to the basic concepts of programming using Python.
2. To familiarize students with Python syntax, variables, and data types.
3. To develop logical thinking and problem-solving skills among students.
4. To enable students to write simple Python programs using basic constructs.
5. To provide an understanding of fundamental programming techniques such as control structures and functions.

Pre-Requisite	NA
Unit I	**Introduction to Python & Basic Concepts** **1.1 Introduction to Programming** • Definition of programming • Types of programming languages 1) High-level languages 2) Low-level languages 3) Difference between high-level and low-level languages • Introduction to Python • Features and applications of Python **1.2 Python Environment Setup** • Installation of Python • Python IDE (IDLE) • Writing and executing first Python program **1.3 Basics of Python** • Structure of a Python program • Python keywords and identifiers • Variables and naming rules • Data Types ○ Integer, Float, String, Boolean **1.4 Type Conversion and I/O** • Type casting (implicit and explicit) • Input function • Output function (print formatting) **1.5 Operators in Python** • Arithmetic Operators • Relational Operators • Logical Operators
Unit II	**Control Structures & Data Structures** **2.1 Decision Making** • if statement

	• if-else statement • nested if • elif ladder **2.2 Looping Statements** • for loop • while loop • Nested loops **2.3 Control Statements** • break • continue • pass **2.4 Strings** • String creation • Indexing and slicing • String operations and functions **2.5 Lists** • Creating lists • List operations • List methods **2.6 Tuples and Sets** • Tuple basics • Set basics **2.7 Dictionaries** • Creating dictionaries • Accessing elements • Basic dictionary operations
Unit III	**Functions, File Handling & OOP Basics** **3.1 Functions** • Definition of functions • Types of functions • Function arguments (default, keyword) • Return statement **3.2 Lambda Functions & Modules** • Lambda functions (basic syntax) • Introduction to modules • Importing modules **3.3 File Handling** • Introduction to files • File opening modes • File operations ○ read() ○ write() ○ append() **3.4 Exception Handling** • Types of errors

	• try, except block • finally block **3.5 Introduction to OOP** • Concept of Object-Oriented Programming • Class and Object • Simple example of class

Subject	Python Programming Lab
Subject Code:	BCA602P
	No Of Credits: **02** No of Periods /Week: 4 Assignment /Sessional :**20** Semester Examination :**30**

Unit I:	**Introduction & Basics** 1. Write a Python program to print "Hello World". 2. Write a program to take user input (name, age) and display it. 3. Write a program to perform type casting (int to float, string to int). 4. Write a program to perform basic arithmetic operations (+, –, ×, ÷). 5. Write a program to find area of a circle. 6. Write a program to swap two variables. 7. Write a program to check the data type of a variable. 8. Write a program to demonstrate input and output formatting. 9. Write a program to check whether a number is positive, negative, or zero. 10. Write a program to compare two numbers using relational operators.
Unit II:	**Control Structures & Data Structures** 1. Write a program to check whether a number is even or odd using if-else. 2. Write a program to find the largest of three numbers. 3. Write a program to print numbers from 1 to 10 using a loop. 4. Write a program to calculate the factorial of a number. 5. Write a program to print the multiplication table of a number. 6. Write a program to demonstrate use of break and continue. 7. Write a program to reverse a string. 8. Write a program to count vowels in a string. 9. Write a program to create a list and perform operations (append, remove). 10. Write a program to find the maximum and minimum element in a list. 11. Write a program to demonstrate tuple operations. 12. Write a program to create a dictionary and display its keys and values. 13. Write a program to update and delete elements from a dictionary.

Unit III:	**Functions, File Handling & OOP** 1. Write a program to create a function to add two numbers. 2. Write a program to demonstrate function with arguments and return value. 3. Write a program using a lambda function to find square of a number. 4. Write a program to import and use a math module. 5. Write a program to create and write data into a file. 6. Write a program to read data from a file. 7. Write a program to append data into a file. 8. Write a program to handle exception using try-except. 9. Write a program to create a class and object. 10. Write a program to demonstrate a simple class with method.

Subject Title		Marketing Management	No. of Credits		2
Subject Ref. No.		BCA603T	No. of Periods / Week		30 / 2
Assignments/Sessional : 20			Semester Examination		30

Course Objectives

1. To introduce the fundamental concepts and principles of marketing management.
2. To develop an understanding of consumer behavior and market segmentation.
3. To familiarize students with marketing mix strategies for products and services.
4. To enhance decision-making skills related to marketing planning and implementation.

Course Outcomes (COs)

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

CO-1	Explain the basic concepts, functions, and importance of marketing management.
CO-2	Analyze consumer behavior and identify target markets through segmentation and positioning strategies.
CO-3	Apply marketing mix (Product, Price, Place, and Promotion) concepts in business situations.
CO-4	Develop simple marketing plans and evaluate marketing strategies for organizational growth.

Unit	Topic	No. of Lecture
Unit – I	Introduction to Marketing Management, Meaning, Nature, Scope, and Importance of Marketing, Marketing Management: Concepts and Functions, Evolution of Marketing Concepts, Marketing Environment: Micro and Macro Environment, Consumer Behavior and Buying Decision Process, Market Segmentation, Targeting, and Positioning (STP)	10
Unit – II	Marketing Mix Strategies, Product: Concept, Product Life Cycle, Branding and Packaging, Pricing: Objectives, Factors Influencing Pricing Decisions, Place (Distribution): Channels of Distribution and Channel Management, Promotion: Advertising, Sales Promotion, Personal Selling, Public Relations, Digital Marketing: Introduction and Importance	10

Unit – III	Unit III: Marketing Planning and Contemporary Issues. Marketing Planning Process. Marketing Research: Meaning and Importance. Customer Relationship Management (CRM).Services Marketing: Concept and Characteristics. Social. Ethical. and Green Marketing. Emerging Trends in Marketing: E-Commerce. Social Media Marketing. and AI in Marketing	10
	Total Marks	30
Text Books Additional Reference Books	Marketing Management. Philip Kotler. Kevin Lane Keller. & Alexander Chernev Marketing Management: A Strategic Decision-Making Approach. Roger J. Best Marketing. Charles W. Lamb. Joseph F. Hair. & Carl McDaniel Principles of Marketing. Philip Kotler & Gary Armstrong Marketing Management. V.S. Ramaswamy & S. Namakumari	

ISK2

DSE: Discipline Specific Elective (Choose Any One from each pool of course)

Subject Title :	Software Testing			
Subject Ref. No.	BCA605T	No. of Credits	:	02
Assignments/Sessional	:			20
Semester Exam.	:			30

Course Outcomes (COs)

1. CO1: Explain the fundamental concepts, principles, and importance of software testing in the software development lifecycle.
2. CO2: Apply various black-box and white-box testing techniques to design effective test cases for software validation.
3. CO3: Differentiate between different levels of testing (Unit, Integration, System, and UAT) and their significance in quality assurance.
4. CO4: Analyze defects, their life cycle, and categorize them based on severity and priority for effective defect management.
5. CO5: Prepare test plans, reports, and traceability matrices to ensure systematic test execution and documentation.

Prerequisite :	
Unit –I :	Introduction to Software Testing 1.1 What is Software Testing? • Definition and Importance of Testing • Objectives of Testing • Differences between Verification and Validation 1.2 Principles of Software Testing • Seven Key Principles of Testing • Common Testing Myths and Realities 1.3 Software Development Models and Testing • Role of Testing in Waterfall, V-Model, and Agile • Software Testing Life Cycle 1.4 Types of Testing • Static Testing • Dynamic Testing • Black-Box Testing • White-Box Testing
Unit –II :	Test Design Techniques 2.1 Black-Box Testing Techniques • Equivalence Partitioning • Boundary Value Analysis • Decision Table Testing • State Transition Testing • Use Case Testing

	2.2 White-Box Testing Techniques • Statement Coverage • Branch Coverage • Path Coverage 2.3 Test Case Development • Components of a Test Case • Characteristics of a Good Test Case • Traceability Matrix 2.4 Levels of Testing • Unit Testing • Integration Testing • System Testing • User Acceptance Testing
Unit – III :	Defects and Test Management 3.1 Defect Life Cycle • What is a Defect? • Defect States • Severity and Priority 3.2 Test Planning and Documentation • Test Plan • Test Strategy versus Test Plan • Risk-Based Testing 3.3 Test Execution and Reporting • Test Execution Process • Defect Reporting • Test Summary Report 3.4 Challenges in Manual Testing • Limitations of Manual Testing • When Manual Testing is Preferred
Reference Books :	A. Introducing Software Testing by Louise Tamres B. Effective Methods for software Testing by William Perry C. Software Testing in Real World by Edward Kit Software Testing Techniques by Boris Beizer

Subject Title		Internet of Things (IoT)			
Subject Ref. No.		BCA606P			
			No. of Credits	:	2
			Assignments / Sessional	:	20
			Semester Examination	:	30

Course Outcomes (COs)

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

CO-1	Understand the IoT Architecture models
CO-2	To understand the sensors & boards to implement IoT in real world
CO-3	Recognize various devices, sensors and applications
CO-4	Apply design concept to IoT solutions
CO-5	Design issues in IoT applications

Course Objective	In this course, student will explore various components of Internet of things such as Sensors, internetworking and cloud. In the end they will also be able to design and implement IoT circuits and solutions.
Prerequisites	Before learning IoT Tutorial, you must have the basic knowledge of Internet, programming language, and electronics
Unit I	Introduction to IoT : Concept , applications, advantages , disadvantage, Embedded Devices & System, IoT Framework, IoT Architecture & Domains ,IoT cloud Platforms with types and examples
Unit II	IoT Technology & Communication protocols : concepts of protocols , properties , advantages & disadvantage of Data Link, Network Layer & Session Layer, types & applications of WiFi, Bluetooth, Zigbee, Z-wave, Cellular, NFC, LoRaWAN
Unit III	IoT Devices : Microcontroller, Microprocessor, sensors with its types and application , Wearable devices . Basic introduction to Arduino and Raspberry Pi
Text Book	1. Internet of Things (IoT) , Kamal Kant Hiran Dr. Kamlesh Lakhwani, Dr. Hemant Kumar Gianey, Joseph Kofi Wireko 2. Internet of Things: A Hands-On Approach, by Arsheep Bahga and Vijay Madisetti. 3. IoT Fundamentals | Networking Technologies, Protocols, and Use Cases for the Internet of Things by Hanes David , Salgueiro Gonzalo. 4. IoT - Internet Of Things Basics: For Beginners: Fast And Easy Way To Learn Iot Basics And Introduction To Data

	Science Kindle Edition

Subject Title :	Software Testing Lab			
Subject Ref. No.	BCA606P	No. of Credits	:	02
Assignments/Sessional	:			20
Semester Exam.	:			30

Course Outcomes (COs)

1. CO1: Design comprehensive test cases using black-box techniques (Equivalence Partitioning, Boundary Value Analysis, Decision Tables) for given requirements.
2. CO2: Execute different levels of manual testing (Unit, Integration, System) and accurately report defects with proper documentation.
3. CO3: Create test management artifacts (Test Plans, Traceability Matrices, Test Summary Reports) following industry standards.
4. CO4: Perform exploratory testing sessions to identify unscripted defects and usability issues in software applications.

Prerequisite :	
Unit –I :	Test Design Fundamentals 1.1: Static Testing • Examine a sample SRS document • Identify 10 requirement defects • Prepare review report 1.2: Equivalence Partitioning • For a "Age Verification" field (valid range: 18-60): ○ Identify equivalence classes ○ Design 5 test cases 1.3: Boundary Value Analysis • For the same "Age Verification" field: ○ Design boundary test cases ○ Execute and document results 1.4: Decision Table • Test a library book renewal system with: ○ Membership status (active/expired) ○ Book status (available/checked out) ○ Create decision matrix with 4 test cases **Based on above objective any other exercises can be performed.*
Unit –II :	Test Execution 2.1: Unit Test Cases • Test a "Password Strength Checker" with: ○ 5 valid/invalid password combinations ○ Document failures 2.2: Integration Testing • Test interaction between: ○ User registration form → Database ○ Report defects in data saving 2.3: System Testing

	• Execute 10 test cases on a demo e-commerce site:
	  ○ Product search
	  ○ Cart functionality
	  ○ Checkout process
	2.4: Defect Reporting
	• Log 5 defects found during system testing:
	  ○ Screenshots
	  ○ Steps to reproduce
	  ○ Severity/Priority assessment
	**Based on above objective any other exercises can be performed.*

Unit – III :	Test Management
	3.1: Test Plan Creation
	• Develop plan for testing a:
	  ○ Flight booking system
	  ○ Include: Objectives, Scope, Schedule
	3.2: Traceability Matrix
	• Link 5 requirements → 15 test cases → 3 defects
	3.3: Test Summary Report
	• Prepare final report with:
	  ○ % test cases passed
	  ○ Defect density
	  ○ Release recommendation
	3.4: Exploratory Testing
	• 30-minute session on a food delivery app:
	  ○ Document 10 observations
	  ○ Categorize as defects/enhancements
	**Based on above objective any other exercises can be performed.*

Reference Books :	D. Introducing Software Testing by Louise Tamres E. Effective Methods for software Testing by William Perry F. Software Testing in Real World by Edward Kit Software Testing Techniques by Boris Beizer

Subject Title		Internet of Things (IoT) DSE 3 (B)			
Subject Ref. No.		BCA605T	Total Hours/Per Week		30/2
			No. of Credits	:	2
			Assignments / Sessional	:	20
			Semester Examination	:	30

Course Outcomes (COs)

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

CO-1	Understand the IoT Architecture models
CO-2	To understand the sensors & boards to implement IoT in real world
CO-3	Recognize various devices, sensors and applications
CO-4	Apply design concept to IoT solutions
CO-5	Design issues in IoT applications

Course Objective	In this course, student will explore various components of Internet of things such as Sensors, internetworking and cloud. In the end they will also be able to design and implement IoT circuits and solutions.
Prerequisites	Before learning IoT Tutorial, you must have the basic knowledge of Internet, programming language, and electronics
Unit I	Introduction to IoT : Concept , applications, advantages , disadvantage, Embedded Devices & System, IoT Framework, IoT Architecture & Domains ,IoT cloud Platforms with types and examples
Unit II	IoT Technology & Communication protocols : concepts of protocols , properties , advantages & disadvantage of Data Link, Network Layer & Session Layer, types & applications of WiFi, Bluetooth, Zigbee, Z-wave, Cellular, NFC, LoRaWAN
Unit III	IoT Devices : Microcontroller, Microprocessor, sensors with its types and application , Wearable devices . Basic introduction to Arduino and Raspberry Pi
Text Book	1. Internet of Things (IoT) , Kamal Kant Hiran Dr. Kamlesh Lakhwani, Dr. Hemant Kumar Gianey, Joseph Kofi Wireko 2. Internet of Things: A Hands-On Approach, by Arsheep Bahga and Vijay Madisetti. 3. IoT Fundamentals | Networking Technologies, Protocols, and Use Cases forthe Internet of Things by Hanes David , Salgueiro Gonzalo. 4. IoT - Internet Of Things Basics: For Beginners: Fast And Easy Way To Learn Iot Basics And Introduction To Data Science Kindle Edition

Minor (Choose any one from each pool of course)		
Semester VI	**BCA607T**	**B) Financial Management**
2 credits	**LTP: 1:1:0**	**Minor (MN-07)**

Course Objective: To introduce students to fundamental financial concepts and interpret basic financial decisions in business and economic contexts.

CO #	Cognitive Level(BTL)	Course Outcomes
CO1	Understanding	Explain key financial concepts, functions, and decision areas.
CO2	Applying	Apply basic financial tools for simple analysis and planning.
CO3	Analyzing	Analyze basic financial decisions related to investment, cost, and funding.

Unit 1	Financial Concepts and Decision Framework : (*Outcome focus*: Conceptual clarity + structure)
	• Meaning, Nature, and Scope of Finance
	• Role of Finance in Organizations and Economy
	• Core Financial Concepts:
	  ○ Cost, Revenue, Profit
	  ○ Assets and Liabilities
	• Financial Decision Areas:
	  ○ Investment Decision (allocation of funds)
	  ○ Financing Decision (sources of funds)
	• Introduction to Financial Statements:
	  ○ Profit & Loss (purpose and structure)
	  ○ Balance Sheet (basic interpretation only)

Unit 2	Basic Financial Tools for Analysis : (*Outcome focus*: Application without complexity)
	• Cost Classification: Fixed and Variable Costs
	• Break-even Analysis (concept + simple application)
	• Time Value of Money:
	  ○ Present vs Future Value (conceptual + very simple examples)
	• Budgeting as a Planning Tool
	• Introduction to Financial Analysis:
	  ○ Basic idea of ratios (profitability/liquidity – no deep formulas)

Unit 3	Financial Decision-Making Contexts : (*Outcome focus*: Analytical thinking)
	• Basics of Investment Decision:
	  ○ Risk and Return (conceptual understanding)
	• Sources of Finance:
	  ○ Equity and Debt (features and differences)
	• Working Capital (introductory concept):
	  ○ Managing short-term funds
	• Overview of Financial Markets and Institutions (basic)
	• Common Errors in Financial Decision-Making

Suggested Readings:

1. Pandey, I.M. – *Financial Management*
2. Chandra, Prasanna – *Financial Management: Theory and Practice*
3. Maheshwari, S.N. – *Financial Management*
4. NCERT – *Business Studies (Class XI & XII)*
5. RBI / NCFE – Financial Education Resources

Subject Title		A] Cyber Law			
Subject Ref. No.		BCA607T	No. of Credits		2
			No. of Periods / Week		30 / 2
			Assignments / Sessional		20
			Semester Examination		30

Course Objectives

1. Understand the fundamentals of cyber law and its significance in the digital era.
2. Familiarize students with the legal framework governing cyberspace in India.
3. Develop awareness regarding cyber crimes, cyber security, and legal remedies available under Indian law.
4. Examine emerging issues relating to privacy, data protection, and digital governance in India.

Course Outcomes (COs)

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

CO-1	Explain the basic concepts, scope, and importance of Cyber Law in India.
CO-2	Interpret the major provisions of the Information Technology Act, 2000 and its amendments.
CO-3	Identify various cyber crimes and analyze legal remedies and penalties under Indian cyber laws.
CO-4	Evaluate issues relating to data privacy, digital evidence, electronic governance, and cyber ethics in the Indian context

Unit	Topic	No. of Lecture
Unit – I	Introduction to Cyber Law, Concept and Nature of Cyberspace, Meaning, Scope, and Need for Cyber Law, Evolution of Cyber Law in India, Cyber Jurisprudence and Legal Issues in Cyberspace, National Cyber Security Policy: Overview, Information Technology Act, 2000,Objectives and Features of the Information Technology Act, 2000,	10
Unit – II	Electronic Records and Electronic Governance, Digital Signatures and Electronic Signatures, Certifying Authorities and Digital Certificates, Information Technology (Amendment) Act, 2008,Intermediary Liability and IT Rules, 2021, Cyber Crimes and Legal Remedies, Hacking and Unauthorized Access, Identity Theft and Cyber Fraud, Phishing,	10

	Spoofing, and Online Financial Crimes.	
Unit – III	Unit III: Cyber Stalking, Cyber Bullying, and Defamation, Data Theft and Privacy Violations, Investigation, Adjudication, and Penalties under the IT Act, Data Protection, Privacy and Emerging Issues, Right to Privacy in India, Digital Personal Data Protection Act (DPDP), 2023,Personal Data and Sensitive Personal Data, Cyber Ethics and Digital Responsibility, Social Media Governance and Legal Challenges, Emerging Trends: AI, Cloud, Computing, and Cyber Security Issues	10
	Total Marks	30

MINOR – Choose any one from the pool of courses			
Subject Title: Company Law			
Subject Ref. No. MN-8 [B]	No. of Credits		2
	No. of Periods/ Week		
	Assignments / Sessional		
	Semester Examination		30

Course Objectives

At the End of Course, students will be able:

1.	To develop basic understanding of company structure, types, and legal framework under the Companies Act, 2013.
2.	To familiarize students with the process of incorporation and fundamental documents of a company.
3.	To provide knowledge of share capital, membership, and management of companies.
4.	To introduce students to company meetings, decision-making processes, and basic compliance including winding up.

Pre Requisite	Content	Number of Lectures
Unit-1: Introduction & Formation of Company	1. 2. Meaning, Definition, and Features of a Company Types of Companies (Private, Public, OPC, Small 3. 4. Company) 5. 6. Difference between Company and Partnership 7. Overview of the Companies Act, 2013 8. Promotion and Promoters Incorporation of Company Memorandum of Association (MOA) Articles of Association (AOA)	10

Unit – 2: Share Capital, Members & Management	1. 2. Meaning and Types of Share Capital 3. 4. Shares vs Debentures (basic difference) 5. 6. Issue of Shares (overview) 7. 8. Membership in a Company 9. Rights and Duties of Members 10. Transfer and Transmission of Shares (basic concept) Directors: Meaning and Types Appointment and Removal of Directors Duties and Powers of Directors Key Managerial Personnel (KMP) and Role of Company Secretary	10

Unit – 3: Company Meetings & Winding Up	1. Types of Meetings (AGM, EGM, Board Meetings) 2. Notice, Quorum, and Voting 3. Resolutions (Ordinary and Special) 4. Minutes and Records (basic understanding) 5. Introduction to Winding Up 6. Modes of Winding Up (brief overview)	10
Text Books & Additional Reference Books	Text Books: • Avtar Singh – Company Law • S.S. Gulshan & G.K. Kapoor – Company Law • P.C. Tulsian & Bharat Tulsian – Business Law (Company Law portion) Reference Books: • Taxmann Publications – Companies Act, 2013 (Bare Act) • MCA (Ministry of Corporate Affairs) – Official website resources • V.S. Datey – Guide to Companies Act • Dr. Ashok Sharma – Company Law	

MINOR – Choose any one from the pool of courses			
Subject Title: Auditing			
Subject Ref. No. MN-8 [B]	No. of Credits		2
	No. of Periods/ Week		
	Assignments / Sessional		
	Semester Examination		30

Course Objectives

At the End of Course, students will be able:

1.	To develop basic understanding of auditing concepts, principles, and procedures.
2.	To familiarize students with audit techniques such as vouching, verification, and internal control.
3.	To provide knowledge of audit reporting and responsibilities of an auditor.
4.	To create awareness about practical aspects and emerging trends in auditing.

Pre Requisite	Content	Number of Lectures

Unit-1: Introduction to Auditing	1. Meaning, Definition, and Objectives of Auditing 2. Advantages and Limitations of Audit 3. Types of Audit (Internal, Statutory, External) 4. Basic Principles of Auditing 5. Concepts: True & Fair View, Independence, Confidentiality 6. Audit Evidence: Meaning and Types 7. Audit Programme and Audit Planning	10
Unit – 2: Audit Process & Techniques	1. Internal Control: Meaning and Importance 2. Internal Check and Internal Audit (basic idea) 3. Vouching: Meaning and Importance 4. Verification and Valuation of Assets and Liabilities (basic concepts) 5. Audit Working Papers 6. Audit Sampling (basic introduction) 7. Errors and Frauds: Types and Auditor's Duties	10

Unit – 3: Audit Reporting & Special Areas	1. Audit Report: Meaning and Types 2. Basic Elements of Audit Report 3. Qualifications in Audit Report (overview) 4. Introduction to Company Audit 5. Role and Responsibilities of Auditor 6. Concepts of Cost Audit and Tax Audit (basic idea) 7. Recent trends: Introduction to Computerized Auditing	10
Text Books & Additional Reference Books	Text Books: • B.N. Tandon – Practical Auditing • A.K. Basu – Auditing: Principles and Practice • Kamal Gupta & Ashok Arora – Fundamentals of Auditing Reference Books: • Institute of Chartered Accountants of India (ICAI) – Study Material on Auditing • Spicer & Pegler – Auditing • V.K. Agarwal & N.K. Jain – Auditing • Taxman Publications – Auditing & Assurance	

7/7/2026