Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 501 –Employability Skills
W.E.F. 2024-25

[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	**V**	CIE Marks :	**40**
Course Code	**BCA 501**	SEE Marks :	**60**
Contact Hours (L.T.P)	**4:0:0**	Exam Hours :	**02**

Course Outcomes – At the end of the course, student will be able to:

- Understand the significance and importance of developing employability skills for future career success.
- Evaluate and analysis of improved personal skills essential for effective workplace performance.
- Analyse the effective teamwork and collaboration skills in a professional setting.
- Apply ethical standards and professional etiquette in interactions with colleagues and clients.
- Understand the necessary skills and knowledge to enter the industry confidently and succeed in chosen field.
- Remember, identify and solve problems, make informed decisions, and take appropriate actions in professional settings, thereby developing a well-rounded set of employability skills crucial for future career success.

Unit 1 – Introduction to Employability Skills **06L 15 M**

- Introduction
- Definition
- Importance of employability skills
- Overview of the IT industry and its expectations
- Understanding the role of employability skills in career development

Unit 2 - Personal Skills **08L 15M**

- Introduction
- Importance of Personal Skills
- Personal Skills
  - Self-Awareness
  - Thinking and solving problems.
  - Working together and communicating.
  - Understanding the Business,

Unit 3 –Teamwork and Collaboration **12L 15 M**

- Introduction
- Importance of Teamwork.
- Working in teams: roles and responsibilities.
- Building and maintaining effective teams.
- Conflict resolution and negotiation skills.

Unit 4 – Professional Ethics and Etiquette **16L 15M**

- Meaning/Definition
- Understanding ethical behaviour in the workplace.
- Professional etiquette in communication and behaviour.
- Cultural sensitivity and diversity in the workplace.
- Appearance & Dress –Essential.

Unit 5 – Industry Readiness **08L 15 M**

- Resume writing
  - Formats of Resume
  - Types of Resume
- Interview Skills
- Job search strategies
- Understanding job roles and responsibilities in the IT industry.

Unit 6 – Problem-Solving and Decision Making **10L 15M**

- Nature & Importance of Problem Solving techniques
- Decision-making process
- Creative thinking and innovation
- Case study on problem solving technique.
- Analytical thinking.

Reference Books -

- Barun K Mitra, Personality Development and Soft Skills, Oxford university press, New Delhi.
- A course in Grammar and Composition by Geetha Nagaraj, Cambridge University Press India Pvt. Ltd
- Communication Skills for Professionals by Nira Konar, PHI learning Pvt. Ltd.
- English Skills for Technical Students by British Council, Orient Black Swan.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 502 E-Commerce and M-Commerce
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 = 100 Marks]

Semester	V	CIE Marks :	40
Course Code	BCA 502	SEE Marks :	60
Contact Hours (L.T.P)	**4:0:0**	Exam Hours :	02

Course Outcomes – At the end of the course, student will be able to:

- Analyse the impact of E-commerce on business models and strategy.
- Capable to evaluate the effectiveness of e-commerce strategies.
- Implement marketing strategies for e-commerce businesses.
- Develop comprehensive E-Commerce strategies for new market

Unit 1 –Introduction 10 L 15 M

- Overview of E- Commerce
- Applications of E-Commerce
- Types of E-Commerce
- Elements E-Commerce
- Introduction to Online Auctions
- Electronic Data Interchange
- Electronic Payment Systems

Unit 2 –Web Portal and Crowd Sourcing 10 L 15 M

- Introduction to Web Portal
- Types of Web Portals
- Crowd Sourcing
- Introduction to TCP/IP
- Understanding IP Addressing System

Unit 3 – Website Management 10 L 15 M

- Domain Management –
  - Domain Types
  - Domain Search
  - Domain Registration & Renewal
- Web Server Management : Web Server, Web Space
- Types of Web Server

Unit 4 –Blog and Searching Fundamentals **10 L 15 M**

- Concept of Blog
- Characteristics of Blog
- Blog Development
- Search Engine
- Multilingual Search
- Translation of search results

Unit 5 – Web Hosting and E-Commerce **10 L 15 M**

- Introduction to Web Hosting
- Hosting Web Site on Web Server
- E-Commerce Models
- E-Commerce Frame Work
- Elements of E-Commerce Infrastructure
- Introduction to E-Retailing

Unit 6 – Mobile Commerce (M-Commerce) **10 L 15 M**

- Introduction to M-Commerce
- Types of M-Commerce
- Services of M-Commerce
- Benefits and Limitations of M-Commerce
- Mobile Business Services
- Wireless Application Protocol

Reference Books -

- Kenneth C. Laudon, E-Commerce : Business, Technology, Society, 4th Edition, Pearson
- S. J. Joseph, E-Commerce: an Indian perspective, PHI
- Elias. M. Awad, "Electronic Commerce", Prentice-Hall of India Pvt Ltd.
- RaviKalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley.
- Efraim Turban, Jae Lee, David King, H.Michael Chung, “Electronic Commerce – A ManagerialPerspective", Addison-Wesley.
- Elias M Award, “Electronic Commerce from Vision to Fulfilment”, 3rd Edition, PHI, Judy Strauss, Adel El-Ansary, Raymond Frost, “E-Marketing”, 3rd Edition, Pearson Education.

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North Maharashtra University, Jalgaon

Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 503 Cloud Computing Applications
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 = 100 Marks]

Semester	V	CIE Marks :	40
Course Code	BCA 503	SEE Marks :	60
Contact Hours (L.T.P)	**4:0:0**	Exam Hours :	02

Course Outcomes –

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

- Familiar with cloud computing fundamentals, services, implementation, architecture and deployment techniques etc.
- Capable to understanding about cloud and virtualization.

Unit 1 –Introduction **10 L 15 M**

- Introduction to Cloud Computing
- Features of Cloud Computing
- Advantages and Dis-Advantages of Cloud Computing
- Challenges and Risk of Cloud Computing
- Roots of Cloud Computing
- Types of Cloud Computing -
  - Public, Private, Hybrid, Community, Multi-Cloud Computing

Unit 2 –Cloud Architecture, Services and Applications **10 L 15 M**

- Cloud Computing Stack
- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)
- Identity as a Service (IDaaS)
- SaaS v/s PaaS

Unit 3 –Abstraction and Virtualization **10 L 15 M**

- Introduction to Virtualization
- Types of Virtualizations
- Load Balancing Techniques
- Introduction to Hypervisor
- Storage Area Network (SAN)

Unit 4 – Porting Application and Virtual Machine Provisioning **10 L 15 M**

- Porting Applications in Cloud
- Virtual Machine Provisioning
- Manageability Virtual Machine Migration Services

Unit 5 – Managing & Securing the Cloud Computing 10 L 15 M

- Administrating the Cloud
- Securing the Clouds
- Securing the data in Cloud Computing
- Disaster Recovery in Cloud
- Securing, Malware and Internet Attack

Unit 6 –Risk of Cloud Computing and Advanced Topics 10 L 15 M

- Risk Assessment and Management
- Risk of Vendor Lock-in
- Types of Vendor Lock-in Risk
- Integration of Public and Private Cloud
- Amazon Web Services (AWS)

Reference Books -

- Sosinsky B., "Cloud Computing Bible", Wiley India ISBN 13: 9788126529803.
- Buyya R., Broberg J., Goscinski A., "Cloud Computing: Principles and Paradigm", John Wiley & SonsISBN NO: 81–7758– 575-4
- Velte T., Velte A., Elsenpeter R., "Cloud Computing – A practical Approach", Tata McGraw-Hill. ISBN 13: 9780070683518
- Barrie Sosinsky: "Cloud Computing Bible", Wiley-India, 2010
- Rajkumar Buyya, James Broberg, Andrzej M. Goscinski: "Cloud Computing: Principles and Paradigms", Wiley, 2011
- Nikos Antonopoulos, Lee Gillam: "Cloud Computing: Principles, Systems and Applications", Springer, 2012
- Ronald L. Krutz, Russell Dean Vines: "Cloud Security: A Comprehensive Guide to Secure Cloud Computing", Wiley-India, 2010
- Tim Mather, Subra Kumara swamy, Shahed Latif, Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, O'Reilly Media, 2009.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR IN COMPUTER APPLICATION (BCA)
BCA 504 (A) Web Development Technology-III
(Web Developments with Angular JS and MongoDB)
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100Marks]

Semester:	**V**	CIE Marks:	**40**
Course Code:	**BCA 504 (A)**	SEE Marks:	**60**
Contact Hours (L:T:P):	**4:0:0**	Exam Hours:	**02**

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

- Build a component-based application using Angular components and enhance their functionality using directives.
- Acquire knowledge about data binding for developing Angular forms and bind them with model data.
- Apply Angular built-in or custom pipes to format the rendered data.
- Capable to develop a single page application by using synchronous or asynchronous Angular routing.
- Capable to make use of MongoDB queries to perform CRUD operations on document database.

Unit-1: Introduction to AngularJS **10 L 15 M**

- Overview of front-end development and JavaScript frameworks
- Introduction to AngularJS and its features
- Setting up an AngularJS development environment (Node.js, npm, Angular CLI)
- AngularJS architecture and components: modules, components, directives
- AngularJS templates and expressions

Unit-2: AngularJS Data binding, Services **10 L 15 M**

- Data binding: one-way binding, two-way binding, ngModel directive
- Built-in directives: ngIf, ngFor, ngSwitch
- Handling events and user interactions
- AngularJS services: $http, $resource
- Creating custom services and factories
- Dependency injection in AngularJS: providers, factories

Unit-3: AngularJS Routing and Form **10 L 15 M**

- Introduction to AngularJS routing
- Setting up routing in AngularJS applications
- Route parameters and route guards
- Building forms in AngularJS

- Form controls: input, textarea, select, checkbox, radio

Unit-4: Introduction to MongoDB **10 L 15 M**

- Overview of MongoDB and NoSQL databases
- Installing and setting up MongoDB
- Advantages over RDBMS
- MongoDB basics: Databases, Collections, Documents
- CRUD operations in MongoDB

Unit-5: Basic Concept of MongoDB **10 L 15 M**

- Create database, Create Collections
- Insert, Update, Delete
- MongoDB Query Operators
- Sorting, Concept of Replica
- Concept of Sharding and backup

Unit-6: AngularJS with MongoDB **10 L 15 M**

- Introduction to MEAN stack (MongoDB, Express.js, AngularJS, Node.js)
- Integration of MongoDB with AngularJS
- Creating AngularJS services to interact with MongoDB
- Implementing CRUD operations in AngularJS using MongoDB as the backend database

Reference Books-

- "AngularJS in Action" by Lukas Ruebbelke
- "AngularJS: Up and Running" by ShyamSeshadri and Brad Green
- MongoDB: The Definitive Guide" by Shannon Bradshaw, Eoin Brazil, and Kristina Chodorow: Published by O'Reilly Media

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR IN COMPUTER APPLICATION (BCA)
BCA 504 (B) Data Analytics –III
(Exploratory Data Analytics Using Power BI)
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100Marks]

Semester:	**V**	CIE Marks:	**40**
Course Code:	**BCA 504 (B)**	SEE Marks:	**60**
Contact Hours (L:T:P):	**4:0:0**	Exam Hours:	**02**

Course Outcomes:

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

- Capable in navigating the Power BI interface, understanding its various components, and knowing how to effectively use them to import, manipulate, and visualize data.
- Acquire knowledge about Python programming to use for data analytics.
- Create clear and informative visualizations in Power BI, enabling them to explore and analyze data effectively.
- Create interactive dashboard using Power BI.

Unit-1:Exploratory Data Analysis **10 L 15 M**

- EDA fundamental
- Exploratory data analysis and data visualization
- Types of Exploratory Data Analysis:-Univariate, Bivariate, Multivariate and Time Series Analysis
- Exploratory Data Analysis Tools
- Making sense of data Comparing EDA with classical and Bayesian analysis
- Continuous variables, Discrete variables, Dependency relationships, Multivariate categorical variables
- Temporal data, Spatial data

Unit-2: EDA Using Python **10 L 15 M**

- Introduction to Python
- Python Libraries (Types of libraries)
- Working on DataFrame
- Exploratory Data Analysis (EDA) Using Pandas (head(), tail(), isna(), DataFrame.sort_values(), DataFrame.truncate(), DataFrame.describe(), drop_dublicates)
- Exploratory data visualization with Pandas library
- Numpy library function for EDA

Unit-3: Introduction to Power BI **10 L 15 M**

- Power BI History, Importance

- Power BI Components
- Power BI Architecture
- Power BI Tools
- Power BI Advantages
- Power BI Disadvantages
- Download and Install Power BI Desktop
- Power BI Dashboard

Unit-4: Working on Data using Power BI **10 L 15 M**

- Importing data into Power BI from various sources: Excel, CSV, databases, web, etc.
- cleaning data using Power Query Editor
- Introduction to Power Query Editor for data cleaning and transformation
- Techniques for handling missing values, duplicates, and errors
- Data reshaping: pivoting, unpivoting, splitting columns

Unit-5: Data Visualization using Power BI **10 L 15 M**

- Creating basic visualizations: bar charts, line charts, pie charts, etc.
- Formatting and customizing visuals: colors, fonts, labels
- Utilizing slicers and filters for interactive analysis
- Advanced visualizations: treemaps, scatter plots, histograms, etc

Unit-6:Dashboard in Power BI **10 L 15 M**

- Building interactive dashboards: combining visuals, arranging layout
- Dashboard Creation
- Dashboard layout and Navigation button
- Publishing dashboards to Power BI Service
- Sharing dashboards with colleagues and stakeholders
- Configuring dashboard settings: access permissions, refresh schedules.

Reference Books

1. "Power BI Cookbook" by Brett Powell
2. "Mastering Microsoft Power BI" by Brett Powell
3. "Data Science for Business" by Foster Provost and Tom Fawcett:
4. Kaggle: Kaggle hosts datasets, competitions, and tutorials on data analysis and machine earning, including tutorials on using Python for exploratory data analysis.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 504(C) Machine Learning
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	V	CIE Marks :	40
Course Code	BCA 504(C)	SEE Marks :	60
Contact Hours (L.T.P)	**4:0:0**	Exam Hours :	02

Course Outcomes –

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

- Acquire knowledge about understands the basic concept of machine learning
- Understand the Role of Machine Learning.
- Apply machine learning algorithms to solve problems of moderate complexity.
- Apply the algorithms to a real-world problem.

Unit 1 – Introduction to Machine Learning **10 L 15 M**

- What is Machine Learning?,
- History of Machine Learning,
- Need of Machine Learning,
- Features of Machine learning,
- Applications of Machine learning,
- Types of Machine Learning,
- Examples of Machine Learning.

Unit 2 - Datasets in Machine Learning **10 L 15 M**

- What is a dataset?
- Types of data in datasets
- Need of Dataset
- Machine learning Life cycle
- Data Pre-processing
- Difference between Artificial intelligence and Machine learning,
- Basics of neural network.

Unit 3 – Learning with Regression **10 L 15 M**

- What is Regression,
- Use Regression Analysis,
- Types of Regression,
- Linear Regression in Machine Learning,
- Multiple Linear regression?

Unit 4 –Introduction to Algorithm **10 L 15 M**

- Classification of Algorithm,
- What is clustering?

- Types of clustering,
- Introduction to logistic regression in Machine Learning.

Unit 5 – Learning with Algorithm **10 L 15 M**

- K-Nearest Neighbour (KNN) Algorithm for Machine Learning,
- Support Vector Machine Algorithm,
- Naïve Bayes Classifier Algorithm

Unit 6 – Define a Problem in Machine Learning **10 L 15 M**

- Problem Definition Framework,
- Steps for problem solving, Problem in machine learning,
- Real-World Problems (Identifying Spam, Image & Video Recognition, demand Forecasting, Virtual Personal Assistant).

Reference Books -

- Giuseppe Bonaccorso, "Machine Learning Algorithms", Packt Publishing Limited, ISBN10: 1785889621, ISBN-13: 978-1785889622
- Introduction to Machine Learning with Python: A Guide for Data Scientists 1st Edition, by Andreas C. Müller, Sarah Guido, O'Reilly.
- Peter Flach, "Machine Learning: The Art and Science of Algorithms that Make Sense of Data", Cambridge University Press, Edition 2012, ISBN-10: 1107422221; ISBN-13: 978-1107422223
- Tom Mitchell "Machine Learning" McGraw Hill Publication, ISBN :0070428077 9780070428072
- Nikhil Buduma, "Fundamentals of Deep Learning", O"REILLY publication, second edition 2017, ISBN: 1491925612

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North Maharashtra University, Jalgaon

Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 505 Lab on E-Commerce
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 = 100 Marks]

Semester	V	CIE Marks :	40
Course Code	BCA 505	SEE Marks :	60
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	03

Course Outcomes –

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

- Develop technical skills and knowledge about E-Commerce.
- Analyse both theoretical and practical knowledge of E-Commerce.

Assignments -

1. Download readymade free templates of E-Commerce websites and modify it.
2. Create simple and static demo web page for online shopping site.
3. Create simple and static Feedback Form (web page) for online shopping site.
4. Create simple and static demo product catalog web page for online shopping site.
5. Demonstrate domain registration.
6. Search Web Hosting Plans with configuration.
7. Demonstrate free hosting with control panel.
8. Upload any demo video on YouTube.
9. Create and develop your blog.
10. Demonstrate E-Mail Functions.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 506 Lab on Cloud Computing
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 = 100 Marks]

Semester	V	CIE Marks :	40
Course Code	BCA 506	SEE Marks :	60
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	03

Course Outcomes –

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

- Explore important cloud computing driven commercial systems and applications.
- Analyze various cloud programming models and apply them to solve problems on the cloud.

Assignments :

Assignment No. 1 : Working on Google Drive to make Spreadsheets and Notes

Assignment No. 2 : Installation and Configuration of Justcloud

(Professional Cloud Storage from JustCloud is Simple, Fast and Secure. Just Cloud will automatically backup the documents, photos, music and videos stored on your computer, to the cloud so you are never without files again.)

Assignment No. 3 : Implementing Virtual Machines with VirtualBox:

(Cloud providers use virtualization technologies to offer scalable and flexible computing resources. Understanding VM creation and configuration is essential for working with cloud-based infrastructure.)

Assignment No. 4 : Setting up a Cloud Environment with OpenStack :

(To Gain proficiency in cloud infrastructure development and management, a fundamental skills in cloud computing, through the implementation of OpenStack for creating a customized cloud environment.)

Assignment No. 5 : Setting Up a Simple Website on GitHub:

(To deploy a static website on GitHub Pages, demonstrating the use of cloud-based hosting for web content. Software: GitHub (https://github.com/)

Assignment No. 6 : Introduction to Cloud CRM (Salesforce):

(Understand Customer Relationship Management (CRM) on Salesforse)

Assignment No. 7 : Data Analytics on the Cloud (Salesforce):

(The objective of this practical is to familiarize students with Salesforce's reporting tools and dashboards, enabling them to analyze and visualize data effectively.)

Assignment No. 8 : Introduction to Amazon AWS S3:

(The objective of this practical is to learn about Amazon AWS and how to host a simple static website using Amazon S3.)

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North Maharashtra University, Jalgaon
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BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 507(A) Lab Web Development Technology-III
(Angular JS and MongoDB)
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	**V**	CIE Marks :	**40**
Course Code	**BCA 507 (A)**	SEE Marks :	**60**
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	**03**

Course Outcomes –

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

- Build a component-based application using Angular components and enhance their functionality using directives.
- Utilize data binding for developing Angular forms and bind them with model data.
- Develop a single page application by using synchronous or asynchronous Angular routing.
- Make use of MongoDB queries to perform CRUD operations on document database.

Assignments

1. Create a user-friendly interface with a clean and proper design.
2. Develop AngularJS program to create a login form, with validation for the username and password fields.
3. To demonstrate AngularJS services and data bind.
4. To display tasks in a list with checkboxes for marking completion as per user choice.
5. To use ng-if directive to display tasks in the UI.
6. To create database and structure in MongoDB.
7. To demonstrate insert, update, delete, select operations in MongoDB
8. To create collection and insert records in collections.
9. Develop a task manager application using AngularJS for the frontend and MongoDB for the backend
10. To Create Student interface to stored and update the information.
11. To display students information reports(All, Parametized)
12. Implement a user interface where users can view, add, update, and delete tasks with MongoDB Database.

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Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 507 (B) Lab on Data Analytics –III
(Exploratory Data Analytics using Power BI and Python)
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	**V**	CIE Marks :	**40**
Course Code	**BCA 507(B)**	SEE Marks :	**60**
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	**03**

Course Outcomes –

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

- Acquire knowledge how to import data into Power BI and Python environment.
- Creating various visualizations in Power BI including histograms, scatter plots, box plots, and others.
- Design dashboard in Power BI

Assignments

1. Install the data Analysis and Visualization tool: Python and Power BI.

Python

2. To demonstrate pandas functions for data analytics(.CSV)
3. To perform exploratory data analysis (EDA) with datasets like email data set. Export all your emails as a dataset, import them inside a pandas data frame, visualize them and get different insights from the data.
4. To working with Numpy arrays, Pandas data frames as well as Basic plots.

PowerBI

5. Import the "Superstore Sales" dataset into Power BI Desktop and inspect the dataset to understand its structure, data types, and any missing values.
6. To demonstrate Power Query Editor on different datasets.
7. To demonstrate Data reshaping on different datasets.
8. To generate summary statistics to describe key aspects of the data, such as sales revenue, order quantity, and profit margins.
9. Create visualizations (e.g., histograms, box plots, scatter plots) to explore the relationships between different variables in the dataset.
10. To design an interactive dashboard in Power BI that integrates the key insights obtained from the exploratory data analysis.
11. To Published and share dashboard with colleagues.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 507(C) Lab on Machine Learning using Python
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	V	CIE Marks :	40
Course Code	BCA 507(C)	SEE Marks :	60
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	03

Course Outcomes –

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

- Implement the basic application in Machine Learning.
- Acquiring knowledge about different function of data distribution.
- Understand the concept of regression.

Assignment

Note: Following practical implemented using python.

1. Write a python program to find mean, mode, median.
2. Write a python program to typical normal data distribution.
3. Write a python program to draw scatter plot of linear regression.
4. Write a python program to draw the line of Linear Regression.
5. Write a python program to predict the speed of a 5 years old car.
6. Write a python program to print the coefficient values of the regression object.
7. Write a python program to 2d binary classification data generated by make_circles() have a spherical decision boundary.
8. Write a python program to display the plot we can use the functions plot() and show() from pyplot.
9. Write a python program to data generated by the function make_blobs() are blobs that can be utilized for clustering.
10. Write a python program to random multi-label classification data is created by the function make make_multilabel_classification().
11. Write a python program to implement the KNN algorithm.
12. Write a python program to creating a dataframe to implement one hot encoding from CSV file.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
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BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 601 Entrepreneurship Development
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	VI	CIE Marks :	40
Course Code	BCA 601	SEE Marks :	60
Contact Hours (L.T.P)	4:0:0	Exam Hours :	02

Course Outcomes –

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

- Understand the concept of Entrepreneurship and to learn the professional behavior expected of an entrepreneur.
- Acquire conceptual exposure on converting idea to a successful entrepreneurial firm.
- Understand on the basic concepts of entrepreneurship and business opportunities to familiars with knowledge about business and project reports for starting a new ventures on team based.

Unit 1 – Understanding Entrepreneurship **10 L 15 M**

- Concepts and Overview of Entrepreneurship
- Evolution of term 'Entrepreneurship'
- Factors influencing entrepreneurship' (1) Psychological factors (2) Social factors (3) Economic factor (4) Environmental factors
- Types of entrepreneurs.
- Difference between Entrepreneur and Manager
- Barriers to entrepreneurship

Unit 2 – Dimensions of Entrepreneurship **10 L 15 M**

- Entrepreneurial Culture & Society
- Entrepreneurial Potential and Potential Entrepreneur
- Emerging Trends in Entrepreneurship Development
- Women Entrepreneurship
- Rural Entrepreneurship
- Social Entrepreneurship in India

Unit 3 – Entrepreneurship Development Program **10 L 15 M**

- Entrepreneurial Development Programs (EDP),
- Role, relevance, and significance
- Role of Government in organizing EDPs,
- Stages of EDP
- Problems of EDP

Unit 4 – Business Plan & Project Report **10 L 15 M**

- Business Plan Preparation and Project Financing
- Market Feasibility, Technical Feasibility and Financial Viability
- Project Report Preparation
- Financial Projections Preparation

Unit 5 – Business Opportunities and Start-up Policies 10 L 15 M

- Business Opportunities in the Contest of Maharashtra and Industrial Policy of the State
- Business Incubation Centres
- Export oriented Unit
- Start-up Policy Framework and Incentives

Unit 6 - Small Business & Funding 10 L 15 M

- Concept & Definition, Role of Small Business in the modern Indian Economy,
- Steps for starting a small industry, registration as SSI, advantages and problems of SSIs
- Institutional Support mechanism in India; Incentives & Facilities, Govt. Policies for SSI
- Sources of Finance- Venture capital- Venture capital process- Business angles- Commercial banks- Government Grants and Schemes.

Reference Books -

TEXT BOOKS:

- Reddy, Entrepreneurship: Text & Cases - Cengage, New Delhi.
- Kuratko/rao, Entrepreneurship: a south asian perpective.- Cengage, New Delhi.
- Leach/Melicher, Entrepreneurial Finance – Cengage. , New Delhi.
- K.Sundar – Entrepreneurship Development – Vijay Nicole Imprints private Limited
- Khanka S.S., Entrepreneurial Development, S.Chand & Co. Ltd., New Delhi, 2001.
- Sangeeta Sharma, Entrepreneurship Development, PHI Learning Pvt. Ltd., 2016.

REFERENCE BOOKS:

- Barringer, B., Entrepreneurship: Successfully Launching New Ventures, 3rd Edition, Pearson, 2011.
- Bessant, J., and Tidd, J., Innovation and Entrepreneurship, 2nd Edition, John Wiley &Sons, 2011.
- Desai, V., Small Scale Industries and Entrepreneurship, Himalaya Publishing House, 2011.
- Donald, F.K., Entrepreneurship- Theory, Process and Practice, 9th Edition, Cengage Learning, 2014.
- Hirsch, R.D., Peters, M. and Shepherd, D., Entrepreneurship, 6th Edition, Tata McGraw-Hill Education Pvt.Ltd., 2006.
- Mathew, J.M., Entrepreneurship Theory at Cross Roads: Paradigms and Praxis, 2nd Edition, Dream Tech, 2006.
- Morse, E., and Mitchell, R., Cases in Entrepreneurship: The Venture Creation Process, Sage South Asia, 2008.
- Nagendra and Manjunath, V.S., Entrepreneurship and Management, Pearson, 2010.
- Reddy, N., Entrepreneurship: Text and Cases, Cengage Learning, 2010.
- Roy, R., Entrepreneurship, 2nd Edition, Oxford University Press, 2011.
- Stokes, D., and Wilson, N., Small Business Management and entrepreneurship, 6th Edition, Cengage Learning, 2010.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 602 - Cyber Security
W.E.F. 2023-24
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	VI	CIE Marks :	40
Course Code	BCA 602	SEE Marks :	60
Contact Hours (L.T.P)	4:0:0	Exam Hours :	02

Course Outcomes –

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

- Create awareness about cyber security.
- Analyse and evaluate existing legal framework and laws on cyber security.
- Apply steps of e-commerce and cybercrime prevention.
- Develop a deeper understanding with cyber security landscape, cryptography, digital signature, network security etc.
- Identify various cybercrime, reporting and investigation procedures.

Unit 1 – Introduction **8 L 10 M**

- Meaning of Data & Information,
- Basic Principles of Information Security,
- Importance of Information Security,
- Information System Threats and attacks,
- Information Security Policy and Procedure.

Unit 2 – E-commerce & Social Networking **10 L 15 M**

- E- Commerce: Definition of E- Commerce, Security Threats to E-Commerce.
- Modes of Electronics Payment :, Internet Banking, E-Cash, Credit/Debit Cards,E-Wallet.
- E-Commerce Frauds and Preventions.
- Social Networking: Meaning, Advantages & Disadvantages of Social Networking, Security issues related to social media, Cyber Crimes related to Social Networking.

Unit 3 – Physical and Logical Access Controls **12 L 20 M**

- Cryptography: Meaning, Types: Symmetric and Asymmetric, Model of Cryptography System.
- Digital Signature: Requirement of Digital Signature System and Mechanism of Digital Signature.
- Physical Security : Meaning & Needs, Disaster and Controls Systems
- Biometrics System: Meaning & Benefits of Biometrics Systems, Criteria for selection of Biometrics.

Unit 4 – Network Security **10 L 15 M**

- Basic Concepts of Network Security, Types of network attacks: Interruption, Interception, Modification, Fabrication.
- Intrusion Detection System: Need and Types of Intrusion Detection System.
- Virtual Private Networks: Concept, Types of VPNs and their Usage, Use of Tunneling with VPN.
- Firewall: Concept, Types and Importance.

Unit 5 – Cyber Crime & Preventions **10 L 15 M**

- Introduction to Cyber Crime and classification of Cyber Crime.
- Email Tracing and Tracking, Hacking, Phishing, Cyber Terrorism, Identity Theft, DoS attack, Spoofing.
- Steps of Cyber Crime Prevention, Cyber Crime Reporting and Investigation.

Unit 6 –Cyber Law & IT Act **10 L 15 M**

- Fundamentals of Cyber Law,
- Scope of Indian Cyber Law,
- Information Technology Act 2000.
- Main features of the IT Act 2000,
- Major Penalties and offences in IT Act 2000
- Information Technology Amendment Act 2008 and its major strengths.

Reference Books -

- Godbole,"Information Systems Security", Willey ISBN 10: 8126516925
- Merkov, Breithaupt," Information Security", Pearson Education ISBN-10: 0-7897-5325-1
- Yadav, "Foundations of Information Technology", New Age, Delhi ISBN 10: 8122417620
- Kahate," Cryptography and Network Security", McGraw-Hill, Noida ISBN-13 : 978-9353163303
- Vithalani,"Information Technology Laws and Cyber Crimes", Shashwat Publication, ISBN:978-81-19281-48-0.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 603 Android Application Development
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	VI	CIE Marks:	40
Course Code	BCA 603	SEE Marks:	60
Contact Hours (L.T.P)	**4:0:0**	Exam Hours:	02

Course Outcomes –

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

- Understand basic and advanced features of android technology.
- Designing and building mobile applications using android platform.
- Explore the knowledge about storing, sharing and retrieving the data in Android Applications.

Unit 1:Introduction to Mobile Computing **10 L 15 M**

Mobile Computing: Introduction to Mobile Computing, Applications, Limitations, and Architecture, Characteristics of Mobile Communication.
Cellular Overview: Cellular networks, Cellular concept, Location Management, Handoffs Noise and its effects on mobile, Understanding GSM and CDMA, FDMA, TDMA.

Unit 2 – Introduction to android **10 L 15 M**

Overview and history of Android operating system, Introduction to Google Play Store, Features of android operating system, Android Architecture, Setting up development environment, Dalvik Virtual Machine & .apk file extension, Android Devices, Setting up development environment and Software development kit., Android API levels (versions & version names)

Unit 3 – Android Application Structure **10 L 15 M**

Design criteria for Android Application: Hardware Design Consideration, Design Demands For Android application, Manifest,.xml and .java file, Layouts & Drawable Resources, Intent, Activity, Activity Lifecycle and Manifest and First sample Application.

Unit 4 –Android Layouts and Menu	**10 L 15 M**
Linear Layout, Relative Layout, Constraint Layout, Frame Layout, Table Layout Option Menu, Context Menu, Popup Menu, Android Fragments.	
Unit 5 – Android Widgets	**10 L 15 M**
Introducing views and view groups, UI Widgets, Working with Buttons. Toggle Button, Checkbox and Custom Checkbox, List View and Custom List View, Date Picker Time Picker, Vertical and Horizontal scroll View ,Search View and Search View on Toolbar	
Unit 6 – Database - SQLite	**10 L 15 M**
Introducing SQLite, SQL Lite Open Helper and creating a database, Opening and closing a database, Working with cursors Inserts, Updates, and Delete.	
Reference Books -	
• Reto Meier, "Professional Android 2 Application Development", Wiley India Pvt Ltd • Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd • Android Application Development All in one for Dummies by Barry Burd, Edition: I	

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 604 (A) Web Technology -IV
(Web Developments with React.js and Node.js)
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	**VI**	CIE Marks :	**40**
Course Code	**BCA 604(A)**	SEE Marks :	**60**
Contact Hours (L.T.P)	**4:0:0**	Exam Hours :	**02**

Course Outcomes –

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

- Understand the fundamentals of React.js & Node.js web development tools.
- Create server-side development using Node JS, focusing on the development of understanding Node JS architectures.
- Acquire knowledge about how to connect client-side and server-side applications and showcase effective ways of handling errors and validating inputs.

Unit - 1 : Basic Concept of React JS **10 L 15 M**

- React JS Introduction
- Advantages of React JS
- Work flow of React JS
- Scope of React JS
- Introduction of Virtual DOM.
- Understanding JSX
- Difference between JS and JSX.
- Containers and components- Types of Components

Unit - 2 : React JS Environment & Real-Time Application **10 L 15 M**

- Create a React component with JSX template.
- Create Nested Components
- States
- React JS render
- React Props
- Introduction of Props validation with data types.
- Routes
- Understanding React Lifecycle and its phases.

Unit - 3 : React JS Forms And UI **10 L 15 M**

- React Forms
- Setup Controlled and Uncontrolled form components.
- Control Input elements.
- React JS Form validations.
- React Events

Unit - 4 :Basic Concept of Node JS **10 L 15 M**

- Introduction
- Advantages of Node JS
- Node setup
- Module
- Exports and Require
- Concept of NPM&Create package.json
- Creating Web Server

Unit - 5 : Node Express JS **10 L 15 M**

- Routes and Responding
- Express Params and Query String
- Introduction to Express.js framework
- Small REST API example
- Handling HTTP requests and responses
- Express Middleware
- API Authentication

Unit - 6 : Node JS Working MongoDB **10 L 15 M**

- Connecting Node.js with MongoDB
- Working with insert, select command
- Updating records
- Deleting records

Reference Books -

1. "Learning React: A Hands-On Guide to Building Web Applications Using React and Redux" by Kirupa Chinnathambi
2. "Fullstack React: The Complete Guide to ReactJS and Friends" by Anthony Accomazzo, Ari Lerner, and Nate Murray
3. "Node.js Web Development - Fifth Edition" by David Herron

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 604 (B) Data Analytics -IV
(Data Visualization for Analytics using Tableau)
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	**VI**	CIE Marks :	**40**
Course Code	**BCA 604 (B)**	SEE Marks :	**60**
Contact Hours (L.T.P)	**4:0:0**	Exam Hours :	**02**

Course Outcomes –

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

- Explore the concept of data visualization
- Understand the principles of effective dashboard design
- Develop proficiency in creating interactive dashboards using Tableau
- Apply best practices for layout, formatting, and interactivity in dashboard design
- Explore advanced dashboard features and techniques in Tableau

Unit - 1 : Introduction **10 L 15 M**

- Data Visualization
- The role of data visualization in decision-making
- Importance and benefits of data visualization
- Data Visualization tools
- Introduction to Tableau software and its capabilities
- Installing Tableau Desktop and connecting to data sources
- Understanding Tableau interface and workspace
- Building basic visualizations: bar charts, line charts, scatter plots

Unit - 2 :Data Connection and Advanced Visualizations in Tableau **10 L 15 M**

- Data Connection with Data Sources(.csv, .txt, SQL, Excel)
- Concept of Tableau Extracting and editing metadata
- Tableau working on data(Joining, Blending & Sorting)
- Creating complex visualizations: heatmaps, tree maps, box plots
- Implementing advanced chart types: dual-axis charts, combination charts

Unit - 3 :Mapping and Geographic Visualization **10 L 15 M**

- Working with spatial data in Tableau
- Spatial functions available in Tableau

- Creating maps and geographic visualizations
- Using custom geocoding and background images

Unit - 4 :Interactive Dashboards in Tableau **10 L 15 M**

- Design principles for effective dashboards
- Introduction to Tableau dashboard components and layout
- Building basic visualizations for dashboards (e.g., bar charts, line graphs)
- Adding filters, parameters, and actions for interactivity

Unit - 5 : Advanced Analytics and Forecasting **10 L 15 M**

- Implementing forecasting models
- Forecasting Works in Tableau
- Create a Forecast
- Forecasting When No Date is in the View
- Forecast Field Results
- Configure Forecast Options
- Review Forecast Descriptions
- Troubleshoot Forecasting

Unit - 6 : Data Storytelling and Presentation **10 L 15 M**

- Crafting compelling data stories with Tableau
- Create Story
- Add a Tableau Data Story to a Dashboard
- Configure Settings for a Tableau Data Story
- Customize Your Tableau Data Story
- Presenting insights and recommendations using Tableau Story Points

Reference Books -

- "Tableau Your Data!: Fast and Easy Visual Analysis with Tableau Software" by Daniel G. Murray
- "Communicating Data with Tableau: Designing, Developing, and Delivering Data Visualizations" by Ben Jones

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 604(C) Data Mining
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	VI	CIE Marks :	40
Course Code	BCA 604(C)	SEE Marks :	60
Contact Hours (L.T.P)	4:0:0	Exam Hours :	02

Course Outcomes –

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

- Understand the different data mining techniques
- Acquire knowledge about Data mining concepts
- Explore Data mining concepts in different fields.

Unit 1 – Introduction to Data Warehousing **10 L 15 M**

Introduction, What is Data Warehouse? Definition, Multidimensional Data Model, OLAP Operations, Warehouse Schema, Data Warehouse Architecture, Warehouse Server, Metadata, OLAP Engine, Data Warehouse Backend Process.

Unit 2 - Introduction to Data Mining **10 L 15 M**

What is Data Mining?, History of Data Mining, Types of Data, Data Mining Techniques, Data Mining Implementation Process, Data Mining vs Machine Learning.

Unit 3 – Basics of data mining & models **10 L 15 M**

Introduction to Data Mining Functionalities, Issues in Data Mining, Data Mining Architecture, Data Mining Models, types of data mining models, Interestingness of Patterns - Classification of Data Mining Systems - Data Mining Task.

Unit 4 – Association Rule Mining **10 L 15 M**

Mining Frequent Patterns, Associations and correlations, Mining Methods, Mining Various Kinds of Association, Rules, Correlation Analysis, Constraint Based Association Mining.

Unit 5 – Classification of Data Mining **10 L 15 M**

Classification and Prediction - Basic concepts, Decision Tree Induction, Bayesian Classification, Rule Based classification, classification by Back propagation, Support Vector Machines.

Unit 6 – Clustering & Applications **10 L 15 M**

Cluster analysis, Categorization of Major Clustering methods, K-means partitioning methods, hierarchical Methods- Data Mining Applications.

Reference Books -

- 1. Jiawei Han & Micheline Kamber, “Data Mining Concepts & Techniques”, 2011, 3rd Edition.
- 2. Data Mining Techniques, Arun K Pujari, University Press
- 3. Data Mining: Concepts and Techniques, 3rd Edition, Jiawei Han, Micheline Kamber,
- Jian Pei
- Margaret H.Dunbam, “Data Mining Introductory and Advanced Topics”, Pearson Education 2003.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 605 –Project
[Total Marks: External60 + Internal40 =100 Marks]

Semester	**VI**	CIE Marks :	**40**
Course Code	**BCA 605**	SEE Marks :	**60**
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	**03**

Outcome : –

- Students are able to apply their theoretical knowledge to practical problems and will be able to develop hands on experience in software development.
- Understand how to apply the programming knowledge for a real world problem.
- Implement the knowledge about Software Requirements Specification (SRS).

PROJECT WORK

- Each Student shall have to carry out the project work based on selected Elective Domain (Web Technology/ Data Analytics /AI, ML) or other technology as per curriculum.
- The project work should be carried out individually. No group work is allowed in the Project work. The project title should not be repeated.
- The topic of the project should be decided with the consultation & guidance of an internal guide teacher of the institute / college.
- The project should be necessarily innovative and problem solving.
- The application should be menu driven and should provide the facilities of storage of data, modifications in existing data, deletion of unwanted data, and viewing of data.
- The student should complete the project based on the actual requirement of any selected enterprise/ organization or sub system and get it certified by the concerned project guide; that the Project report has been satisfactorily completed.
- In the project Report, student should clearly mention –SRS, Need of project, DFD, Normalization, ERD, database(s) / CSV files required for the project, software / technology used for the project, reasons for selection of that software / technology, inputs & Outputs design.
- Prepare **3 copies** of Project Report (1 copy for student, One for Institute / College & One for University).
  Submit **TWO** copies to the Head / Director of the institute / Principal of the college. One copy of the report shall be forwarded to the University by the Institute.
- No student will be permitted to appear for Viva-Voce examinations, unless and until the project report is submitted within the stipulated time.

Guidelines for the Project Guide:

- The project guides ensure that the project title should not be repeated.
- A project guide at a time shall be guiding a maximum of 15 students.
- Project Guide should regularly monitor students' progress throughout the project to ensure they are on track to meet deadlines. Guide the students for the overall project development.

Project Development Phases

Phase -1	**10 Hrs.**
Project Selection	
Students may be given the option to choose a project topic within the scope of their curriculum or be assigned specific topics decided by their project guide.	
The project topic should be relevant to their field of study and align with the learning objectives of the course.	
Planning and Scheduling	
Students create a project plan and schedule detailing the task, and deadlines for each phase of the project	
They identify the resources required for the project, including software, hardware, data, and any other materials.	

Phase -2	**10 Hrs.**
Requirements Gathering	
Students identify and document the functional and non-functional requirements of their project.	
They may conduct interviews, surveys, or research to gather information from potential users	
Design	
Based on the requirements gathered, students design the architecture, user interface, database schema, algorithms, or any other components of their project	
They create blue Print or diagrams to visualize the design and seek feedback from project guide	

Phase -3	**30 Hrs.**
Implementation	
Students begin coding or developing their project according to the design specifications.	
They follow best practices for coding standards, version control, and documentation throughout the implementation phase.	
Testing	
Students conduct testing to ensure that their project meets the specified requirements and functions as intended.	
They perform unit testing, integration testing, and system testing to identify and fix any defects or issues.	

Phase -4	**10 Hrs.**
Documentation	
Guide students in creating user manuals or guides to help to users understand how to use their projects.	
Assist students in making a project report summarizing their methodologies, diagrams, and conclusions.	

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 606 Lab on Android Application Development
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	VI	CIE Marks :	40
Course Code	BCA 606	SEE Marks :	60
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	03

Course Outcomes –

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

- Creating robust mobile applications and learn how to integrate them with other services.
- Creating intuitive, reliable mobile apps using the android services and components.
- Create a seamless user interface that works with different mobile screens.

1. Installation and setup of java development kit (JDK), setup android SDK, setup eclipse IDE, setup android development tools (ADT) plugins, create android virtual device.

2. Create “Hello World” application. That will display “Hello World” in the middle of the screen using TextView Widget in the red color.

3. Create Registration page to demonstration of Basic widgets available in android.

4. Create sample application with login module.(Check username and password) On successful login, Change TextView “Login Successful”. And on failing login, alert user using Toast “Login fail”.

5. Create an application for demonstration of Scroll view in android.

6. Create login application where you will have to validate username and passwords till the username and password is not validated, login button should remain disabled.

7. Create an application for calculator.

8. Demonstrate use of scroll view.

9. Demonstrate use of intent in android.

10. Create application to demonstrate menu option.

11. Create application to demonstrate progress bar.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 607(A) Lab on Web Development Technology IV
(React Js and Node JS)
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	**VI**	CIE Marks :	**40**
Course Code	**BCA 607(A)**	SEE Marks :	**60**
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	**03**

Course Outcomes –

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

- Build a component-based application using React JS and Node JS components and enhance their functionality using directives.
- Design UI using React JS
- Understand server-side development using Node JS, focusing on the development of understanding Node JS architectures.
- Understand client-side and server-side applications and showcase effective ways of handling errors and validating inputs.

Assignments

1. Write ReactJs code to use all the states in in the created Application.
2. Write ReactJs code for Client-side form validation.
3. Write ReactJs code for Applying form components.
4. Write ReactJs code to create student Registration Form.
5. Write ReactJs code to create Simple Login Form.
6. Write ReactJsCreate a Single Page Application.
7. Write ReactJs / NodeJs code to Applying Routing.
8. Write ReactJs / NodeJs code to demonstrate the use of POST Method.
9. Write ReactJs/ NodeJs code to demonstrate the use of GET Method.
10. To demonstrate REST API in Node JS
11. Create Node JS Application for to stored student information in database.
12. Create Node JS Application for login credentials.
13. Create Node JS Application to display student information.
14. Create Node JS Application to update, display and delete student information.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 607(B) Lab on Data Analytics –IV
(Data Visualization using Tableau)
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	**VI**	CIE Marks :	**40**
Course Code	**BCA 607(B)**	SEE Marks :	**60**
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	**03**

Course Outcomes –

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

- Understand the principles of effective dashboard design
- Develop proficiency in creating interactive dashboards using Tableau
- Integrate multiple visualizations into cohesive dashboards
- Apply best practices for layout, formatting, and interactivity in dashboard design
- Explore advanced dashboard features and techniques in Tableau

Assignments

1. Create at least three different types of visualizations (e.g., bar chart, line chart, scatter plot) to analyze different aspects of the data
2. To demonstrate different data source connections and extracts data from .csv / SQL etc
3. To demonstrate Data preprocessing and Cleaning using tableau
4. Data Blending and Joins
5. Adding filters, parameters, and actions for interactivity
6. Create Map in Tableau
7. Working on spatial data
8. Creating maps and geographic visualizations
9. Create Sales Forecast Analysis Dashboard
10. Create Patient Risk Healthcare Forecast Dashboard
11. Crime Analysis Dashboard
12. Interactive Sales Dashboard
13. Techniques for effective data storytelling using dashboards
14. Data Storytelling Project
15. Work on a final dashboard project integrating all concepts learned.

Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon
Faculty of Science and Technology
BACHELOR OF COMPUTER APPLICATIONS (BCA)
BCA 607(C) Lab on Data Mining
W.E.F. 2024-25
[Total Marks: External 60 + Internal 40 =100 Marks]

Semester	VI	CIE Marks :	40
Course Code	BCA 607(C)	SEE Marks :	60
Contact Hours (L.T.P)	**0:0:4**	Exam Hours :	03

Course Outcomes –

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

- Implement the basic application in Data Mining.
- Understand the clustering using K-means.
- Explore the concept of visualization.

Assignment

Note: Following practical implemented using python.

Assignments :

1. Calculate the mean and standard deviation.
2. Read the CSV file.
3. Perform data filtering, and calculate aggregate statistics.
4. Calculate total sales by month.
5. Implement the Clustering using K-means.
6. Classification using Random Forest.
7. Regression Analysis using Linear Regression.
8. Association Rule Mining using Apriori.
9. Visualize the result of the clustering and compare.
10. Visualize the correlation matrix using a pseudocolor plot.
11. Use of degrees distribution of a network.
12. Graph visualization of a network using maximum, minimum, median, first quartile and third quartile.