

ST. ALOYSIUS' COLLEGE(AUTONOMOUS) JABALPUR

PART A: Introduction

Program: Diploma	Session: 2023-24	Class: BCA	Year: III SEM	SESSION: 2023-24
Subject: Computer Application (BCA)				
1. Course Code		S2-BCAA1T		
2. Course Title		Data Communication and Computer Networks		
3. Course Type		Major		
4. Pre-Requisite (if any)		To study this course, a student must have the basic knowledge of Computers.		
5. Course learning outcome(CLO)		<ul style="list-style-type: none"> • Demonstrate the Basic Concepts of Networking, Networking Principles, Routing Algorithms, IP Addressing and working of Networking Devices. • Demonstrate the significance, purpose and application of Networking protocols and Standards. • Describe, compare and contrast LAN, WAN, MAN, Intranet, Internet, AM, FM, PM and Various Switching Techniques. • Explain the working of Layers and apply the various protocols of OSI & TCP/IP model. • Analyze the Requirement for a given Organizational structure and select the most appropriate Networking Architecture and Technologies. • Design the Network Diagram and solve the Networking problems of the Organization with consideration of Human and Environment install and configure the networking device. 		
6. Credit Value	Theory—6 Credits			
7. Total Marks	Max. Marks: 40+60	Min. Passing Marks: 35		

PART B: Content of the Course

Lectures (in hours per week): 3 Hrs. per week

Total No. of Lectures (in hours): 90 Hrs.

Unit	Topics	No. of Lectures
I	Network goals and application, Network structure, Network services, Example of network and Network Standardization, Networking models: centralized, distributed and collaborative. Network Topologies: Bus, Star, Ring, Tree, Hybrid: Selection and Evaluation factors.	15
II	Theoretical basis for Data communication, Transmission media, Twisted pair, Coaxial Cable, Fiber optics: Selection and Evaluation factors Line of Sight Transmission, Communication Satellites. Analog and Digital transmission. Transmission and switching, frequency division and time division multiplexing, Circuit switching, packet. Switching and message switching.	20
III	Brief overview of LAN (local area network) Classification, Brief overview of Wide Area Network (WAN). Salient features and difference of LAN with emphasis on Media, Speed of Transmission,	20

	Terminal Handling, Polling, Token passing, Contention IEEE Standards their need and developments.	
IV	Open System: What is an Open System? Network Architectures is OSI Reference Model, Layers: Application, Presentation, Session, Transport, Network, Data Link & Physical Layer - Transmission, Bandwidth, Signaling devices used, media type. Data Link Layer - : Addressing, Media Access Methods, Logical link Control.	20
V	Routing: Fewest-Hops routing, Type of Service routing, Bridges and Routers, Gateway protocols, routing daemons. OSI and TCP/IP model. TCP/IP and Ethernet. The Internet: The structure of the Internet, the internet layers, Internetwork problems. Internet Standards.	15

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

1. Tannanbaum, A.S.: Computer Networks, Prentice Hall, 1985.processing, Prentice Hall,1983.
2. Black : Computer Networks : Protocols, standards and Interfaces, Prentice Hall International I. Tannanbaum, A.S.: Computer Networks, Prentice Hall, 1985.processing, Prentice Hall, 1983.
3. Fourauzan B., "Data Communications and Networking", 3rd edition, TataMcGraw- Hill Publications,

Reference Books:

- 1.Comer· D., "Computer Networks and Internet", 2ND Edition, PearsonEducation
2. S.K.Basandra& S. Jaiswal, "Local Area Networks", Galgotia Publications
3. William Stallings, "Data and Computer Communication"
- 4: Book published by M.P. Granth Academy, Bhopal

Suggested Web Links:

<https://www.nptel.ac.in/courses/106/105/106105082/>
<https://www.iitkg.ac>
<https://www.nptel.ac.in/course.html>
<https://www.harvard.edu/subject/computer-networking>
<http://www.ml2hindigranthacademy.org/>
<http://www.mphindigranthacademy.org/>

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods: Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks

Internal Assessment Continuous Comprehensive Evaluation (CCE): 40	Class Test Assignment/Presentation	Total 40
External Assessment University Exam Section: 60	Section (A) : Objective Questions Section (B): Short Questions Section (C): Long Questions	Total 60

St. Aloysius' College (Autonomous), Jabalpur		
Part A – Introduction		
Session:	2023-24	
Subject	Computer Application	
Programme	Diploma	
Class	BCA III Semester	
Course Code	S2-BCAA2T	
Course Type	Minor	
Course Title	Database Management Systems	
Pre-requisite	To study this course, a student must have the basic knowledge of Computers.	
Course Learning Outcome	<p>After completion of this course, it is expected that the student shall be able</p> <p>CO1. Explain the features of database management systems and relational database.</p> <p>CO2. Design conceptual models of a database using ER modeling for real life applications and construct queries in relational algebra.</p> <p>CO3. Create and populate a RDBMS for a real-life application, with constraints and keys, using SQL.</p> <p>CO4. Retrieve any type of information from a database by formulating complex queries in SQL.</p> <p>CO5. Analyse the existing design of a database schema and apply concepts of normalization to design an optimal database.</p>	
Credit Value	4 credits (4-TH)	
Total Marks	Max. Marks: 40+60	Min. Passing Marks:35
Part B – Course Content		
Total No. of Lectures-Tutorials-Practical (in hours per week): L-4		
Unit I	<p>Introduction to DBMS: Why database? Characteristics of datain database, DBMS. What are advantages of DBMS?</p> <p>Database Architecture and Modeling: Conceptual, physical and logical database models, Role of DBA, Database design.</p> <p>Entity Relationship (ER) Model: Components of ER-model, ER modeling symbols, Relationships, Specialization, Generalization, Aggregation.</p>	
Unit II	<p>Relational database implementation</p> <p>Relational Implementation with SQL: Schema and Table Definition: Schema definition (CREATE), Data types & domains, Defining Tables, Column Definition.</p> <p>Data Manipulation: Simple Queries (SELECT, FROM, WHERE), Built-In Functions (SUM, AVG, COUNT, MAX, and MIN).GROUP BY, ORDER BY and HAVING clause. Database Change Operations: INSERT, UPDATE, DELETE.</p>	

Unit III	Relational database implementation: Multiple Table Queries-Subqueries, EXISTS and NOT EXISTS operators. Relational Algebra and Calculus Relational Algebra: Union, Intersection, Difference, Product, Select, Project, Join - Natural, Theta & Outer Join, Divide, Assignment. Relational Algebra Operations with SQL: UNION, INTERSECT, EXCEPT.
Unit IV	The Relational Data Model: <i>Fundamental Concepts:</i> Relations, Null Values, Keys, Foreign Keys, Integrity Constraints - Entity Integrity & Relational Integrity. <i>Normalization Process:</i> First Normal Form, Functional Dependencies, Second Normal Form, Third Normal Form, Boyce-Codd Normal Form (BCNF), Fourth Normal Form; Other Normal Forms - Fifth Normal Form & Domain/Key Normal Form.
Unit V	Physical Database Systems Overview of Physical Storage Media, Magnetic Disk and Flash Storage, RAID, RAID Levels, Choice of RAID level. <i>Physical Storage Media.</i> Secondary Storage, Physical Storage Blocks. <i>Data Storage Formats on Disk:</i> Track Format, Record Format—Fixed-Length Records & Variable-Length Records, Input/output Management. <i>File Organizing and Addressing Methods:</i> Sequential File Organization, Indexed- Sequential File Organization, Direct File Organization, Data Dictionary Storage.

Part C – Suggested Readings

S. N.	Author	Name of the Book	Publication
1	Gary W. Hansen & James V. Hansen	Database Management and Design	Prentice Hall of India Pvt Ltd.
2	Ramez Elmasri, Shamkant Navathe	Fundamentals of Database Systems	Pearson
3	Raghu Ramakrishnan & Johannes Gehrke	Database Management Systems	McGraw Hill Education
4	C.J. Date	An Introduction to Database System	Pearson
5	Abraham Silberschatz, Henry F. Korth, S. Sudharshan	Database System Concepts	Tata McGraw Hill

Attainment Expressions	PO Mapping	PSO mapping	Cognitive level
Identifying basic problem of real world with abstract requirement (CO1, CO2)	PO2	PSO4	R, U
Applying advanced and basic queries on real databases (CO3, CO4, CO5)	PO2, PO3	PSO4, PSO7	AP

PART A: INTRODUCTION			
Program: Diploma		Class: BCA	Year. III Semester
Session: 2023-24			
Subject: Computer Applications			
1.	Course Code	S2-BCAA2P	
2.	Course Title	DBMS	
3.	Course Type	Minor	
4.	Pre-Requisite (if any)	To study this course, a student must have the basic knowledge of Computers.	
5.	Course Learning Outcomes (CLO)	<p>This lab is based on the theory course of DBMS. This lab course Involves the development of the practical skills in DBMS using MS-Access/Visual-FoxPro/SQL-Server/etc. This course is an attempt to upgrade and enhance student's theoretical skills and provide the hands-on experience.</p> <p>After completing this lab course sessions, student will be able:</p> <ul style="list-style-type: none"> • to create Databases & Views, • execute simple advance SQL queries, • use DBMS tools in the areas of database applications. <p>Topics to be covered in the lab syllabus-</p> <ul style="list-style-type: none"> • Introduction to MS-Access/Visual-FoxPro/SQL-Server/etc • Hands on practice on the application package used in the lab(i.e. on MS-Access/Visual-FoxPro/SQL-Server/etc) • Database creation using MS-Access/Visual-FoxPro/SQL-Server/etc • Simple SQL queries (Single table) • Use of Advanced SQL queries 	
6.	Credit Value	2 credits (2-PR)	
7.	Total Marks	Max. Marks: 40 Int + 60 Ext	Min. Passing Marks: 35
PART B: CONTENT OF THE COURSE			
Total No. of Lectures-Tutorials-Practical (in hours per week): P – 2			
Total timber of Practical: 02 Hours per Week			

List of Practical's

1. To draw ER Model and Relational Model for a given database. Show ER to Relational Model reduction.

2. Implementation of Database

- Creation of Database with proper constraints
- Insert into database using different types of insert statements
- Display

3. Data Definition (schema) Modification

4. Simple SQL queries (Single table retrieval)

- Make use of different operators (relational, logical etc.)
- Selection of rows and columns, renaming columns, use of distinct keyword
- String handling (% , etc.)
- Update statement
- Delete

5. Advanced SQL Queries-1

- Group by, having clause, aggregate functions
- Set operations like union, union all and use of order by clause
- Nested queries: in, not in, exists, not exists and any, all

6. Advanced SQL Queries -2

- Join (Inner & Outer)
- Exists & Union

PART C: LEARNING RESOURCES
Textbooks, Reference Books, Other Resources
Suggested Readings:
1. SQL, PL/SQL-The programming language of ORACLE, Ivan Bayross, BPB publication. 2. Dr Rajeev Chopra, —Database Management System (DBMS) A Practical Approach, 2010, S Chand 3. Jitendra Patel, —DBMS Lab Manual, Kindle Edition, 2012.
<i>Suggestive digital platform web finds</i>
https://fec.kai.nic.in/i*aibag/FileHandler/270-101d616b-255a-4add-8d9bdd_e22fec7c1.pdf https://nesitsoiith.pes.edu/pdf/2019/3u1v/CS/LM DBMS%20LAB.ndf http://www.mphindigranthacademy.org/
<i>Suggested equivalent online courses</i>

ST. ALOYSIUS' COLLEGE(AUTONOMOUS) JABALPUR				
PART A: Introduction				
Program: Diploma	Session: 2023-24	Class: BCA	Year: III Semester	SESSION: 2023-24
Subject: Computer Application (BCA)				
8. Course Code		S2-BCAC 1 G		
9. Course Title		Internet of Things (IOTs)		
10. Course Type		Elective		
11. Pre-Requisite (if any)		Students must have basic Computer Knowledge		
12. Course learning outcome	<ul style="list-style-type: none">• CO1. To understand the basics of the Internet of Things• CO2. To get an idea of some of the application areas where the Internet of Things can be applied.• CO3. To understand the middleware for the Internet of Things and the concepts of the Web of Things.• CO4. To understand the concepts of the Cloud of Things with an emphasis on Mobile cloud computing.• CO5. To understand the IOT protocols.			
13. Credit Value	Theory—3Credits	Practical— 1 Credits		
14. Total Marks	Max. Marks: 40+60	Min. Passing Marks: 35		
PART B: Content of the Course				
Lectures (in hours per week): 2 Hrs. per week				
Total No. of Lectures (in hours): 60 Hrs.				
Module	Topics			No. of Lectures
I	Introduction: Introduction: Definition, characteristics of IoT, IoT Conceptual framework, IoT Architectural view, Physical design of IoT, Logical design of IoT, Application of IoT, Arduino IDE, Setup(), loop(), delay, bound, serial monitor.			14
II	Machine-to-machine (M2M). SDN (software-defined networking) and NFV (network function virtualization) for IoT, data storage in IoT. IoT Cloud-Based Services.			14
III	Design Principles for Web Connectivity: Web Communication Protocols for connected devices, Message Communication Protocols for connected devices, SOAP, and REST. HTTP Restful Web Sockets. Internet. Connectivity Principles: Internet Connectivity, Internet-based communication, IP addressing in IoT, and Media Access control.			14
IV	Sensor Technology, Participatory Sensing, Industrial IOT and Automotive IOT, Actuator. Sensor data Communication Protocols, Radio Frequency Identification Technology, Wireless-Sensor Network Technology. IoT Design methodology: Specification Requirement, process, model, service, functional & operational view. IoT Privacy and security solutions, Raspberry Pi & Arduino devices. IoT Case studies: smart city streetlights control & monitoring, E-waste Management.			14

Suggested Readings

Textbooks:

- Rajkamal, Internet of Things—, Tata McGraw Hill publication.
- Hakima Chaouchi —The Internet of Things: Connecting Objects, Wiley publication.
- Francis Dacosta -Rethinking the Internet of things: A scalable Approach to connecting everything, 1st edition, Apress publications2013.
- Donald Norris—The Internet of Things: Do-It-Yourself at Home Projects for Arduino, Raspberry Pi, and BeagleBone Black—, McGraw Hill publication.

Reference books:

- I . Philip Levis, -TinyOS Programming.
- D. Norris, —The Internet of Things: Do-it-Yourself Projects with Arduino, Raspberry Pi, and Beagle Bone Black, McGraw-Hill Education, New Delhi.
- Raj Karnal, —Internet of Things: Architecture and Desist, Tata McGraw Hill publication.
- Pajankarand A. Kakkar, —Raspberry Piby Example J, Pack Publishing Ltd, Birmingham, UK.
- S. Dooks published by II.P. Hindi Granth Academy, Bhopal

- Suggestive digital platform web links.
- <https://www.iotforall.com/introduction-rot-applications-in-education>
- https://onlinecourses.swayam2.ac.in/arpl9_ap52/preview
- <http://www.mphindigranthacademy.org>.

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods: Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks

Internal Assessment Continuous Comprehensive Evaluation (CCE):40	Class Test Assignment/Presentation	Total 40
External Assessment University Exam Section: 60 Time : 03.00	Section (A) : Objective Questions Section (B): Short Questions Section (C): Long Questions	Total 60

PART' A: Introduction			
Program: Diploma	Class: BCA	Year: III SEM	Session: 2023-24
	Subject: Internet of Things(IOTs) Practical /Lab		
1.	Course Code	S2-BCAC 1 R	
2.	Course Title	Internet of Things (IOTs) lab	
3.	Course Type(Core Course/ Elective/ Generic Elective/ Vocational	Elective	
4.	Pre-Requisite (if any)	Open for all	
5.	Learning Outcomes(CLO)	After completing this lab course, students will be able to: 1. Arduino/Raspberry Concept. 2. Knowledge of Digital Sensor. 3. Uses of DHT11 Sensors. 4. Knowledge of Bluetooth interface.	
6.	Credit Value	Practical — 2 Credits	
7.	Total Marks	Max.Marks: 40+60	Min. Passing Marks: 35

PART B: Content of the Course	
No. of Lab. Practical (in hours per week): 1 Hr. per week	
Total No. of Labs: 15 Hrs.	
Suggestive List of Practical	No. of Labs.
<ol style="list-style-type: none"> 1. To interface LLD/Buzzer with Arduino /Raspberry Pi and write a program to turn on LED after every 2 seconds. 2. To interface Push button/Digital sensor (IR/PDR) with Arduino/Raspberry Pi and write a program to turn on LED when push button is pressed or at sensor detection. 3. To interface DHT 11 sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings. 4. To interface motor using relay with Arduino/Raspberry Pi and write a program to turn on motor when push button is pressed. 5. To interface OLED with Arduino/Raspberry Pi and write a program to print temperature and humidity reading on it. 6. To interface blue tooth with Arduino/Raspberry Pi and write a program to send sensor data to smartphone using Bluetooth. 7. To interface Bluetooth with Arduino/Raspberry Pi and write a program to turn LED 'OFF' when 1 "0" is received from smartphone using Bluetooth. 8. Write a program Arduino/Raspberry Pi to upload temperature and humidity data to thing speak cloud. 9. Write a program Arduino/Raspberry Pi to retrieve temperature and humidity data from thing speak cloud. 10. To install MySQL database on Raspberry Pi and perform basic SQL queries. 	

Suggested Readings

Textbooks:

- Rajkamal, Internet of Things—, Tata McGraw Hill publication.
- Hakima Chaouchi —The Internet of Things: Connecting Objects, Wiley publication.
- Francis Dacosta -Rethinking the Internet of things: A scalable Approach toconnectingeveiythingi,1st edition, Apress publications2013.
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Reference books:

- I . Philip Levis, -TinyOS Programming.
- D. Norris, —The Internet of Things: Do-it-Yourself Projects with Arduino, Raspberry Pi, and Beagle Bone Black, McGraw-Hill Education, New Delhi.
- Raj Karnal, —Internet of Things: Architecture and Desist, Tata McGraw Hill publication.
- Pajankarand A. Kakkar, —Raspberry PibyExampleJ, Packt Publishing Ltd, Birmingham, UK.
- S. Dooks published by II.P. Hindi Granth Academy, Bhopal

- Suggestive digital platform web links.
- <https://www.iotforall.com/introduction-rot-applications-in-education>
- https://onlinecourses.swayam2.ac.in/arpl9_ap52/preview
- <http://www.mphindigranthacademy.org>.

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods: Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks

Internal Assessment Continuous Comprehensive Evaluation (CCE):40	Class Test Assignment/Presentation	Total 40
External Assessment University Exam Section: 60 Time : 03.00	Section (A) : Objective Questions Section (B): Short Questions Section (C): Long Questions	Total 60

ST. ALOYSIUS' COLLEGE(AUTONOMOUS) JABALPUR				
PART A: Introduction				
Program: Diploma	Session: 2023-24	Class: BCA	IV Semester	SESSION: 2023-24
Subject: Computer Application (BCA)				
1. Course Code				
2. Course Title		BLOCK CHAIN TECHNOLOGY		
3. Course Type		Elective		
4. Pre-Requisite (if any)		Students must have basic Computer Knowledge		
5. Course learning outcome	<ul style="list-style-type: none">• To understand the concepts of blockchain technology• To understand the consensus and hyper-ledger fabric in blockchain technology. State the basic concepts of blockchain• Paraphrase the list of consensus and Demonstrate and interpret the working of Hyper ledger Fabric• Implement SDK composer tool and explain the Digital identity for the government.			
6. Credit Value	Theory—4 Credits			
7. Total Marks	Max. Marks: 40+60	Min. Passing Marks: 35		
PART B: Content of the Course				
Total No. of Lectures (in hours): 60 Hrs.				
Module	Topics			No. of Lectures
I	History: Digital Money to Distributed Ledgers -Design Primitives: Protocols, Security, Consensus, Permissions, Privacy-: Blockchain Architecture and Design-Basic crypto primitives: Hash, SignatureHash chain to Blockchain-Basic consensus mechanisms.			14
II	Requirements for the consensus protocols-Proof of Work (PoW)- Scalability aspects of Blockchain consensus protocols: Permissioned Block chains-Design goals-Consensus protocols for Permissioned Blockchains.			14
III	Decomposing the consensus process-Hyper ledger fabric components-Chain code Design and Implementation: Hyper ledger Fabric II:- Beyond Chain code: fabric SDK and Front End-Hyper ledger composer tool.			14
IV	Blockchain in Financial Software and Systems (FSS): -Settlements, - KYC, -Capital markets-Insurance Blockchain in trade/supply chain: Provenance of goods, visibility, trade/supply chain finance, invoice management/discounting. Blockchain Cryptography: Privacy and Security on Blockchain.			14
PART C: Learning Resources				
Textbooks, Reference Books, Other Resources				
Suggested Readings				
Textbooks:				
1. Mark Gates, —Block chain: Ultimate guide to understanding block chain, bit coin, crypto currencies, smart contracts and the future of money, Wise Fox Publishing and Mark Gates 2017.				
2. Salman Baset, Luc Desrosiers, Nitin Gaur, Petr Novotny, Anthony O'Dowd, Venkatraman Ramakrishna, —Hands-On Block chain with Hyper ledger: Building decentralized applications with Hyperledger Fabric and Composer, 2018.				
3. Bahga, Vijay Madiseti, -Block chain Applications: A Hands-On Approach, Arshdeep Bahga, Vijay Madiseti publishers 2017.				

Reference books:

1. Andreas Antonopoulos, -Mastering Bitcoin: Unlocking Digital Crypto currencies, O'Reilly Media, Inc. 2014.
2. Melanie Swa, -Block chain, O'Reilly Media 2014.

- NPTEL & MOOC courses titled blockchain technology
- blockgeeks.com/guide/what-is-block-chain-technology
- <https://nptel.ac.in/courses/106105184>

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods: Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks

Internal Assessment Continuous Comprehensive Evaluation (CCE):40	Class Test Assignment/Presentation	Total 40
External Assessment University Exam Section: 60 Time : 03.00	Section (A) : Objective Questions Section (B): Short Questions Section (C): Long Questions	Total 60

ST. ALOYSIUS' COLLEGE (AUTONOMOUS) JABALPUR**Part-A :Introduction**

Program: Diploma		Class: BCA	Semester : IV	session: 2023-2024
Subject : Computer Applications				
1.	Course Code	S2-BCAD1G		
2.	Course Title	E-Commerce		
3.	Course Type(Core Course/Elective/Generic Elective/Vocational/...)	Generic Elective		
4.	Pre-requisite(If any)			
5.	Course Learning Outcomes (CLO)	On the completion of this course student will be able - <ul style="list-style-type: none">• To learn the fundamentals of E — Commerce and its process.• To understand the role of E- commerce in the present scenario along with the concepts of security and its applications.• To gain knowledge of e-commerce business needs and resources and match to technology considering human factors and budget constraints.• To apply knowledge of changing technology on traditional business models and strategy.• To have skills to communicate effectively and ethically using electronic communication.		
6.	Credit Value	Theory : 4 Credits		
7.	Total Marks	Max.Marks: 40 + 60		Min. Passing Marks:35

Part-B :Contents		
No. Of Lectures (in hours per week) : 2 Lectures per week Total No. of Lectures = 60 Hrs.		
Module	Topics	No. of Lectures
I	<u>Introduction</u> Brief history of e-commerce ,Types , Advantages & Disadvantages of e-commerce, Elements of e-commerce, Principles of e-commerce, Messaging and Information distribution, Messaging and information distribution, Common service infrastructure, Architectural framework of Electronic Commerce, Web based E Commerce Architecture.	10
II	<u>EDI to e-commerce:</u> EDI - Origin , System approach and Communication approach, Benefits of EDI, EDI technology, EDI standards, EDI communications, EDI Implementation, EDI Agreements, EDI Security, EDI Mechanics, E-com with WWW/Internet. E-Government- Concepts, Applications of G2C, G2B, G2G,	10
III	<u>WWW & Electronic Payment System:</u> Applications — what is web , Why is the Web such a hit, The Web and E-Com, Concepts & Technology —Key concepts, Web Software development Tools. Electronic payment system — Overview , Electronic or digital cash , Electronic Checks , Online credit card based system, E-Retailing: Traditional retailing and e retailing, Benefits of e retailing, Models of e retailing, Features of e retailing.	20
IV	<u>Security and Application</u> Need of computer security, Specific intruder approaches, Security strategies, Cryptography, Public key encryption, Private key encryption, Digital signatures <u>Advertising on the internet:</u> Marketing. Electronic publishing issues, EP architecture, EP tools, Web page EP-Baseline issues, Application tools and publishing on the internet, Legal protections Intellectual Property Rights: Types of Intellectual Property protection, Governance.	20

	<p style="text-align: center;">Part -C Learning Resources</p>	
	<p>Suggested Digital Platforms, Web links</p> <ol style="list-style-type: none"> 1. https://onlinecourses.nptel.ac.in/noc19_inq54/preview 2. https://onliiiecouises.swayain2.ac.in/cecl9_cm01/prev,,iew 3. https://www.couiseia.org/lecture/innovative-entrepreneur/e-commeice-the-internet-as-a-selling-platform-DYSNa 4. https://www.mooc-list.co.in/tags/e-commerce-market 5. https://onlinecourses.swayam2.ac.in/nou21_cm14/preview 6. http://www.mphindigranthacademy.org/ <p>Suggested Readings:</p> <ol style="list-style-type: none"> 1. <i>"Electronic Commerce"</i> By Ravi Kalakota and Andrew B. Whinston. 2. <i>"Web Commerce Technologies Handbok"</i> By Daniel Minoli & Emma Minoli 3. <i>"E-Commerce"</i> By Dr. Varinder Bhatia 4. <i>"Promise Of E-Governance"</i> By M P Gupta 5. Book published by M.P. Granth Academy, Bhopal 6. Elias. M. Awad, "Electronic Commerce", Prentice-Hall of India Pvt Ltd. 	

Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks : 100		
Continuous Comprehensive Evaluation (CCE) : 40marks University Exam(UE) 60marks Internal		
Assessment :	Class Test	Total 40 Continuous
Comprehensive Evaluation (CCE):40	Assignment/Presentation	
External Assessment : University Exam Section: 60 Time : 03.00 Hours	Section(A) :Objective Questions	Total 60
	Section (B) : Short Questions	
	Section (C) : Long Questions	

ST. ALOYSIUS' COLLEGE(AUTONOMOUS) JABALPUR				
PART A: Introduction				
Program: Diploma	Session: 2023-24	Class: BCA	IV SEM	SESSION: 2023-24
Subject: Computer Application (BCA)				
Course Code				
Course Title		REACT JS		
Course Type		Elective		
Pre-Requisite (if any)		Students must have knowledge of HTML, CSS and Java Script		
Course learning outcome	<ul style="list-style-type: none">• Create React Components.• Perform some simple tests.• Think in React.• Add state and props to an application.• Add inverse data flow to an application.• Use some common React Hooks.• Use external services to provide data.• Set up a single page application.			
Credit Value	Theory—3 Credits			
Total Marks	Max. Marks: 40+60	Min. Passing Marks: 35		
PART B: Content of the Course				
Lectures (in hours per week): 2 Hrs. per week				
Total No. of Lectures (in hours): 60 Hrs.				
Module	Topics			No. of Lectures
I	Introduction to React: What is React, Why React, React version history, React 16 vs React 15, Just React – Hello World ,Using create-react-app, Anatomy of react project, Running the app, Debugging first react app.			14
II	Templating using JSX: Working with React. createElement, Expressions, Using logical operators, Specifying attributes, Specifying children, Fragments. About Components: Significance of component architecture, Types of components, Functional, Class based, Pure, Component Composition			14
III	Working with state and props: What is state and it significance, Read state and set state, Passing data to component using props, Validating props using propTypes, Supplying default values to props using default Props. Rendering lists:Using react key prop, Using map function to iterate on arrays to generate elements.			14
IV	Event handling in React: Understanding React event system, Understanding Synthetic event, Passing arguments to event handlers, Understanding component lifecycle and handling errors. Working with forms: Controlled components, Uncontrolled components,			14

	Understand the significance to default Value prop, Using react ref prop to get access to DOM element.	
PART C: Learning Resources		
Textbooks, Reference Books, Other Resources		
Suggested Readings		
Textbooks: <ul style="list-style-type: none"> ReactJS by Example - Building Modern Web Applications with React React Js for Beginners A Comprehensive Beginner's Guide to ReactJS By Emma William · 2021 Reference books: <ul style="list-style-type: none"> React and React Native A Complete Hands-on Guide to Modern Web and Mobile Development with React.js By Adam Boduch, Roy Derks · 2020 Quickstart Step-By-Step Guide to Learning React Javascript Library (React. Js, Reactjs, Learning React JS, React Javascript, React Programming) By Lionel Lopez · 2017 		
<ul style="list-style-type: none"> https://www.w3schools.com/REACT/DEFAULT.ASP https://legacy.reactjs.org/docs/getting-started.html 		
Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100		
Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks		
Internal Assessment Continuous Comprehensive Evaluation (CCE):40 Marks	Class Test Assignment/Presentation	Total 40
External Assessment University Exam Section: 60 Marks	Section (A) : Objective Questions Section (B): Short Questions Section (C): Long Questions	Total 60

ST. ALOYSIUS' COLLEGE(AUTONOMOUS) JABALPUR				
PART A: Introduction				
Program: Diploma	Session: 2023-24	Class: BCA	IV SEM	SESSION: 2023-24
Subject: Computer Application (BCA)				
Course Code				
Course Title		REACT JS		
Course Type		Generic Elective		
Pre-Requisite (if any)		Students must have basic Computer Knowledge		
Course learning outcome	<ul style="list-style-type: none">• Able to work with react js• Able to design and develop high class websites			
Credit Value	Practical— 1 Credits			
Total Marks	Max. Marks: 40+60	Min. Passing Marks: 35		
PART B: Content of the Course				
Lectures (in hours per week): 1 Hrs. per week				
Total No. of Lectures (in hours): 60 Hrs.				
Module	Topics			No. of Labs.
	<ul style="list-style-type: none">a) Build Search filter in Reactb) Creating a simple counterc) Display a listd) Build Accordione) Image Sliderf) Create a Checklistg) Simple Login formh) Multi-Page navigation using React Router			30
PART C: Learning Resources				
Textbooks, Reference Books, Other Resources				
Suggested Readings				
Textbooks: <ul style="list-style-type: none">• ReactJS by Example - Building Modern Web Applications with React• React Js for Beginners A Comprehensive Beginner's Guide to ReactJS By Emma William • 2021 Reference books: <ul style="list-style-type: none">• https://contactmentor.com/react-js-practice-exercises-solution/?expand_article=1• https://www.w3schools.com/php/• https://www.learn-php.org/• https://www.javatpoint.com/php-tutorial				
Part D-Assessment and Evaluation				
Suggested Continuous Evaluation Methods: Maximum Marks: 100				
Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks				
Internal Assessment Continuous Comprehensive Evaluation (CCE):40 Marks	<ul style="list-style-type: none">• Hands-on Lab Practice: 10 Marks• Viva: 10 Marks• Lab Test from practical list: 10 Marks• Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training: 10 Marks			Total 40
External	<ul style="list-style-type: none">• Practical record file: 5 Marks			Total 60

Assessment University Exam Section: 60 Marks	<ul style="list-style-type: none"> • Viva voce practical: 5 Marks • Table works/ Exercise Assigned in practical exam: 40 Marks • Reports of excursions Lab visits/ Industrial training/ Survey/ Collection/ Models: 10 Marks 	
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ST. ALOYSIUS' COLLEGE(AUTONOMOUS) JABALPUR				
PART A: Introduction				
Program: Diploma	Session: 2023-24	Class:	Year: IV SEM	SESSION: 2023-24
Subject: B.C.A.				
Course Code				
Course Title		System Analysis and Engineering		
Course Type (Core Course/ Discipline Specific Elective/ Elective/ Generic Elective /Vocational/)		Minor		
Pre-Requisite (if any)				
Course learning outcome	<ul style="list-style-type: none">• CO1. Gain in depth knowledge of basic understanding of system characteristics, system design, and its development processes.• CO2. Student will learn how a system is designed in a systematic and phased manner, starting from requirement analysis to system implementation and maintenance.• CO3. To gain the knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are conducted in a software project.• CO4 Ability to apply software engineering principles and techniques. To produce efficient, reliable, robust and cost-effective software solutions.• CO5. Students will be able to choose appropriate process model depending on the user requirements.• CO6. Students will be able perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance.			
Credit Value	Theory—6Credits			
Total Marks	Max. Marks:	Min. Passing Marks:		
PART B: Content of the Course				
No. of Lectures (in hours per week): 3 Hrs. per week				
Total No. of Lectures: 60 Hrs				
Module	Topics			No. of Lectures
I	System Analysis and Design - Overview: Systems Analysis, Systems Design, What is a System? , Constraints of a System, Properties of a System, Elements of a System, Types of Systems, Systems Models.			14
II	System Development Life Cycle: Phases of SDLC, Life Cycle of System Analysis and Design, Role of System Analyst, Attributes of a Systems Analyst. System Planning: Requirements Determination, Information Gathering Techniques.			10
III	Structured Analysis: Structured Analysis Tools, Data Flow Diagrams (DFD), Decision Trees, Decision Tables, Components of a Decision Table. System Design: Inputs and Outputs for System Design, Types of System Design.			12
IV	Software Characteristics, Components and Applications. Software Engineering - A Layered Technology. Software Process Models [Linear Sequential Model, Prototype and RAD Model]. Evolutionary Software Process Models [Waterfall Model, Incremental Model and Spiral Model].			12

V	S/W Quality Assurance: Quality Concepts, SQA activities, S/W Reviews, Formal Technical Reviews. S/W Testing Techniques: White and Black Box Testing, Basic Path Testing, Unit Testing, integration Testing, Validation Testing, System Testing.	12
PART C: Learning Resources		
Textbooks, Reference Books, Other Resources		
Suggested Readings		
Textbooks: <ul style="list-style-type: none"> • Systems Analysis and Design by Elias M Awad • Alan Dennis' 5th Edition of Systems Analysis and Design • An Integrated Approach To Software Engineering By Pankaj Jalote • Software Engineering By R.S.Pressman, Edition V- Reference books: <ul style="list-style-type: none"> • Software Engineering {7th Edition) Addison- Wesley 2004 ,Ian Sommerville • Software Engineering Hand book Auerbach publication, Jessica Keyes • Software Engineering Principles and Practice 2"d edition Wiley • System Analysis and Design (9th Edition) Kenneth E. Kendall & Julie Kendall 		
Suggestive digital platform web links. <ul style="list-style-type: none"> • https://www.tutorialspoint.com/system_analysis_and_design/index.htm • https://www.msuniv.ac.in/Download/Pdf/9cf334ee2d564a0 • https://www.tutorialspoint.com/software_engineering/software_engineering_tutorial.pdf • http://fmcet.in/CSE/CS6403_uw.pdf 		
Part E-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100		
Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks		
Internal Assessment Continuous Comprehensive Evaluation (CCE):40	Class Test Assignment/Presentation	Total 40
External Assessment University Exam Section: 60 Time : 03.00	Section (A) : Objective Questions Section (B): Short Questions Section (C): Long Questions	Total 70

<p style="text-align: center;">ST. ALOYSIUS' COLLEGE (AUTONOMOUS) JABALPUR</p>			
PART A: Introduction			
Program: Diploma	Class: BCA	Semester : IV SEM	Session: 2023-24
Subject: Computer Applications			
1.	Course Code	BCA4	
2.	Course Title	Programming using JAVA	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational)	Major	
4.	Pre-Requisite (if any)	To study this course, a student must have basic knowledge of Object-Oriented Programming.	
5.	Course Learning Outcomes (CLO)	<p>After the completion of this course, a successful student will be able to do the following:</p> <ul style="list-style-type: none"> • Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs. • Read and make elementary modifications to Java programs that solve real-world problems. • Validate input in a Java program. • Design and use basic applet for web page 	
6.	Credit Value	Theory — 4 Credits Practical — 2 Credits	
7.	Total Marks	Max. Marks : 40+60	Min. Passing Marks: 35
PART B: Content of the Course			
No. of Lectures (in hours per week): 2 hrs. per week			
Total No. of Lectures: 60 Hrs.			
Module	Topics		No. of Lectures
I	The Java Environment: History and features of java, C++ VS java, JAVA Program Structure, Java Virtual Machine concepts, Primitive data types, variables and constants, operators, expression, statement-branching, looping and jumping, labeled statements.		10
II	Object Oriented Programming in Java: Classes, objects and methods: defining a class, adding variables and methods, creating objects, constructor, Instances, field and methods initialization by constructors, Copy constructor. Arrays, String classes, Wrapper classes.		14

III	Inheritance: Inheritance basics, Super class, Sub-class, Method overloading, abstract classes. Interfaces: defining an interface, implementing & applying interfaces, variables in interfaces, extending interfaces.	12
IV	Multithreading and Exception Handling: Basic idea of multithreaded programming; The lifecycle of a thread, Creating thread with the thread class and runnable interface, Basic idea of exception handling: The try, catch and finally.	12
V	Applet programming-Local and Remote Applets, Applet Vs Application, creating and executing java applets, inserting applets in a web page, passing parameter to applets, Applet Tag, Getting Input from User.	12
PART C: Learning Resources		
Textbooks, Reference Books, Other Resources		
Suggested Readings <ul style="list-style-type: none"> • Java A Complete reference by Herbert Schildt, Mc Graw hill publication • Thinking in Java (3rd edition) Bruce Eckel , Prentice Hall • The Java Language Specification, Java SE 8 , Cay S. Horstmann, Gary Cornell, Prentice Hall • Core Java an Integrated Approach (Black Book), Dr. R. Nageswara Rao, Prentice Hall Suggested Websites www.javatutorials.com www.javatpoint.com www.tutorialspoint.com		

Part D-Assessment and Evaluation
Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz		Viva Voce on Practical	
Attendance		Practical Record File	
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial		Table work / Experiments	
TOTAL	40		60