Learning Outcome Based Scheme and Syllabus of Examination

for

Bachelor of Computer Application (BCA)

Courses Effective from Academic Session 2022-23

1. **Title of the program:** The title of the programme shall be Bachelor of Computer Application (B.C.A.).
2. **Eligibility for admission:** Eligibility of admission in BCA will be as follow:
   i. Student must passed H.Sc. (Class 12th) in any stream/Three year diploma course in any branch of technical education or equivalent from recognized board.
   ii. Student must have minimum aggregate of 40% marks in H.Sc. examination (Relaxation in percentage will be as per rule of C.G. Govt.).
3. **Scheme of examination:** Each theory paper is divided into two components as follow, however there shall not be any Internal Assessment (IA) for practical subject.
   i. University Examination (UE): 75 Marks
   ii. Internal Assessment (IA): 25 Marks
4. **Internal Assessment (IA):** The structure of IA shall be as follow:
   i. **Internal test (15 Marks):** There shall be three internal tests of 15 marks each, the average of best two shall be considered as the marks of internal test.
   ii. **Other activity (10 Marks):** Presentation/Group discussion /Assignment/ MOOC course certification (List of MOOC course shall be provided to the students through notice board/college website by the HOD concern after mapping it from SWAYAM, Coursera or any other similar popular platforms at the beginning of each academic session) or any other similar activity.
5. **University Examination (UE)**: The pattern of examination shall be as follow:
   i. There shall be two sections of question paper: A and B
   ii. Section A (15 Marks) shall be compulsory and shall consists 15 short/objective questions each of one mark covering the entire syllabus.
   iii. Section B (60 Marks) shall consist questions from 5 unites as per the syllabus with internal choice (Student has to attempt only one question from each unit). Each unit shall be of 12 marks.

6. **Programme Learning Outcomes for Bachelor of Computer Application (BCA)**

On completion of this programme, the students are expected to:

PLO1: Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

PLO2: Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

PLO3: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

PLO4: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PLO5: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

PLO6: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

PLO7: Develop software projects in various languages as per the demand of the market.

PLO8: Work on research based projects.

PLO9: Develop live software projects and will be capable of working in IT companies.

PLO10: Explore and gain new knowledge through MOOC courses.

PLO11: Ability to pursue higher studies of specialization and to take up technical employment.

PLO12: Ability to formulate, to model, to design solutions, procedure and to use software tools to solve real world problems and evaluate.

PLO13: Apply standard Software Engineering practices and strategies in real-time software project development.

PLO14: The ability to work independently on a substantial software project and as an effective team member.

PLO15: Ability to operate, manage, deploy and configure software operation of an organization.

Scheme of BCA

Year	Course Code	Subject Name	Theory/ Practical	Total Credit	Marks			
					UE	IA	Total	
					Max	Max	Max	Min
First	BCA-1T	Discrete Mathematics	Theory	6	75	25	100	33
	BCA-2T	Computer Fundamental and MS office	Theory	4	75	25	100	33
	BCA-3T	Programming with C and C++	Theory	4	75	25	100	33
	BCA-4T	Data Structure	Theory	6	75	25	100	33
	BCA-5T	Digital Electronics	Theory	6	75	25	100	33
	BCA-6T	Hindi	Theory	5	50	-	50	17
	BCA-7T	English	Theory	5	50	-	50	17
	BCA-1P	LAB 1: PC software	Practical	2	100	-	100	33
	BCA-2P	LAB 2: Programming with C and C++	Practical	2	100	-	100	33
Second	BCA-8T	Numerical Mathematics	Theory	6	75	25	100	33
	BCA-9T	Operating System	Theory	6	75	25	100	33
	BCA-10T	Relational Database Management System	Theory	4	75	25	100	33
	BCA-11T	Computer Networking and Cyber Technology	Theory	6	75	25	100	33
	BCA-12T	Web Technology	Theory	4	75	25	100	33
	BCA-13T	Hindi	Theory	5	50	-	50	17
	BCA-14T	English	Theory	5	50	-	50	17
	BCA-3P	LAB 3: Relational Database Management System	Practical	2	100	-	100	17
	BCA-4P	LAB 4: Web Technology	Practical	2	100	-	100	17
Third	BCA-15T	Python Programming	Theory	4	75	25	100	33
	BCA-16T	Java Programming	Theory	4	75	25	100	33
	BCA-17T	Software Engineering	Theory	6	75	25	100	33
	BCA-18T	Artificial Intelligence and Expert System	Theory	6	75	25	100	33
	BCA-19T	E-Commerce	Theory	6	75	25	100	33
	BCA-20T	Communication Skill	Theory	5	100	-	100	33

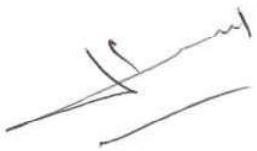
	BCA-5P	LAB 5: Java	Practical	2	100	-	100	33
	BCA-6P	LAB 6: Python	Practical	2	100	-	100	33
	BCA-7P	Project	Practical	5	100	-	100	33

Note:

1. Syllabus of Foundation Courses: Hindi and English shall be similar to B.Sc. Computer Science/IT program.
2. Students has to pass environment studies subject as per the rule of any other B.Sc. program.
3. There shall be four extra credits in all the years of under graduation for internship/apprenticeship/skill development program. The certificate of extra credits would be provided by the concern university and is not mandatory.

Abbreviations used:

UE: University Exam
IA: Internal Assessment



Part A: Introduction				
Program: **Certificate Course**		Class: **B.C.A. II Year**	Year: **2022**	Session: 2022-2023
1	Course Code	**BCA-2P**		
2	Course Title	**LAB 2: Programming with C and C++**		
3	Course Type	**Practical**		
4	Pre-requisite (if any)	Theoretical knowledge of C and C++		
5	Course Learning Outcomes (CLO)	At the end of course, Students will be able to: • Understand the fundamental programming concepts and methodologies which are essential to create good C/C++ programs. • Code, test, and implement a well-structured, robust computer program using the C/C++ programming language. • Write reusable modules (collections of functions). • Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing. • Develop an in-depth understanding of functional, logic, and object-oriented programming paradigms.		
6	**Credit Value**	**Practical: 2**		
7	**Total Marks**	**Max. Marks: 100**	**Min Passing Marks: 33**	

Part B: Content of the Course	
Total Periods: 30	
Tentative Practical List	**Note:** This is tentative list; the teachers concern can add more program as per requirement. 1. Write a program in C/C++ for addition of two numbers using float data type. 2. Write a program in C/C++ to find the biggest number between two numbers. 3. Write a program in C/C++ to find the factorial value of any entered number using do – while loop. 4. Write a program in C/C++ for various arithmetic operations using switch case statements. 5. Write a program in C/C++ for Multiplication of two 3X3 matrix. 6. Write a program in C/C++ to store five books information using structure. 7. Write a program in C/C++ to store six employee information using union. 8. Write a program in C/C++ to calculate simple interest using call by value and call by reference method. 9. Write a program in C/C++ for swapping of two numbers using pointer. 10. Write a program in C/C++ to make a text file using file handling. 11. Write a program to count word, space and lines in a text file. 12. Write a program to demonstrate work of calloc().

Part A: Introduction				
Program: **Certificate Course**		Class: **B.C.A. II Year**	Year: **2022**	Session: **2022-2023**
1	Course Code	**BCA-2P**		
2	Course Title	**LAB 2 : Programming in C and C++**		
3	Course Type	**Practical**		
4	Pre-requisite (if any)	Theoretical knowledge of C and C++		
5	Course Learning Outcomes (CLO)	At the end of course, Students will be able to: • Understand the fundamental programming concepts and methodologies which are essential to create good C/C++ programs. • Code, test, and implement a well-structured, robust computer program using the C/C++ programming language. • Write reusable modules (collections of functions). • Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing. • Develop an in-depth understanding of functional, logic, and object-oriented programming paradigms.		
6	**Credit Value**	**Practical: 2**		
7	**Total Marks**	**Max. Marks: 100**	**Min Passing Marks : 33**	

Part B: Content of the Course	
	Total Periods: 30
Tentative Practical List	**Note:** This is tentative list; the teachers concern can add more program as per requirement. 1. Write a program in C/C++ for addition of two numbers using float data type. 2. Write a program in C/C++ to find the biggest number between two numbers. 3. Write a program in C/C++ to find the factorial value of any entered number using do – while loop. 4. Write a program in C/C++ for various arithmetic operations using switch case statements. 5. Write a program in C/C++ for Multiplication of two 3X3 matrix. 6. Write a program in C/C++ to store five books information using structure. 7. Write a program in C/C++ to store six employee information using union. 8. Write a program in C/C++ to calculate simple interest using call by value and call by reference method. 9. Write a program in C/C++ for swapping of two numbers using pointer. 10. Write a program in C/C++ to make a text file using file handling. 11. Write a program to count word, space and lines in a text file. 12. Write a program to demonstrate work of calloc().

13. Write a program to demonstrate work of malloc(), realloc() and free().
14. Write a program in C++ to find the sum and average of five numbers using class and objects.
15. Write a program in C++ to multiply two numbers using private and public member functions.
16. Write a program in C++ to print structure like this using scope resolution operator

    1
    1 2
    1 2 3
    1 2 3 4
    1 2 3 4 5
17. Write a program in C++ for constructor and Destructor.
18. Write a program in C++ for multiple inheritance.
19. Write a program in C++ for operator overloading.
20. Write a program in C++ for friend class and friend function.
21. Write a program in C++ for virtual function and virtual class.
22. Write a program in C++ for Exception Handling.
23. Write a program in C++ to open and close a file using file Handling.
24. Given two ordered arrays of integers, write a program to merge the two-arrays to get an ordered array.
25. WAP to display Fibonacci series (i) using recursion, (ii) using iteration
26. WAP to calculate Factorial of a number (i) using recursion, (ii) using iteration
27. WAP to calculate GCD of two numbers (i) with recursion (ii) without recursion.
28. Create Matrix class using templates. Write a menu-driven program to perform following Matrix Operations (2-D array implementation): a) Sum b) Difference c) Product d) Transpose 22. Create the Person class. Create some objects of this class (by taking information from the user). Inherit the class Person to create two classes Teacher and Student class. Maintain the respective information in the classes and create, display and delete objects of these two classes (Use Runtime Polymorphism).
29. Create a class Triangle. Include overloaded functions for calculating area. Overload assignment operator and equality operator.
30. Create a class Box containing length, breath and height. Include following methods in it: a) Calculate surface Area b) Calculate Volume c) Increment, Overload ++ operator (both prefix & postfix) d) Decrement, Overload -- operator (both prefix & postfix) e) Overload operator == (to check equality of two boxes), as a friend function f) Overload Assignment operator g) Check if it is a Cube or cuboid Write a program which takes input from the user for length, breath and height to test the above class.
31. Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
32. Write a program to retrieve the student information from file created in previous

	question and print it in following format: Roll No. Name Marks 33. Copy the contents of one text file to another file, after removing all whitespaces. 34. Write a function that reverses the elements of an array in place. The function must accept only one pointer value and return void. 35. Write a program for exception handling.

Part C - Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

1. Program Design, Peter Juliff, PHI Publications.
2. Let us C: Yashwant Kanetkar, BPB Publications.
3. Programming in ANSI C, E. Balaguruswamy, Tata McGraw Hill
4. Let us C++ ,Y. Kanetkar, B.P.B Publication.
5. Programming in C++, E. Balaguruswamy, Tata McGraw Hill.

E Resources:

C/C++ different topics from SWAYAM/NPTEL

1. Introduction
   https://onlinecourses.nptel.ac.in/noc19_cs38/preview
   https://onlinecourses.nptel.ac.in/noc22_cs103/preview
   https://www.youtube.com/watch?v=KG4hjVDw-p8&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=2

2. Constant and Inline Function
   https://www.youtube.com/watch?v=pX6LufLso2M&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=10

3. Pointer and Reference
   https://www.youtube.com/watch?v=GtsBZ5e1-cE&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=12

4. Function Overloading
   https://www.youtube.com/watch?v=uJGmGAShHeU&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=13

5. Operator Overloading
   https://www.youtube.com/watch?v=0jpOwe4d-FE&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=17

6. Dynamic Memory Management
   https://www.youtube.com/watch?v=lkFK2X6qIc0&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=18

B4KrM9uOEdvPIVFUkU3jNc6D2&index=18

7. Class and Object
https://www.youtube.com/watch?v=wtuks_f3vP4&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=24

8. Access Specifiers
https://www.youtube.com/watch?v=6ki_W7cXdM0&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=22

9. Constructor and Destructor
https://www.youtube.com/watch?v=wtuks_f3vP4&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=24

- C different topics from W3School
https://www.w3schools.com/c/
- C++ different topics from W3School
https://www.w3schools.com/CPP/default.asp
- C different topics from Javatpoint
https://www.javatpoint.com/c-programming-language-tutorial
- C++ different topics from Javatpoint
https://www.javatpoint.com/cpp-tutorial

Part D: **Assessment and Evaluation**

Suggested Continuous Evaluation Methods:
Maximum Marks: 100
Continuous Comprehensive Evaluation (CCE): Not Applicable
University Exam(UE): 100 Marks

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	Not Applicable

Declaration

The syllabus of this subject is frame as per the TOR of department of higher education, Chhattisgarh.

1. Dr. H.S. Hota - Chairman
Prof. and Head, Dept. of Computer Science and Application
2. Dr. Sanjay Kumar - Member
Prof. and Head, SoS in Computer Science, Pt. Ravishankar Shukla University, Raipur
3. Mr. Jitendra Kumar - Member
Asst. Prof., Dept. of Computer Science and Application
Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur
4. Mr. H.S.P. Tonde - Member

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Sant Gahira Guru University Sarguja, Ambikapur

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6. Mr. Sushil Kumar Sahu - Member
   Asst. Prof. and Head, Christ College, Jagdalpur
   Shaheed Mahendra Karma Vishwavidyalaya, Bastar
7. Mr. Vikrant Gupta - Member
   Prof. and Head, Batmul Ashram College, Salheana
   Shaheed Nand Kumar Patel University, Raigarh
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    Pt. Ravishankar Shukla University, Raipur
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    Asst. Prof. and Head, Govt. R.B.R.N.E.S. PG College, Jashpur
    Sant Gahira Guru University Sarguja, Ambikapur
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    Hemchand Yadav Vishwavidyalaya, Durg
13. Dr. Ugrasen Suman - Member (Present Online)
    Prof. and Head, Dept. of Computer Science
    Devi Ahila Vishwavidyalaya, Indore

Date: 03.06.2022

Part A: Introduction				
Program: **Diploma Course**		Class: **B.C.A. II Year**	Year: **2022**	Session:**2022-2023**
1	Course Code	**BCA-3P**		
2	Course Title	**LAB 3: Relational Database Management System**		
3	Course Type	**Practical**		
4	Pre-requisite (if any)	Basic Knowledge of SQL		
5	Course Learning. Outcomes (CLO)	At the end of course, Students will be able to: • Learn about Database Concepts, Architecture, various Users, Data Models and Data Management which helps them to interact with various Databases. • Develop various Tables and Databases which helps them to develop new Software. • Practice various SQL commands which helps them to generate new relationships among various Tables and Databases which are useful for Software Development. • Familiar about RDBMS Software like Oracle and SQL Server which are used as Backend for Software Development. • Develop new Databases for their Minor and Major Project Development which enhances their Data Storage, Data Accessibility and Data Management.		
6	**Credit Value**	**Practical: 2**		
7	**Total Marks**	**Max. Marks: 100**	**Min Passing Marks: 33**	

Part B: Content of the Course	
Total Periods: 30	
Tentative Practical List	**Note:** This is tentative list; the teachers concern can add more program as per requirement. 1. Design an employee table in Oracle/SQL Server having eid(primary key) ename, edesignation, edoj, edob, eaddress, salary, econtact as fields and answer the following questions : a) Insert five records in above created table. b) Display all five records. c) Delete the fourth record. d) Update the third record of field ename as 'hari'. e) Add one new field in the table. 2. Design a salary table Oracle/SQL Server with one primary key and foreign key(employee table) having following fields : Month, working days, deptid, gross, incentive, deduction and net salary. a) Insert five records in above created table.

b) Display all five records.
c) Use foreign key relation and display records.
d) Update the second record of field deptid as 'Sales '.
e) Add one new field in the table.

3) Create a new user in Oracle/SQL Server.
4) Create a view in Oracle/SQL Server.
5) Create a new table in Oracle/SQL Server and practice for join operation.
6) Create a new user in Oracle/SQL Server and practice for commit and rollback command.
7) Create a new database in Oracle/SQL Server having atleast five tables for Hotel Management System.
8) Create a new database in Oracle/SQL Server having atleast four tables for Covid Vaccination Management System.
9) Create a new database in Oracle/SQL Server having atleast five tables for Library Management System.
10) Create a new table in Oracle/SQL Server and practice for Group by and Order by Clause.
11) Create a new table in Oracle/SQL Server and practice for max(), min(), avg() and count() functions.
12) Create a new table in Oracle/SQL Server and practice for lower(), substr(),trim() and upper() functions.
13) Create a new table in Oracle/SQL Server and practice for unique and check constraint.
14) Create a new table in Oracle/SQL Server and practice for any two date formats.
15) Create a new table in Oracle/SQL Server and practice for using clause.
16) Create a new table in Oracle/SQL Server and practice for having clause with sub queries.
17) Create a new table in Oracle/SQL Server and practice for alias in any table.
18) Create a new table in Oracle/SQL Server and practice for inner and outer join.
19) Create a new table in Oracle/SQL Server and practice for Drop command.
20) Write a PL/SQL program for addition of two numbers .
21) Write a PL/SQL program to find the factorial value of any entered number.
22) Write a PL/SQL program for swapping of two numbers.
23) Write a PL/SQL program to print first ten Natural Numbers.

		24) Write a PL/SQL program to generate Even series upto five digits starting from 2 and sum all the terms. 25) Write a PL/SQL program to practice for implicit and explicit cursor.

Part C - Learning Resource

Text Books, Reference Books, Other Resources

Suggested Readings:

1. Database system concept , H. Korth and A. Silberschatz, TMH Publications .
2. Data Base Management System, Alexies&Mathews,Vikash publication.
3. Data Base Management System, C. J. Date ,Narosha Publication.
4. Data Base Management System By James Matin .
5. Principles of Database System By Ullman.
6. Program Design, Peter Juliff, PHIPublications .
7. The Complete Reference, Kevin Loney, Oracle Press.
8. SQL, PL/SQL The Programming Language of Oracle, Ivan Bayross , PustakKosh Publication.
9. Microsoft SQL Server Management and Administration, Ross, STM Publications .

E Resources:

1. SWAYAM url link for DBMS and RDBMS: https://youtu.be/f6LGtJutWyA
2. SWAYAM url link for DBMS and RDBM: https://youtu.be/IoL9Ve2SRwQ
3. SWAYAM url link for DBMS and RDBMS : https://**swayam**.gov.in/courses/4434-data-base-management-system

Part D: **Assessment and Evaluation**

Suggested Continuous Evaluation Methods:
Maximum Marks: 100
Continuous Comprehensive Evaluation (CCE): Not Applicable
University Exam(UE): 100 Marks

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	Not Applicable

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03.06.2022

03.6.2022

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    Devi Ahila Vishwavidyalaya, Indore

Date: 03.06.2022

Part A: Introduction				
Program: **Diploma Course**		Class: **B.C.A. II Year**	Year: **2022**	Session: **2022-2023**
1	Course Code	**BCA-4P**		
2	Course Title	**LAB 4: Web Technology**		
3	Course Type	**Practical**		
4	Pre-requisite (if any)	Theoretical knowledge of Web Technology		
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: • Analyze a web page and identify its elements and attributes. • Create web pages using HTML, CSS, JAVASCRIPT, XHTML • Build dynamic web pages using JavaScript (Client side programming). • Create XML documents and Schemas. • Build interactive web applications using, PHP, AJAX. • Handling Database using MYSQL		
6	**Credit Value**	**Practical: 2**		
7	**Total Marks**	**Max. Marks: 100**	**Min Passing Marks : 33**	

Part B: Content of the Course

Total Periods: 30

Tentative Practical List

Note: This is tentative list; the teachers concern can add more program as per requirement.

HTML

1. Write an HTML program to create the following table:

Class	Subject 1	Subject 2	Subject 3
BCA-I	Visual Basic	PC Software	Electronics
BCA-II	C++	DBMS	English
BCA-III	Java	Multimedia	CSA

2. Write an HTML program to create the following lists:
   - C
   - C++
   - Fortran
   - COBOL
3. Write an HTML program to create the following lists:
   1. Java
   2. Visual Basic
   3. Basic
   4. COBOL
4. Write an HTML program to demonstrate hyper linking between two web pages.
5. Create a marquee & also insert an image.
6. Write an HTML program to create frame in HTML with 3 columns (width= 30%, 30%, 40%).
7. Write an HTML program to create a webpage with a blue background and print the following text with white background.
8. Write an HTML program to create the following table:

Course	OC	BC	MB	SC/ST	Total
Computer Science	**9**	**18**	**5**	**5**	**37**
Commerce	**14**	**25**	**6**	**5**	**50**

Grand Total		87

9. Write an HTML program to create the following table:

Maruti		Tata		Ford	
Model	**Price**	**Model**	**Price**	**Model**	**Price**
Maruti 800	2 Lac	Sumo	2 Lac	Icon	5 Lac
Omni	3 Lac	Scorpio	3 Lac	Gen	2 Lac

10. Write an HTML program to create the following table:

Pandit Ravishankar Shukla University		
Name	**Roll No.**	**Class**
Rahul	40	BCA-I
Preeti	85	BCA-I
Priya	74	BCA-I
Richa	95	BCA-I

11. Write an HTML program to create the following table:

Students Record

Name	Subject	Marks
Arun	Java	70
	C	80
Ashish	Java	75
	C	69

12. Write an HTML program to create the following table and also insert an image in the webpage.

Subject	Max	Min	Obtain
Java	100	33	75
Multimedia	100	33	70
Operating System	100	33	68
C++	100	33	73

13. Write an HTML program to create the following table:

Name Roll No.		Rahul 101	
Subject	**Max**	**Min**	**Obtain**
Java	100	33	75
Multimedia	100	33	70

14. Write an HTML program to create a form as the following:

Enter Name :

Enter Roll No. :

Enter Age :

Enter DOB :

15. Write an HTML program to create the following webpage with background and the following text:
16. Write an HTML program to create the following form:

User Name :

Password :

When user types characters in a password field. The browser displays asterisks or bullets instead of character.

Submit

17. Write a HTML Program to create Student Registration Form
18. Write a HTML Program to create Contact Form
19. Write a HTML Program to insert Audio & Video in HTML
20. Write the HTML coding for the following equations:

$C_2H_5OH+PCL_5=C_2H_5CL+POCL_3+HCL$

$4H_3PO_3=3H_3PO_4+PH_3$

$PCL_3+CL_2=PCL_5$

21. Write the HTML code to display the following:
    - Actors
        - Bruce Wills
        - Gerand Butler
        - Vin Diesel
        - Bradd Pitt
        - Paul Walker
        - Jason Statham
    - Actress
        - Julia Roberts
        - Angelina Jolie
        - Kate Wins let
        - Cameron Diaz
22. Write the HTML code to display the following:
    1. Cricket Players
        A. Batsman
            i. Sachin Tendulkar
            ii. Rahul Dravid
            iii. Virendra Sehwag
        B. Bowlers
            i. Kumble
            ii. Zaheer Khan
            iii. Balaji
        C. Spinner
            i. Harbhajan
            ii. Ravindra Jadeja
            iii. Kartik

JavaScript

1. Create a script using for loop to prime number between 1 and 50.
2. Write a script to get the largest value in an array.
3. Write a function to calculate the factorial of a number (a non-negative integer).
4. Write a script to demonstrate data validation.
5. Write a program to print date using JavaScript.
6. Write a program to Sum and Multiply two numbers using Javascript.

DHTML

1. Create a web page which shows the changes of header dynamically.
2. Create a webpage which explains the use of relative positioning.
3. Display an alert box to alert the x and y coordinates of the cursor.

PHP

1. Create a script using for loop to all integers between 0 and 30 and display the total.
2. Create a script to construct the following pattern, using nested for loop exercises.
3. Write a PHP script to get the largest key in an array.
4. Write a function to calculate the factorial of a number (a non-negative integer).
5. Write a PHP script to check string for palindrome.

MySQL

1. Create the following table in MySQL:

College (cname, city, caddress, cphone)
Staffjoins (sid, cname, dept, doj, post, salary)
Staffs (sid, sname, saddress , scontacts)
Teaching (sid, class, paprid, fsession, tsession)
Subject (paperid, subject, paper, papername)

1. List the name and post of teacher teaching computer subject.
2. List the name and city of all staffs working in your college.
3. List the name and city all staffs working in your college who earn more then 15000.
4. Find the staff whose date of joining is 2005.
5. Find the staffs whose names start with 'M' or 'R' and 'A' and/or 7 character long.
6. Modify the database so that staffN1 now work in C2 college .
7. List maximum, average, minimum salary of each college.
8. Acquire detail of staffs by name in a college or each college.
9. List names of staffs in ascending order according to salary who are working in all colleges.
10. Find the staffs that earn a higher salary who earn greater than average salary of their college.

2. Create the following table MySQL:

Enrollment (enrollno, name, gender, DOB, address, phone)
Admission (adno, enrollno, course, yearsem, date, cname)
Feestucture (course_yearsem, fee)
Payment (billno, admno, amount, pdate,purpose)

1. Get full detail of all students who took admission this year class wise.
2. Get detail of students who took admission in sai colleges.
3. Calculate the total amount of fees collected in this session.
4. List the student who have not payed full fee in your colleges.
5. List the number of admission in your college in every year.
6. List the students in colleges in your city and also live in your city.

3. Create the following table MySQL:

Subject (paperid, subject, paper, papername)
test(paperid,tdate,max,min)
score(rollno,paperid,marks,attendance)
students(admno,rollno,class,yearsem)

	1. List roll no of students who were present in a paper of a subject. 2. List all roll numbers who have passed in first division. 3. List all students in BCA-II who have scored higher than average in your college. 4. List the highest score

Part C - Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

1. Xavier, C, "Web Technology and Design", New Age International.
2. Ivan Bayross, "HTML, DHTML, Java Script, Perl & CGI", BPB Publication.
3. Ramesh Bangia, "Internet and Web Design", New Age International.
4. Ullman, "PHP for the Web: Visual Quick Start Guide", Pearson Education.
5. Jim Converse & Joyce Park, "PHP & MySQL Bible", Wiley India Publication
6. "Internet and Internet Engineering", Daniel Minoli, TMH.
7. Chuckmusiano & Bill Kenndy, O Reilly, HTML The Definite Guide"
8. Joseph Schmuller, Dynamic HTML, BPB, 2000.
9. Deitel, Deitel, Goldberg, "Internet & World Wide Web How to Program", Third Edition, Pearson Education, 2006.
10. Raj Kamal, "Internet and Web Technologies", Tata McGraw-Hill.

E Resources:

1. HTML different topics from Javatpoint
   https://www.javatpoint.com/html-tutorial/
2. JavaScript different topics from Javatpoint
   https://www.javatpoint.com/javascript-tutorial
3. JavaScript different topics from Javatpoint
   https://www.javatpoint.com/php-tutorial
4. DHTML different topics from Javatpoint
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5. PHP different topics from W3Schools
   https://www.w3schools.com/php/
6. PHP different topics from W3Schools
   https://www.w3schools.com/html/
7. MySQL different topics from W3Schools
   https://www.w3schools.com/mySQl/default.asp
8. MySQL different topics from Javatpoint
   https://www.javatpoint.com/mysql-tutorial

Part A: Introduction				
Program: **Diploma Course**		Class: **B.C.A. II Year**	Year: **2022**	Session: **2022-2023**
1	Course Code	**BCA-4P**		
2	Course Title	**LAB 4: Web Technology**		
3	Course Type	**Practical**		
4	Pre-requisite (if any)	Theoretical knowledge of Web Technology		
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: • Analyze a web page and identify its elements and attributes. • Create web pages using HTML, CSS, JAVASCRIPT, XHTML • Build dynamic web pages using JavaScript (Client side programming). • Create XML documents and Schemas. • Build interactive web applications using, PHP, AJAX. • Handling Database using MYSQL		
6	**Credit Value**	**Practical: 2**		
7	**Total Marks**	**Max. Marks: 100**	**Min Passing Marks : 33**	

Part B: Content of the Course

Total Periods: 30

Tentative Practical List

Note: This is tentative list; the teachers concern can add more program as per requirement.

HTML

1. Write an HTML program to create the following table:

Class	Subject 1	Subject 2	Subject 3
BCA-I	Visual Basic	PC Software	Electronics
BCA-II	C++	DBMS	English
BCA-III	Java	Multimedia	CSA

2. Write an HTML program to create the following lists:
   - C
   - C++
   - Fortran
   - COBOL
3. Write an HTML program to create the following lists:
   1. Java
   2. Visual Basic
   3. Basic
   4. COBOL
4. Write an HTML program to demonstrate hyper linking between two web pages.
5. Create a marquee & also insert an image.
6. Write an HTML program to create frame in HTML with 3 columns (width= 30%, 30%, 40%).
7. Write an HTML program to create a webpage with a blue background and print the following text with white background.
8. Write an HTML program to create the following table:

Course	OC	BC	MB	SC/ST	Total
Computer Science	**9**	**18**	**5**	**5**	**37**
Commerce	**14**	**25**	**6**	**5**	**50**

Grand Total		87

9. Write an HTML program to create the following table:

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	1. List roll no of students who were present in a paper of a subject. 2. List all roll numbers who have passed in first division. 3. List all students in BCA-II who have scored higher than average in your college. 4. List the highest score

Part C - Learning Resources

Text Books, Reference Books, Other Resources

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3. JavaScript different topics from Javatpoint
   https://www.javatpoint.com/php-tutorial
4. DHTML different topics from Javatpoint
   https://www.javatpoint.com/dhtml
5. PHP different topics from W3Schools
   https://www.w3schools.com/php/
6. PHP different topics from W3Schools
   https://www.w3schools.com/html/
7. MySQL different topics from W3Schools
   https://www.w3schools.com/mySQl/default.asp
8. MySQL different topics from Javatpoint
   https://www.javatpoint.com/mysql-tutorial

Part D: **Assessment and Evaluation**		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): Not Applicable University Exam(UE): 100 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	Not Applicable

Declaration

The syllabus of this subject is frame as per the TOR of department of higher education, Chhattisgarh.

1. Dr. H.S. Hota - Chairman
   Prof. and Head, Dept. of Computer Science and Application
2. Dr. Sanjay Kumar - Member
   Prof. and Head, SoS in Computer Science, Pt. Ravishankar Shukla University, Raipur
3. Mr. Jitendra Kumar - Member
   Asst. Prof., Dept. of Computer Science and Application
   Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur
4. Mr. H.S.P. Tonde - Member
   Asst. Prof. and Head, Dept. of Computer Science,
   Sant Gahira Guru University Sarguja, Ambikapur
5. Dr. Mamta Singh - Member
   Asst. Prof. and Head, Sai College, Bhilai
   Hemchand Yadav Vishwavidyalaya, Durg
6. Mr. Sushil Kumar Sahu - Member
   Asst. Prof. and Head, Christ College, Jagdalpur
   Shaheed Mahendra Karma Vishwavidyalaya, Bastar
7. Mr. Vikrant Gupta - Member
   Prof. and Head, Batmul Ashram College, Salheana
   Shaheed Nand Kumar Patel University, Raigarh
8. Mr. L.K. Gavel - Member
   Asst. Prof. and Head, Govt. Ghanshyam Singh Gupt, PG College, Balod
   Hemchand Yadav Vishwavidyalaya, Durg
9. Dr. Anil Kumar Sharma - Member
   Asst. Prof. and Head, A.P.S.G.M.N.S, Govt. PG College, Kawardha
   Hemchand Yadav Vishwavidyalaya, Durg
10. Mr. Vishwnath Tamrakar - Member
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    Pt. Ravishankar Shukla University, Raipur
11. Ms. Anjeeta Kujur - Member
    Asst. Prof. and Head, Govt. R.B.R.N.E.S. PG College, Jashpur

Sant Gahira Guru University Sarguja, Ambikapur

12. Mr. Suresh Kumar Thakur - Member
    Asst. Prof. and Head, Indira Gandhi Govt. PG College, Vaishali Nagar
    Hemchand Yadav Vishwavidyalaya, Durg
13. Dr. Ugrasen Suman - Member
    Prof. and Head, Dept. of Computer Science (Present Online)
    Devi Ahila Vishwavidyalaya, Indore

Date: 03.06.2022

Part A: Introduction				
Program: **Diploma Course**		Class: **B.C.A. II Year**	Year: **2022**	Session:**2022-2023**
1.	Course Code	**BCA-8T**		
2.	Course Title	**Numerical Analysis**		
3.	Course Type	**Theory**		
4.	Pre-requisite (if any)	Knowledge of basic mathematics		
5.	Course Learning. Outcomes (CLO)	At the end of this course, the students will be able to: • Obtain numerical solutions of algebraic and transcendental equations. • Find out numerical solutions of system of linear equations and check the accuracy of the solutions. • Learn about various interpolating and extrapolating methods. • Solve initial and boundary value problems in differential equations using numerical methods. • Apply various numerical methods in real life problems.		
6.	**Credit Value**	**Theory : 6**		
7.	**Total Marks**	**Max. Marks: 25 +75**	**Min Passing Marks : 33**	

Part B: Content of the Course		
Total Periods: 90		
Unit	Topics	No. of Periods
I.	**Numerical Methods for Solving Algebraic and Transcendental Equations:** Round-off error and computer arithmetic, Local and global truncation errors, Algorithms and convergence; Bisection method, False position method, Fixed point iteration method, Newton's method and secant method for solving equations.	18
II.	**Numerical Methods for Solving Linear Systems:** Partial and scaled partial pivoting, Lower and upper triangular (LU) decomposition of a matrix and its applications, Thomas method for tridiagonal systems; Gauss-Jacobi, Gauss-Seidel and successive over-relaxation (SOR) methods.	18
III.	**Interpolation:** Lagrange and Newton interpolations, Piecewise linear interpolation, Cubic spline interpolation, Finite difference operators, Gregory-Newton forward and backward difference interpolations.	18
IV.	**Numerical Differentiation and Integration:** First order and higher order approximation for first derivative, Approximation for second derivative; Numerical integration: Trapezoidal rule, Simpson's rules and error analysis, Bulirsch-Stoer extrapolation methods, Richardson extrapolation.	18
V.	**Initial and Boundary Value Problems of Differential Equations:** Euler's method, Runge-Kutta methods, Higher order one step method, Multi-step methods; Finite difference method, Shooting method, Real life examples: Google search engine, 1D and 2D simulations, Weather forecasting.	18
Keywords: Error, Decomposition, Interpolation, Differentiation, Integration, Higher order, Simulation.		

Part C - **Learning Resource**
Text Books, Reference Books, Other Resources

Suggested Readings:

1. Brian Bradie (2006), A Friendly Introduction to Numerical Analysis. Pearson.
2. C. F. Gerald & P. O. Wheatley (2008). Applied Numerical Analysis (7th edition), Pearson Education, India.
3. F. B. Hildebrand (2013). Introduction to Numerical Analysis: (2nd edition). Dover Publications.
4. M. K. Jain, S. R. K. Iyengar & R. K. Jain (2012). Numerical Methods for Scientific and Engineering Computation (6th edition). New Age International Publishers.
5. Robert J. Schilling & Sandra L. Harris (1999). Applied Numerical Methods for Engineers Using MATLAB and C. Thomson-Brooks/Cole.

E Resources:

- Topics Related to Numerical Analysis from SWAYAM/NPTEL
  1. Introduction
     https://onlinecourses.swayam2.ac.in/cec20_ma11/preview
     https://onlinecourses.nptel.ac.in/noc19_ma21/preview

  2. Introduction to error analysis and linear systems
     https://www.youtube.com/watch?v=_cgzqVmvqtQ&list=PLq-Gm0yRYwTguDcfylj1ZicXxzdZCAr5S&index=2

  3. LU decomposition
     https://www.youtube.com/watch?v=1g0G_kjA560&list=PLq-Gm0yRYwTguDcfylj1ZicXxzdZCAr5S&index=4

  4. Jacobi and Gauss Seidel methods
     https://www.youtube.com/watch?v=K193avJMCd4&list=PLq-Gm0yRYwTguDcfylj1ZicXxzdZCAr5S&index=5

  5. Playlist
     https://www.youtube.com/channel/UCqpVOOZS6-OFQaPKWBZLKJQ
     https://www.youtube.com/watch?v=TWAN_T66Cps&list=PLq-Gm0yRYwTguDcfylj1ZicXxzdZCAr5S (NPTEL)

Part D: **Assessment and Evaluation**
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 25 Marks University Exam(UE): 75 Marks

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	25 Marks

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DATE: 03.06.2022

Part A: Introduction				
Program: **Diploma Course**		Class: **B.C.A. II Year**	Year: **2022**	Session:2022-2023
1.	Course Code	**BCA-9T**		
2.	Course Title	**Operating System**		
3.	Course Type	**Theory**		
4.	Pre-requisite (if any)	No		
5.	Course Learning. Outcomes (CLO)	At the end of this course, the students will be able to: • Describe the important computer system resources and the role of operating system in their management policies and algorithms. • To understand various functions, structures and history of operating systems and should be able to specify objectives of modern operating systems and describe how operating systems have evolved over time. • Understanding of design issues associated with operating systems. • Understand various process management concepts including scheduling, synchronization, and deadlocks. • To have a basic knowledge about multithreading. • To understand concepts of memory management including virtual memory. • To have sound knowledge of various types of operating systems including Unix and Android. • Describe the functions of a contemporary operating system with respect to convenience, efficiency, and the ability to evolve.		
6.	**Credit Value**	**Theory : 6**		
7.	**Total Marks**	**Max. Marks: 25 +75**	**Min Passing Marks : 33**	

Part B: Content of the Course		
Total Periods: 90		
Unit	Topics	No. of Periods
I.	**Introduction to Operating System:** What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multiprogramming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems.	18
II.	**Operating System Organization and Process Characterization:** Processor and User Modes, Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Pre-emptive and Pre- emptive Scheduling Algorithms.	18
III.	**Process Management (Deadlock):** Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery. **Inter Process Communication and Synchronization:** Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter-process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer.	18

IV.	**Memory Management:** Physical and Virtual Address Space; Memory Allocation Strategies– Fixed and -Variable Partitions, Paging, Segmentation, Virtual Memory.	12
V.	**Introduction to Android Operating System:** Introduction to Android Operating System, Android Development Framework, Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework.	12
Keywords: Operating System (OS), Process, Kernel, Threads, Deadlock, Critical Section, Semaphores.		

Part C - **Learning Resources**

Text Books, Reference Books, Other Resources

Suggested Readings:

1. A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications 2008.
2. A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education 2007.
3. G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education
4. 1997.
5. W. Stallings, Operating Systems, Internals & Design Principles 2008 5th Edition, Prentice Hall of India.
6. M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill 1992.

E Resources:

1. **SWAYAM/NPTEL - IITD**
   https://youtube.com/playlist?list=PLsylUObW5M3CAGT6OdubyH6FztKfJCcFB

2. **NPTEL - IIT Madras**
   https://youtube.com/playlist?list=PL3-wYxbt4yCjpcfUDz-TgD_ainZ2K3MUZ

3. **Coursera:**
   Introduction:
   https://www.coursera.org/specializations/codio-introduction-operating-systems?
   Memory Management:
   https://www.coursera.org/learn/codio-intro-to-operating-systems-2-memory-management?specialization=codio-introduction-operating-systems

4. **w3shool.com**
   https://www.w3schools.in/operating-system/intro#:~:text=An%20operating%20system%20falls%20under,networking%20hardware%2C%20printers%2C%20etc.

5. **gatevidyalay.com**
   https://www.gatevidyalay.com/operating-system/

6. **javatpoint.com**
   https://www.javatpoint.com/os-tutorial

Part D: **Assessment and Evaluation**		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 25 Marks University Exam(UE): 75 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	25 Marks

Declaration

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    Devi Ahila Vishwavidyalaya, Indore

Date: 03.06.2022

Part A: Introduction				
Program: **Diploma Course**		Class: **B.C.A. II Year**	Year: **2022**	Session: **2022-2023**
1.	Course Code	**BCA-10T**		
2.	Course Title	**Relational Database Management System**		
3.	Course Type	**Theory**		
4.	Pre-requisite (if any)	No		
5.	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: • Learn about Database Concepts, Architecture, various Users, Data Models and Data Management which helps them to interact with various Databases. • Develop various Tables and Databases which helps them to develop new Software. • Practice various SQL commands which help them to generate new relationships among various Tables and Databases which are useful for Software Development. • Familiar about RDBMS Software like Oracle and SQL Server which are used as Backend for Software Development. • Develop new Databases for their Minor and Major Project Development which enhances their Data Storage, Data Accessibility and Data Management.		
6.	**Credit Value**	**Theory : 4**		
7.	**Total Marks**	**Max Marks: 25+75**	**Min Passing Marks : 33**	

Part B: Content of the Course		
Total Periods: 60		
Unit	Topics	No. of Periods
I.	**Overview of Database Management**: Data, Information and Knowledge, Data Processing versus Data Management, File Oriented Approach verses Database Oriented Approach, Data Independence, Database Administration Roles, Overview of Database, DBMS Architecture, Different kinds of DBMS users, Introduction to Data Dictionary. Data Models: Network Model, Relational Model, Hierarchical Model. Database Languages: DDL, DML, DCL, And TCL. Structured Query Language :Basic Data Types, Commands : Create, Insert, Select, Delete, Truncate , Drop, Alter, Grant ,Revoke, Commit, Rollback, Queries on Multiple Relation, Join Operation, String Operation, Set Operation, Grouping, Nested Subqueries.	12
II.	**Concepts of Database Management System :** Definition of Tables, Cardinality relationships in a Database, Constraints in a Database, Entity, Attributes, Strong and weak entities, ER-Diagram, Symbols and Implementation, Concept of keys: Candidate key, Primary key, Alternate key, Foreign key, Case studies of ER modeling Generalization, Specialization and Aggregation. Converting an ER model into relational Schema. Extended ER features.	12

	Schema. Extended ER features.	
III.	**Relational Database Design:** Normalization concept in logical model, Pitfalls in database design, Functional dependencies, Join dependencies, Natural Join, Normal forms (1NF, 2NF, 3NF). Boyce Codd Normal form, Decomposition, Multi-Valued Dependencies, 4NF, 5NF. Issues in physical design: Concepts of indexes, File organization for relational tables, De-normalization. Relational Database :Structure of Relational Database, Schema, Relational Operation : Selection, Projection, Cartesian Production, Union, Intersection and Minus operation .Relational Algebra: Select operation, Project operation, Union operation, Cartesian Product operation, Intersection operation, Join operation, Different types of joins (Inner join, Outer join, Self join).	12
IV.	**SQL Server Basics:** Microsoft SQL Server 2019, Overview of SQL Server 2019,Versions of SQL Server, Installation of SQL Server 2019, SQL Server Management Studio(SSMS), Azure Data Studio(ADS), Features of SQL Server Express, SQL Server Support Life Cycle, Data Definition Language (DDL) Commands, Data Manipulation Language (DML) Commands, Data Control Language (DML) Commands, Transaction Control Language (TCL) Commands, Data Constraints, Stored Procedure, Function .	12
V.	**Oracle Basics :** Oracle Corporation, Versions of Oracle, Oracle Products, Oracle Installation, Oracle Client and Server Products, Online Transaction Processing, Hybrid cloud Installation, Data Definition Language (DDL) Commands, Data Manipulation Language (DML) Commands, Data Control Language (DML) Commands, Transaction Control Language (TCL) Commands, Data Constraints, Introduction to PL/SQL Programming, Data Types, Looping Statements, Cursors, Stored Procedure, Function .	12
Keywords: Data Models, Keys, SQL Commands, DBMS, RDBMS, Oracle, SQL Server.		

Part C - Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

1. Database system concept , H. Korth and A. Silberschatz, TMH Publications .
2. Data Base Management System, Alexies&Mathews,Vikash publication.
3. Data Base Management System, C. J. Date ,Narosha Publication.
4. Data Base Management System By James Matin .
5. Principles of Database System By Ullman.
6. Program Design, Peter Juliff, PHIPublications .
7. The Complete Reference, Kevin Loney, Oracle Press.
8. SQL, PL/SQL The Programming Language of Oracle, Ivan Bayross , PustakKosh Publication.
9. Microsoft SQL Server Management and Administration, Ross, STM Publications .

E Resources:

1. SWAYAM url link for DBMS and RDBMS :https://youtu.be/f6LGtJutWyA
2. SWAYAM url link for DBMS and RDBM : https://youtu.be/IoL9Ve2SRwQ
3. SWAYAM url link for DBMS and RDBMS : https://**swayam**.gov.in/courses/4434-data-base-management-system

Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 25 Marks University Exam (UE): 75 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	25 Marks

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Date: 03.06.2022

Part A: Introduction				
Program: **Diploma Course**		Class: **B.C.A. II Year**	Year: **2022**	Session:**2022-2023**
1	Course Code	**BCA-11T**		
2	Course Title	**Computer Networking and Cyber Technology**		
3	Course Type	**Theory**		
4	Pre-requisite (if any)	No		
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: • Understand the basic computer network technology. • Understand and explain the Data Communications System and its components. • Identify the different types of network topologies and protocols. • Understand the layers of the OSI model and TCP/IP. • Expose wireless and wired LANs. • Understand the cyber laws in India.		
6	**Credit Value**	**Theory: 6**		
7	**Total Marks**	**Max. Marks: 25+75**	**Min Passing Marks: 33**	

Part B:Content of the Course		
Total Periods: 90		
Unit	Topics	No. of Periods
I	**Introduction to Computer Network and Physical Layer:** Computer network Fundamentals and Types of computer networks: LAN, MAN, WAN, Wireless and wired networks, broadcast and point to point networks, Network topologies, ISO-OSI reference model, TCP/IP model, Concept of Analog & Digital Signal, Bandwidth, Multiplexing: TDM, FDM, WDM, CDMA, Transmission Media : Twisted pair, Coaxial cable, Fiber-optics, Wireless transmission (radio, microwave, infrared), Switching: Circuit Switching, Message Switching ,Packet Switching & their comparisons, Line Coding techniques: Bipolar, Unipolar, RZ, NRZ, Manchester, AMI, B8ZS, Block coding techniques.	18
II	**Data Link Layer:** Functions at Data Link Layer, Framing, Error detection and correction codes: checksum, CRC, hamming code, Flow Control: Stop & Wait and Sliding Window Protocols, Data link protocols: HDLC and PPP, Medium Access Sub-Layer: LLC Protocol, IEEE 802.2, Overview of IEEE 802.3,802.4,802.5, 802.6 and brief knowledge of 802 series up to present scenario.	18
III	**Network Layer and Transport Layer:** Functions of Network Layer, Routing Protocols & Algorithms, Principles of Congestion Control, IPv4 addresses, IPv4 Addressing, IPv6 addresses, Internetworking basics, Functions of Transport Layer, Flow Control & Buffering, Introduction to TCP/UDP protocols and their comparison.	18

IV	**Common Network Architecture:** Protocol Stack for Example Networks, Connection oriented & Connectionless N/Ws, Frame Relay, Example of N/Ws-P2P, X.25, ATM, Ethernet, Wireless LANs - 802.11, 802.11x, Gigabit, Broadband Networks: Integrated Service Digital Networks (ISDN), BroadBand ISDN, ATM, Introduction to Very Small Aperture Terminal (VSAT).	12
V	**Application Layer:** World Wide Web (WWW), Domain Name System (DNS), E-mail, File Transfer Protocol (FTP), HyperText Transfer Protocol (HTTP), Email Protocols: MIME & SMTP, POP, IMAP, Telnet – Remote Communication Protocol, Proxy Server, Proxy Web Servers. **Cyber Laws in India:** Information Technology Act, 2000 – a brief overview; E – commerce; E – governance; Concept of Electronic Signature; Concept of Cyber contraventions and Cyber Offences.	12
Keywords: Computer Network, TCP/IP Model, OSI Model, Wireless & Wired Networks, Cyber Laws		

Part C - Learning Resource

Text Books, Reference Books, Other Resources

Suggested Readings:

Text Books:

1. Computer Networks, Andrew S. Tanenbaum, PHI / Pearson Education Inc.
2. Data Communication and Networking, Behrouz A. Forouzan, Tata McGraw-Hill.
3. Internet Law-Text and Materials, Chris Reed, Universal Law Publishing Co., New Delhi
4. Hand book of Cyber Laws, Vakul Sharma, Macmillan India Ltd, New Delhi

Reference Books:

1. Data and Computer Communication, William Stallings, Pearson Education.
2. Computer and Communication Networks, Nader F. Mir, Pearson Education, 2007.
3. Data & Computer Communication, Black, PHI

E Resources:

- NPTEL URL link for Data Communication:
  https://nptel.ac.in/courses/106105082

  Topics From SWAYAM Portal
- Introduction to Data Communication

  https://www.youtube.com/watch?v=swtH_okidQc&list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN&index=1
- Layered Architecture
  https://www.youtube.com/watch?v=xHO6LjSHeo0&list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN&index=2
- Data and Signal
  https://www.youtube.com/watch?v=6ZGVZ7gUccE&list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN&index=3
- Guided Transmission Media
  https://www.youtube.com/watch?v=y7v3EAJsWXA&list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN&index=5
- Unguided Transmission Media
  https://www.youtube.com/watch?v=hKq1tYlVxdQ&list=PLUtfVcb-iqn8dG1-Cn7NTEdILR3hRVgcN&index=6

Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 25 Marks University Exam (UE): 75 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	25 Marks

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- Member
(Present Online)

Date: 03.06.2022

Part A: Introduction				
Program: **Diploma Course**		Class: **B.C.A. II Year**	Year: **2022**	Session:2022-2023
1	Course Code	**BCA-12T**		
2	Course Title	**Web Technology**		
3	Course Type	**Theory**		
4	Pre-requisite (if any)	No		
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: • Analyze a web page and identify its elements and attributes. • Create web pages using HTML, CSS, JAVASCRIPT, XHTML • Build dynamic web pages using JavaScript (Client side programming). • Create XML documents and Schemas. • Build interactive web applications using, PHP, AJAX. • Handling Database using MYSQL		
6	**Credit Value**	**Theory: 4**		
7	**Total Marks**	**Max. Marks: 25+75**	**Min Passing Marks: 33**	

Part B: Content of the Course		
Total Periods: 60		
Unit	**Topics**	No. of Periods
I	**Introduction** :Introduction to web, protocols governing the web, web development strategies, Web applications, Introduction to Web Publishing: Introduction, Domain Name Registration, choosing a web host and signing up for an Account, web hosting, web design and development, Testing web site, uploading web pages.	12
II	**HTML:** Introduction, Basic formatting tags: heading, paragraph, line break, bold, italic, underline, superscript, subscript, font and image. Different attributes like align, color, bgcolor, font face, border, size. Navigation Links using anchor tag: internal, external, mail and image links, Link to different web pages and sections. Lists: ordered, unordered and definition, Table tag, HTML Form controls: form, text, password, text area, button, checkbox, radio button, select box, hidden controls, Frameset and frames. Basics of DHTML, XML.	12
III	**Scripting Languages:** Usefulness of Style Sheets, Creating Style sheets, Classes and Pseudo Classes, CSS Tags, Background, Font, Text, Position etc. JavaScript: Overview, Syntax & Conventions, Variables, Expression, Branching & Looping, Function, Array, Objects, Events & Document Object model, Alerts, prompts and conforms.	12

IV	PHP: Introduction to PHP, Server side scripting, Role of Web Server software, including files, comments, variables and scope, echo and print, Operators: Logical, Comparison and Conditional operators, Branching statements, Loops, break and continue PHP functions. Passing information between pages, HTTP GET and POST method, String functions: strlen, strops, strstr, strcmp, substr, str_replace, string case, Array constructs: array(), list() and foreach(), PHP advanced functions: Header , Session, Cookie, Object Oriented Programming using PHP: class, object, constructor, destructor and inheritance.	12
V	**MySQL:** Features of MySQL, data types, Introduction to SQL commands-SELECT, DELETE,UPDATE, INSERT, PHP functions for MySQL operations: mysql_connect, mysql_select_db, mysql_query,mysql_fetch_row, mysql_fetch_array, mysql_fetch_object, mysql_result, Insertion and Deletion of data using PHP, Displaying data from MYSQL in webpage.	12

Keywords: HTML, PHP, CSS, CSS3, JAVASCRIPT, MYSQL, Dynamic website, Commercial website, Web applications

Part C - Learning Resource

Text Books, Reference Books, Other Resources

Suggested Readings:

TEXT BOOKS/ REFERENCE BOOKS:

1. Xavier, C, "Web Technology and Design", New Age International.
2. Ivan Bayross, "HTML, DHTML, Java Script, Perl & CGI", BPB Publication.
3. Ramesh Bangia, "Internet and Web Design", New Age International.
4. Ullman, "PHP for the Web: Visual Quick Start Guide", Pearson Education.
5. Jim Converse & Joyce Park, "PHP & MySQL Bible", Wiley India Publication
6. "Internet and Internet Engineering", Daniel Minoli, TMH.
7. Chuckmusiano & Bill Kenndy, O Reilly, HTML The Definite Guide"
8. Joseph Schmuller, Dynamic HTML, BPB, 2000.
9. Deitel, Deitel, Goldberg, "Internet & World Wide Web How to Program", Third Edition, Pearson Education, 2006.
10. Raj Kamal, "Internet and Web Technologies", Tata McGraw-Hill.

Part D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:
Maximum Marks: 100
Continuous Comprehensive Evaluation (CCE): 25 Marks
University Exam (UE): 75 Marks

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	25 Marks

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