GOKUL GLOBAL UNIVERSITY

विद्या अनन्तम्

Approved By Govt. of Gujarat
(Recognized by UGC under Section 22 & 2(f) of 1956)
(Gujarat Private State University Act 4 of 2018)

BCA

SEM- I,II

Bachelor Of Computer Applications(BCA)

Batch 2023-24

Faculty of Computer Science & Applications

Gokul College of Computer Science & Applications

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BCA SEM 1 SUBJECTS

Subject code	Course Type	Name of subject	Course Credit	Internal Marks	External Marks	Total Marks
CPMJDSCAFC101	Discipline Specific Course(major)	Fundamentals of Programming Language 'C'	4	50	50	100
CPMJDSCADB101A	Discipline Specific Course(major)	Database Management System	4	50	50	100
CPMNDSCAFC102	Discipline Specific Course(minor)	Practical - Fundamentals of Programming Language 'C'	2	25	25	50
CPMNDSCADB102A	Discipline Specific Course(minor)	Practical – DBMS & Office	2	25	25	50
CPMDCADC103	Multi Disciplinary Course	Digital Computer System Architecture	4	50	50	100
CPAECACS104	Ability Enhancement Course	Communication Skills - I	2	25	25	50
CPIKSAUI105	Indian Knowledge System	Understanding India	2	25	25	50
CPSECAMA106	Skill Enhancement Course	Mathematics	2	25	25	50
	Total		22	275	275	550

BCA SEM 2 SUBJECTS						
Subject code	**Course Type**	**Name of subject**	**Course Credit**	**Internal Marks**	**External Marks**	**Total Marks**
CPMJDSCAPC201	Discipline Specific Course(major)	Advance Programming Language 'C'	4	50	50	100
CPMJDSCAWD201A	Discipline Specific Course(major)	Internet And Web Design	4	50	50	100
CPMJDSCAPC202	Discipline Specific Course(minor)	Practical –Advance Programming Language 'C'	2	25	25	50
CPMJDSCAWD202A	Discipline Specific Course(minor)	Practical – Web Design	2	25	25	50
CPMDCASA203	Multi Disciplinary Course	System Analysis	4	50	50	100
CPAECACS204	Ability Enhancement Course	Communication Skills - II	2	25	25	50
CPVACAES205	Common Value added Course	Environmental Studies	2	25	25	50
CPSECAMT206	Skill Enhancement Course	Advance Mathematics	2	25	25	50
	Total		22	275	275	550

BCA SEM 3 SUBJECTS

Subject code	Course Type	Name of subject	Course Credit	Internal Marks	External Marks	Total Marks
DPMJDSCAOP301	Discipline Specific Course(major)	Object Oriented Programming Language C++	04	50	50	100
DPMJDSCARD301A	Discipline Specific Course(major)	Relational Database Management System	04	50	50	100
DPMNDSCAOP302	Discipline Specific Course(minor)	Practical : Object Oriented Programming Language C++	02	25	25	50
DPMNDSCARD302A	Discipline Specific Course(minor)	Practical – Rdbms	02	25	25	50
DPMDCACN303	Multi Disciplinary Course	Computer Network	04	50	50	100
DPAECAHE304	Ability Enhancement Course	Health Education	02	25	25	50
DPIKSAIB305	Indian Knowledge System	IDEA OF BHARAT	02	25	25	50
DPSECACS306	Skill Enhancement Course	Computer Security - I	02	25	25	50
	Total		22	275	275	550

BCA SEM 4 SUBJECTS						
Subject code	**Course Type**	**Name of subject**	**Course Credit**	**Internal Marks**	**External Marks**	**Total Marks**
DPMJDSCAPP401	Discipline Specific Course(major)	Python Programing	04	50	50	100
DPMJDSCAWP402	Discipline Specific Course(major)	Web Development Using PHP	04	50	50	100
DPMJDSCAPP401A	Discipline Specific Course(minor)	PRACTICAL – Python Programing	02	25	25	50
DPMJDSCAWP402A	Discipline Specific Course(minor)	PRACTICAL – Web Development Using PHP	02	25	25	50
DPMDCAEC403	Multi Disciplinary Course	E-Commerce	04	50	50	100
DPAECAPD404	Ability Enhancement Course	Personality Development & Reasoning Ability	02	25	25	50
DPVACAID405	Common Value added Course	Integrated Personality Development Course-II	02	25	25	50
DPSECACS406	Skill Enhancement Course	Computer Security - II	02	25	25	50
	Total		22	275	275	550

BCA SEM 5 SUBJECTS

Subject code	Course Type	Name of subject	Course Credit	Internal Marks	External Marks	Total Marks
BPMJDSCAJA501	Discipline Specific Course(major)	Object Oriented Programming JAVA	04	50	50	100
BPMJDSCAGP501A	Discipline Specific Course(major)	GUI Programming Using C# .Net	04	50	50	100
BPMJDSCAJA501B	Discipline Specific Course(major)	**Practical:** Object Oriented Programming JAVA	02	25	25	50
BPMJDSCAGP501C	Discipline Specific Course(major)	**Practical:** GUI Programming Using C# .Net	02	25	25	50
BPMIDSCASE502	Minor Stream Course	Software Engineering	04	50	50	100
BPMIDSCAOS502A	Minor Stream Course	Operating System	04	50	50	100
BPSECAPD507	Skill Enhancement Course	Project Development	02	25	25	50
BPMJDSCAJA501	Discipline Specific Course(major)	Object Oriented Programming JAVA	04	50	50	100
	Total		22	275	275	550

BCA SEM 6 SUBJECTS

Subject code	Course Type	Name of subject	Course Credit	Internal Marks	External Marks	Total Marks
BPMJDSCAJP601	Discipline Specific Course(major)	Advance JAVA Programming	04	50	50	100
BPMJDSCASP601A	Discipline Specific Course(major)	Web Development Using Asp.Net	04	50	50	100
BPMJDSCAJP601B	Discipline Specific Course(major)	**Practical:** Advance JAVA Programming	02	25	25	50
BPMJDSCASP601C	Discipline Specific Course(major)	**Practical:** Asp .Net	02	25	25	50
BPMIDSCAUM605	Minor Stream Course	Unified Modeling Language (UML)	04	50	50	100
BPAECADCM606	Ability Enhancement Course (AEC)	Digital Communication and Marketing Skills	02	50	50	50
BPINTAIP607	Internship	Industrial Project	04	50	50	100
BPMJDSCAJP601	Discipline Specific Course(major)	Advance JAVA Programming	04	50	50	100
	Total		22	275	275	550

BCA SEMESTER I

Program :	BCA	**Subject / Branch :**	NA
Year :	2023/24	**Semester :**	I
Course title :	Fundamentals of Programming Language 'C'	**Course code :**	CPMJDSCAFC101
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Basic Knowledge of Computer		
Rationale :	To introduce students the essentials of computer Programming and programming methodology using C language		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
0	0	4	30	20	50	100

Course Objective:

1. Students will understand to formulate a computing problem to executable computer program using C language.
2. Students will understand about compiler based programming languages
3. Students will learn concepts of variables, literals, data types, conversions of data types, input and output data and processing of data, inbuilt functions, arrays, header files, conditional and iterative statements.

Course Outcome:

1. Design and implement C programs to solve complex problems.
2. Describe the purpose and usage of basic c concept,control flow statements, looping and branching statements, array.
3. Analyze and predict the output of more complex C programs and identify and correct logical errors in C code.
4. Recognize and recall C language syntax and keywords,data types and their characteristics, variables, control flow statements, looping, array to create logical program structures and their usage.
5. Assess the quality of code in terms of readability, maintainability, and adherence to coding standards.

Content

Unit	Description in detail	Credit	Weightage
I	**Introduction to Programming** Concepts of Algorithm and Flowcharts, problem solving examples using algorithm and flowchart, Types of Programming languages, Characteristics of higher level language, Compiler and Interpreter **Overview of C Introduction** Importance of C, Sample C programs, Basic structure of C programs, Programming style, executing of C program **Constants, Variables and data Types** Introduction, Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, Defining symbolic constants	1	25 %
II	**Operators and Expression** Introduction, Arithmetic of Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bit-wise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Operator precedence and associativity, Mathematical functions. **Input & Output Operators** Introduction, reading a character, writing a character, formatted input, formatted output.	1	25 %
III	**Branching and Looping** Introduction Decision making with Simple IF statement, IF ELSE statement, Nesting of IF ELSE statements, The ELSE IF ladder, The switch statement, the turnery (? :) Operator, the GOTO statement. **Iterative Statement** Introduction WHILE statement, the DO statement, The FOR statement, Jumps in loops Break and continue	1	25 %

IV	**Array & String** Introduction, One-dimensional, arrays, Two-dimensional arrays, Initialization of two- dimensional arrays, Concept of Multidimensional arrays **Handling of Character strings** Introduction, Declaring and initializing string variables, Reading strings from terminal, Writing strings to screen, Arithmetic operations on characters, Putting string together, String Operations: String Copy, String Compare, String Concatenation And String Length, String Handling functions, Table of strings	1	25 %

Reference Books:

1. Programming in C, Balaguruswami – TMH
2. C: How to Program, Deitel & Deitel - PHI
3. C Programming Language, Kernigham & Ritchie - TMH

Suggested Readings:

1. Mastering Turbo C, Kelly & Bootle - BPB
2. C Language Programming – Byron Gottfried - TMH
3. Let us C, Yashwant Kanetkar - BPB Publication

Online Resources:

1. https://www.w3schools.com/
2. https://www.tutorialspoint.com/
3. https://www.programiz.com/
4. https://www.cprogramming.com/

Course Outcome Fundamentals of Programming Language 'C', CPMJDSCAPC101	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2	1				3	3							2
CO-2	3					3	3							
CO-3		3	3			2	3							
CO-4	2					3	3						3	
CO-5	1												3	

Program :	BCA	**Subject / Branch :**	NA
Year :	2023/24	**Semester :**	I
Course title :	Practical - Fundamentals of Programming Language 'C'	**Course code :**	CPMNDSCAFC102
Course type :	Practical	**Course credit :**	02
Pre-requisite :	Basic Knowledge of Computer		
Rationale :	To introduce students the essentials of computer Programming and programming methodology using C language		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	10	25	50

Course Objective:

1. Students will understand to formulate a computing problem to executable computer program using C language.
2. Students will understand about compiler based programming languages
3. Students will learn concepts of variables, literals, data types, conversions of data types, input and output data and processing of data, inbuilt functions, arrays, header files, conditional and iterative statements.

Course Outcome:

1. Design and implement C programs to solve complex problems.
2. Describe the purpose and usage of basic c concept,control flow statements, looping and branching statements, array.
3. Analyze and predict the output of more complex C programs and identify and correct logical errors in C code.
4. Recognize and recall C language syntax and keywords,data types and their characteristics, variables, control flow statements, looping, array to create logical program structures and their usage.
5. Assess the quality of code in terms of readability, maintainability, and adherence to coding standards.

Practical List

Practical:

1. Write a C program to display "Gokul University" on the screen.
2. Write a C program to find the area of circle using the formula Area=PI * r * r.
3. Write a C program to find the area of rectangle, cube and triangle. (Formula are: Rectangle=l *b*h, triangle = (I * b) * 0.5, cube = L*L*L
4. Write a C program to evaluate simple interest I = P*R*N / 100.
5. Write a C program to enter a distance into K.M and convert it in to meter, feet, inches and Centimeter
6. Write a C program to interchange two numbers.
7. Write a C program to convert Fahrenheit into centigrade
8. Write a C program for summation, subtraction, multiplication, division of two number using Arithmetic operator
9. Write a C program to find out the largest value from given three numbers using conditional Operator
10. Write a C program to find the maximum number from given three numbers.
11. Write a C program to find that the enter number is Negative, or Positive or Zero.
12. Write a C program to Checked whether entered char is capital, small, digit or any special Character
13. Write a C program to find out the max. and min. number from given 10 numbers.
14. Write a C program to find the sum of digit of accepted number.
15. Write a C program to find the sum of first 100 odd numbers. And even numbers.
16. Write a C program to display first 25 Fibonacci nos.
17. Write a C program to check the accepted number is prime number or not.
18. Write a C program to display first' 100 prime numbers.
19. Write a C program to find factorial of accepted numbers.
20. Write a C program to print accepted no and its reverse number.
21. Write a C program to convert decimal numbers into equivalent hexadecimal number.

22.Write a C program to display first 5 Armstrong number.

23.Write a C program to arrange the accepted numbers in ascending order and descending order.

24.Write a C program to find whether the accepted string is palindrome or not.

25.Write a C program to convert given line into upper case or lower case.

26.Write a C program to count no of word, character, line and space from given text.

27.Write a C program to display following output on the screen.

```
1
12
123
1234
```

28.Write a C program to display following output on the screen.

```
0
1 1
1 0 1
0 1 0 1
1 0 1 0 1
```

29.Write a C program to display following output on the screen.

```
1
22
3 3 3
4 4 4 4
```

30.Write a C program to find maximum & minimum value from the given array

Reference Books:

1. Programming in C, Balaguruswami – TMH
2. C: How to Program, Deitel & Deitel - PHI
3. C Programming Language, Kernigham & Ritchie - TMH

Suggested Readings:

1. Mastering Turbo C, Kelly & Bootle - BPB
2. C Language Programming – Byron Gottfried - TMH
3. Let us C, Yashwant Kanetkar - BPB Publication

Online Resources:

1. https://www.w3schools.com/
2. https://www.tutorialspoint.com/
3. https://www.programiz.com/
4. https://www.cprogramming.com/

Course Outcome Practical - Fundamentals of Programming Language 'C' CPMNDSCAFC102	**Expected Mapping with Programme Outcomes** **(1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2	1				3	3							2
CO-2	3					3	3							
CO-3		3	3			2	3							
CO-4	2					3	3						3	
CO-5	1												3	

Program :	BCA	**Subject / Branch :**	NA
Year :	2023/24	**Semester :**	I
Course title :	Database Management System	**Course code :**	CPMJDSCADB101A
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Knowledge about Database Management System		
Rationale :	DBMS helps to share the data Quickly, effectively and securely and also access the data vary fast with the accurate result. It gives to knowledge to the student how the data can be stored and accessed.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective :

1. Make access to the data easy for the user.
2. Protect Data From Physical harm and unauthorized systems.
3. Allow for growth in the data base system.

Course Outcome:

1. Evaluate the security and integrity of a database system
2. Analyze different types of database models (relational, hierarchical, network)
3. Apply normalization techniques to design and optimize database schemas
4. Explain the principles of database management systems in organizing and retrieving information.
5. Recognize fundamental concepts of databases, such as tables, records, fields, and keys and Memorize and list common terms used in database management.

Content

Unit	Description in detail	Credit	Weightage
I	Database and DBMS, Comparison between traditional file V/s DBMS, Characteristics of data in database, Components of database system environment, Functions of DBMS, Advantages and disadvantages of the DBMS, DBMS users, Database administrator, Role of DBA	1	25 %
II	Essentials of Database Design, Three level Architecture of Database- external, conceptual and internal, Data Models concepts: Hierarchical, Network and Relational, Operators, relations, domains and attributes, keys, traditional set operations, special relational operations.	1	25 %
III	**The E/R model :** Entity, E-R Diagram, Attributes, Relationship & Types, Development stages of E-R diagram & Examples **Normalization:** Normalization Process, 1 st NF , 2 nd NF, 3 rd NF, demoralization.	1	25 %
IV	Introduction of Database Data type - Text, Number, Auto number, Currency, Boolean, Date/Time, Memo Object – Table, Query, Forms, Reports Controls use in form and report	1	25 %

Reference Books:

1. Database System Concepts: – Henry F. Korth&AbrahimSilberschatz –McGraw Hill Education
2. Introduction to database Management – Navin Prakash -TMH
3. Introduction to Database System C. J. Date (7 Edition) Low Price Edition
4. MS Office Fundamental & Internet

Suggested Readings:

1. Introduction to database Management – Navin Prakash -TMH

Online Resources:

1. https://www.geeksforgeeks.org/dbms
2. https://www.javatpoint.com/dbms-tutorial
3. https://www.tutorialspoint.com/dbms/index.htm

Course Outcome	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Database Management System, CPMJDSCADB101A	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	1					3	3							
CO-2		3	2		2			2						
CO-3								3				1		
CO-4	3		2			1	3						2	
CO-5						2	3						3	

Program :	BCA	**Subject / Branch :**	NA
Year :	2023/24	**Semester :**	I
Course title :	Practical – DBMS & Office	**Course code :**	CPMNDSCADB102A
Course type :	Practical	**Course credit :**	02
Pre-requisite :	Knowledge about Database Management System		
Rationale :	DBMS helps to share the data Quickly, effectively and securely and also access the data vary fast with the accurate result. It gives to knowledge to the student how the data can be stored and accessed.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
0	0	4	15	10	25	50

Course Objective :

1. Make access to the data easy for the user.
2. Protect Data From Physical harm and unauthorized systems.
3. Allow for growth in the data base system.

Course Outcome:

1. Evaluate the security and integrity of a database system
2. Analyze different types of database models (relational, hierarchical, network)
3. Apply normalization techniques to design and optimize database schemas
4. Explain the principles of database management systems in organizing and retrieving information.
5. Recognize fundamental concepts of databases, such as tables, records, fields, and keys and Memorize and list common terms used in database management.

Content

Practical:

1. Essential Skills, Starting Microsoft Excel, Managing Workbook Files, Working in Workbooks, Selecting Cells and Choosing Commands, entering Data, Using Formulas to Calculate Values, Editing a Worksheet, formatting a Worksheet , Printing, Consolidating Data, Creating Charts (graphs), Chart Types, Auto formats, Changing Data in a Chart, Formatting a Chart, Organizing and Analyzing Data in a List Using a List to Organize, data sorting and filtering Data in a List Summarizing Data in a List, Presenting, Reviewing, and Sharing Workbooks, Creating Graphic Objects on Worksheets and Charts, Auditing and Adding Comments to Documents, Protecting a Workbook, Exchanging Data with Other Applications, Sharing Data and Graphics with Other Applications, Importing and Exporting Documents, Switching from Other Applications.
2. Practical may be given to create

- Pivot table
- Macro facility
- Student mark sheet using formula & chart
- Salary sheet using formula & chart

Database Tools

3. Create a database with different data types using wizard.
4. Create relationship between two tables using keys (Primary key & Foreign Key)
5. Create report using wizard
6. Create student information system with insert, update, delete and view

Reference Books:

1. Database System Concepts: – Henry F. Korth&AbrahimSilberschatz –McGraw Hill Education
2. Introduction to database Management – Navin Prakash -TMH
3. Introduction to Database System C. J. Date (7 Edition) Low Price Edition
4. MS Office Fundamental & Internet

Suggested Readings:

2. Introduction to database Management – Navin Prakash -TMH

Online Resources:

4. https://www.geeksforgeeks.org/dbms
5. https://www.javatpoint.com/dbms-tutorial
6. https://www.tutorialspoint.com/dbms/index.htm

Course Outcome	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Practical – DBMS & Office, CPMNDSCADB102A	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	1					3	3							
CO-2		3	2		2			2						
CO-3								3				1		
CO-4	3		2			1	3						2	
CO-5						2	3						3	

Program :	BCA	**Subject / Branch :**	NA
Year :	**2023/24**	**Semester :**	I
Course title :	Digital Computer System Architecture	**Course code :**	CPMDCADC103
Course type :	Theory	**Course credit :**	04
Pre-requisite :	The students should have a basic Understanding of Digital computer Organization and Architecture or Micro Processors		
Rationale :	It gives information to students which gives the means of interconnectivity for a computer's hardware components as well as the mode of data transfer and processing exhibited.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective :

1. To understand the structure, function and characteristics of computer system.
2. To identify and compare different method for computer I/O.
3. Identify and understand the Number system.

Course Outcome:

1. Recall fundamental concepts and terminology related to computer system architecture.
2. Interpret the purpose and functionality of different components in a computer system.
3. Apply knowledge of computer system architecture to solve problems or design simple systems.
4. Combine knowledge of computer system architecture to design innovative solutions.

Content

Unit	Description in detail	Credit	Weightage
I	Digital & Analog systems, Logic levels and pulse wave forms, digital computer, Major parts of computer, Hardware, Software - Application and System Software Computer generations First generation, Second generation, Third generation, Forth generation, Fifth generation Super Computers, Mainframes, Mini Computers, Palmtop PC, Laptop PC, Personal Computer, Workstations, Mainframe, Supercomputer. Dos, Windows, Linux	1	25 %
II	Communication devices -Modem, NIC, Switch, Hub Keyboard, Mouse, Light pen, Joystick, Scanner, Voice input system, Touch Monitor - CRT terminals (Monitor / VDU) Non – CRT terminals, LCD, Plasma display, LED Printer - Dot matrix printer, Ink jet printer, Laser printer, Line printer, Plotter Magnetic memory - Magnetic disk, Hard disk, Floppy disk, Semiconductor memory - RAM, ROM, Flash memory Optical memory - CD, CD-ROM, CD-RAM, DVD, DVD-ROM, DVD-RAM Cache memory, Physical & Virtual memory	1	25 %
III	Number system - Binary, decimal, octal, hexadecimal Conversion - Binary to decimal, decimal to binary, octal to decimal , decimal to octal, octal to binary, binary to octal, hexadecimal to binary, binary to hexadecimal, hexadecimal to Decimal, decimal to hexadecimal, hexadecimal to octal, octal to hexadecimal Binary arithmetic – Addition, subtraction (simple method)	1	25 %

IV	Logic gates - AND, OR, NOT, NAND, NOR, Exclusive-OR, Exclusive-NOR Data Processing circuit - Decoder, Encoder	1	25 %

Reference Books:

1. Fundamentals of computers – By. V. Rajaraman PHI Publication
2. How computer work: Ron White – Tech media
3. O-Level (Information Technology) - By V.K.Jain (Module- M1.1)
4. Computer Fundamentals: Pradeep K. Sinha &Priti Sinha (BPB)
5. Fundamentals of computers – By. Anand Kumar PHI Publication

Suggested Books:

1. Fundamentals of computers – By. Anand Kumar PHI Publication

Online Resources:

1. https://edu.gcfglobal.org/en/computerbasics/what-is-a-computer/1/
2. https://www.tutorialspoint.com/digital_circuits/digital_circuits_logic_gates.htm
3. https://www.tutorialspoint.com/computer_fundamentals/computer_number_system.htm

Course Outcomes Digital Computer System Architecture, CPMDCADC103	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3				3	1	3						3	
CO-2	3				1	3				2				
CO-3	2		1	1									3	
CO-4	2		2											

Program :	BCA	**Subject / Branch :**	NA
Year :	**2023/24**	**Semester :**	I
Course title :	Communication Skills - 1	**Course code :**	CPAECACS104
Course type :	Theory	**Course credit :**	02
Pre-requisite :	Basic Knowledge of English Language		
Rationale :	To make the students confident and make them aware about their personality development.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
2	0	0	15	10	25	50

Course Objective :

1. Students will develop their confidence.
2. Students will understand the importance of personality development and self awareness.
3. Students understand the importance of language and learn different techniques of interview, presentation etc.

Course Outcome:

1. Demonstrate the ability to articulate ideas clearly and confidently in spoken form.
2. Develop active listening skills, enabling them to comprehend and respond appropriately to various communication cues.
3. Enhance their written communication skills, producing clear, concise, and organized written documents.
4. Evaluate the effectiveness of different communication methods.
5. Implement learned communication techniques in real-world scenarios
6. Apply effective communication strategies in digital environments, including email, video conferencing, and social media.

Content

Unit	Theory of Communication	Credit	Weightage
I	**Communication** ➔ Meaning and Objectives ➔ Process and Importance, ➔ Barriers **Methods of Communication** ➔ Verbal and Non-Verbal ➔ Horizontal, ➔ Grapevine **Steps of Effective Communication**	1	25 %
II	**Grammar** ➔ Parts of Speech ➔ Subject Verb Agreement ➔ Indirect speech ➔ Auxiliaries and Modals ➔ Questions and Negatives	1	25 %

Reference Books:

1. Communication Skills – Vithal Patel
2. English Grammar Composition and Effective Business Communication- Pink and Thomas – S. Chand

Suggested Readings:

1. Story books to increase vocabulary.
2. Listen Motivational videos.
3. Read interested area in English News Papers.

Online Resources:

1. https://learnenglish.britishcouncil.org/grammar-reference
2. https;//en.m.wikipedia.org/communication

Course Outcomes Communication Skills - 1 CPAECACS104	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1						2	3		3		3			
CO-2									3	1				
CO-3		2										2		
CO-4									3					
CO-5									3	2				
CO-6	1					2	3							

Program:	BCA	**Subject / Branch:**	NA
Year:	**2023/24**	**Semester:**	I
Course title:	Understanding India	**Course code:**	CPIKSAUI105
Course type:	Theory	**Course credit:**	02
Pre-requisite :	knowledge of its diverse history, cultural richness, and socio-economic dynamics.		
Rationale :	Acquiring knowledge about India is key for fostering cross-cultural understanding and participating in a globally interconnected world.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
2	0	0	15	10	25	50

Course Objective:

1. The course aims at enabling the students to acquire and demonstrate the knowledge and understanding of contemporary India.
2. The course would also focus on developing an understanding among student-teachers of the Indian knowledge systems, the Indian education system, Indian tradition, art and culture and the roles

Course Outcome:

1. Demonstrate the ability to list key historical events, dates, and facts about India.
2. Identify and memorize important geographical features and landmarks of India.
3. Apply knowledge of India's political system to analyze current events.
4. Analyze the cultural influences on art, literature, and architecture in India.

Content

Unit		Credit	Weightage
I	**Concept of Bharatvarsh:** – Understanding Of Bharatvarsh. – The Land of India: Landscape, Mountains and Rivers. – The Glory of Indian Literature: Ved, Vedanga, Upanishads, Smriti, Puranas. – Jain And Buddhist Literature. – The Name of Our Country: Jambudvipa, Sindhu (Indus), Inde, Hind, Hindustan, Bharat India	1	25 %
II	**Indian tradition, art and culture.** – **Architecture and Sculpture**: Indus Valley town planning, rock cut architecture, major styles of temples, Mughal architecture, modern and contemporary architecture, stone and metal sculpture – **Painting:** Ajanta murals, Mughal paintings, Madhubani paintings, paintings of Jharkhand (Kohbar, Sohrai, Jadopatia, etc.). – **Music and Dance:** Overview of various forms of music and dances in India; Chau dance of Jharkhand and Odisha – **Science, Technology and Medicine**: A general survey of the progress of science, technology and medicine in ancient India	1	25 %

Reference Books:

1. A.S. Altekar, Education in Ancient India, Nand Kishor's & Bros. Varasani, 1944.
2. Bhagvdatt: Brahad Bharat Ka Itihas, Pranav Prakashan, New Delhi
3. Narendra Mohan: Bharatiya Sanskruti, Prabhat Prakashan, Delhi 2005
4. Satish Chandra Mittal: Bharatiya Sanskruti ke char adhyay, akhil bharatiya itihas sankalan yojana, Delhi 2018
5. R.K. Shrivastava: Prachin Bharat ka Itihas tatha Sanskruti.

Suggested Books:

1. "India: A History" by John Keay
2. "The Argumentative Indian" by Amartya Sen

Online Resources:

1. www.indiatoday.in
2. www.understandingindia.in

Course Outcome Understanding India CPIKSAUI105	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1				2						1			1	
CO-2		3	2							2				
CO-3										3				
CO-4		3								3		2		

Program:	BCA	**Subject / Branch:**	NA
Year:	**2023/24**	**Semester:**	I
Course title:	Mathematics	**Course code:**	CPSECAMA106
Course type:	Theory	**Course credit:**	02
Pre-requisite :	Have basic knowledge of mathematics		
Rationale :	Math allows students to very quickly explore non-trivial ”real world” problems that are challenging and interesting.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
2	0	0	15	10	25	50

Course Objective:

Introduce concept of mathematical logic for analyzing proposition and proving theorem. Use sets for solving applied problems, and use the properties of set operations algebraically.

Course Outcome:

1. Determine whether or not a given matrix is invertible and if is, find its inverse.
2. Perform the matrix operations of addition, multiplication and express a system of simultaneous linear equation in matrix form.
3. Determine if an infinite sequence is bounded, monotonic or oscillating
4. Recall basic set theory, Function, Matrices and Determinants, Sequence and Series

Content

Unit	Set Theory	Credit	Weightage
I	Definition and notation of Set, Methods of representation of set (Property and List Method), set of numbers (Natural, Integers, Rational, Irrational, Real), Definition: Finite set, Infinite set, Empty set, Singleton set, Subset, Proper subset of a set, Power set, Universal set, Complement of a set, Cardinality of set, Venn Diagrams, Set Operations: Union of two sets, Intersection of two sets, Disjoint sets, Equality of sets, Equivalent sets, Difference set, Symmetric Difference set, Cartesian product of sets, Properties of set operations (Commutative, Associative, Distributive, De Morgan's laws)	1	25 %
II	**Function**		
	Introduction of Function, Definition of function, Domain, Co-domain, Image and Range of function, Types of function(with example): Linear, Quadratic, Polynomials, Rational, Irrational, Single value and Many value, Even and Odd, Explicit and Implicit The Classification of functions: one-one, many-one, onto, into function, Evaluation of function, Composition of functions, Mathematical functions (Definition with example): Floor and Ceiling function, Integer and Absolute value function, Remainder function, Exponential function, logarithm function and its properties, Recursive function.	1	25 %

Reference Books:

1. Discrete Mathematics -Revised 3rd Edition Authors: **Seymour Lipschutz** and **Marc Lars Lipson,** Publication: McGraw-Hill Education (India) Pvt Limited
2. Elements of Discrete Mathematics -3rd Edition Authors: Chung Laung Liu and Durga Prasad Mohapatra Publication: McGraw-Hill Education (India) Pvt Limited
3. Discrete Mathematics -3rd Edition Author: J. K. Sharma

Suggested Books:

1. Elements of Discrete Mathematics -3rd Edition Authors: Chung Laung Liu and Durga Prasad Mohapatra Publication: McGraw-Hill Education (India) Pvt Limited

Online Resources:

1. https://www.weareteachers.com/best-math-websites/

Course Outcomes Mathematics, CPSECAMA106	**Expected Mapping with Programme Outcomes** **(1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3	2												
CO-2						3	2							
CO-3	2	1												
CO-4		2				3	3			1			2	

BCA SEMESTER II

Program :	BCA	**Subject / Branch :**	NA
Year :	**2023/24**	**Semester :**	II
Course title :	Advance Programming Language 'C'	**Course code :**	CPMJDSCAPC201
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Basic Knowledge of Computer		
Rationale :	To introduce students the essentials of computer Programming and programming methodology using C language		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective :

1. Students will understand to formulate a computing problem to executable computer program using C language.
2. Students will understand about compiler based programming languages
3. Students will learn concepts of variables, literals, data types, conversions of data types, input and output data and processing of data, inbuilt functions, arrays, header files, conditional and iterative statements.

Course Outcome:

1. Develop C programs that interact with external resources, such as file, large-scale C programs that involve multiple modules and libraries.
2. Apply advanced concepts of C programming to solve complex problems.
3. Analyze and debug complex C programs for logical errors and memory leaks
4. Recall C programming syntax and language features like structure, UDF, File, pointer
5. Design and implement C programs with a focus on optimization and efficiency

Content

Unit	Description in detail	Credit	Weightage
Unit – 1	**Introduction to Function**	1	25 %
	Concepts of Function, Types of Function, Prototype, Need for User define function, Classifications of function using arguments and return types , Nesting of functions, Recursion, Functions with arrays, The scope and lifetime of variables in functions		
Unit – 2	**Pointer**	1	25 %
	Introduction, Advantage of using pointer, Accessing the address of a variable, Declaring and initializing pointers, Accessing a variable through pointer, Pointer expressions, Pointer increments and scale factor, Pointers and arrays, Pointers and character strings, Pointers and Functions, Pointers and structures.		
	Dynamic Memory Allocation and Linked List		
	Introduction, Dynamic Memory allocation, Memory allocation functions (malloc, calloc)		
Unit – 3	**Structures & Unions**	1	25 %
	Introduction, defining a structure, Structure initialization, copying and Comparison of structures members, Arrays of structures, Arrays within structures, Structures within Structures, Structures and functions, Unions, Size of structures.		
Unit – 4	**File Management in C**	1	25 %
	Introduction, creating and opening a file, closing a file, Input / Output operations on files, Error handling during I/O operations, Random access files and Command line arguments		

Reference Books:

1. Programming in C, Balaguruswami – TMH
2. C: How to Program, Deitel & Deitel - PHI
3. C Programming Language, Kernigham & Ritchie – TMH

Suggested Readings:

1. Mastering Turbo C, Kelly & Bootle - BPB
2. C Language Programming – Byron Gottfried - TMH
3. Let us C, Yashwant Kanetkar - BPB Publication
4. Programming in C, Stephan Kochan - CBS
5. Magnifying C, Arpita Gopal - PHI

Online Resources:

1. https://www.w3schools.com/
2. https://www.tutorialspoint.com/
3. https://www.programiz.com/
4. https://www.cprogramming.com/

Advance Programming Language 'C', CPMJDSCAPC201	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3		3		2		3							3
CO-2				3								3		3
CO-3	3	2			2	3	3							
CO-4						3						2	2	
CO-5			3									3		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2023/24**	**Semester :**	II
Course title :	Practical –Advance Programming Language 'C'	**Course code :**	CPMJDSCAPC202
Course type :	Practical	**Course credit :**	02
Pre-requisite :	Basic Knowledge of Computer		
Rationale :	To introduce students the essentials of computer Programming and programming methodology using C language		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
0	0	4	Mid	CE		
			10	15	25	50

Course Objective :

1. Students will understand to formulate a computing problem to executable computer program using C language.
2. Students will understand about compiler based programming languages
3. Students will learn concepts of variables, literals, data types, conversions of data types, input and output data and processing of data, inbuilt functions, arrays, header files, conditional and iterative statements.

Course Outcome:

1. Develop C programs that interact with external resources, such as file, large-scale C programs that involve multiple modules and libraries.
2. Apply advanced concepts of C programming to solve complex problems.
3. Analyze and debug complex C programs for logical errors and memory leaks
4. Recall C programming syntax and language features like structure, UDF, File, pointer
5. Design and implement C programs with a focus on optimization and efficiency

Practical List

Practical:

1. Write a program to check the given number is Palindrome or not using User Defined Function (UDF).
2. Write a program to find factorial of given no using UDF.
3. Write a program to find factorial of given no using recursion.
4. Write a program to display first 25 terms of Fibonacci series using recursion.
5. Write a program using a recursive function to find the GCD (Greatest Common Divisor) of two Positive integer numbers.
6. Write a program to swap value of two integer number using UDF.
7. Write a function prime that returns 1 if its argument is a prime and return zero Otherwise.
8. Write a program that uses a UDF to sort an array of integer.
9. Write a program which explains the use of nesting of functions.
10. Define a structure type struct personal that would contain person name, date of joining and salary using this structure to read this information and Display on screen.
11. Design a structure student_records to contain Roll_no, Name, City and Percentage obtained. Develop a program to read data for 5 students and Display them.
12. Write a program using structure within structure.
13. Write a program using structure within Function.
14. Write a program declare following structure member: name, code, age, weight and height. Read all members of the structure for 10 persons and find list of persons with all related data whose weight > 50 and height > 40 and print the same with suitable format and title.
15. Write a program to use of pointer in arithmetic operation.
16. Write a program to accept 10 numbers and display its sum using pointer.
17. Write a program to accept 10 numbers and sort them with use of pointer.
18. Write a program to swap the two values using pointers and UDF.
19. Write a program with structure and pointer.

20. Write a program using pointer to determine the length of a character string.
21. Write a program using pointers to read an array of integers and print its elements in reverse order.
22. Write a program using UDF and pointers to add two matrices and to return the resultant matrix to the calling function.
23. Create one text file store some information into it and print the same information on Terminal.
24. A file named data contains series of integer no. Write a c program to read that no. and then write all odd no into file named odd no. and write all even no into file named even no. Display all the contents of these file on screen.
25. Write a c program to read data from keyboard write it to a file called input and Display data of input file on the screen.
26. Write a program that counts the number of characters and number of lines in a file.
27. Two files DATA1 and DATA2 contain sorted lists of integers. Write a program to produce a third file DATA which holds a single sorted, merged list of these two lists. Use command line arguments to specify the file names.
28. Write a C program to work as a dos type command using command line argument.
29. Write a C program to work as a dos copy command using command line argument.
30. Write a program which explains the use of macro.

Reference Books:

1. Programming in C, Balaguruswami – TMH
2. C: How to Program, Deitel & Deitel - PHI
3. C Programming Language, Kernigham & Ritchie – TMH

Suggested Readings:

1. Mastering Turbo C, Kelly & Bootle - BPB
2. C Language Programming – Byron Gottfried - TMH
3. Let us C, Yashwant Kanetkar - BPB Publication
4. Programming in C, Stephan Kochan - CBS
5. Magnifying C, Arpita Gopal - PHI

Online Resources:

1. https://www.w3schools.com/
2. https://www.tutorialspoint.com/
3. https://www.programiz.com/
4. https://www.cprogramming.com/

Practical –Advance Programming Language 'C', CPMJDSCAPC202	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3		3		2		3							3
CO-2				3								3		3
CO-3	3	2			2	3	3							
CO-4						3						2	2	
CO-5			3									3		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2023/24**	**Semester :**	II
Course title :	Internet & Web Design	**Course code :**	CPMJDSCAHM201A
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Basic knowledge of internet		
Rationale :	Students will develop and understanding of information design web page and usability as it applies to interactive media projects.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective :

1. Learn about E-Services like E-Banking, E-Learning etc.
2. Understanding the basic concept of HTML tags.
3. Learn the language of the web: HTML and CSS.
4. Develop skills in analyzing the usability of a web site.

Course Outcome:

1. Demonstrate proficiency in creating well-structured web pages using HTML for content and CSS for styling.
2. Remember fundamental principles of web design, including HTML tags, CSS properties, and basic scripting concepts.
3. Apply web design principles to create a basic website. Implement interactive features using JavaScript.
4. Evaluate the reliability of internet sources. Assess the effectiveness of security measures in a network

Content

Unit	Description in detail	Credit	Weightage
I	**Introduction to Internet** Introduction, Evaluation of Internet, Internet Service, Computer Networks, Internet, URL (Uniform Resource Locator), Internet Service Provider, Intranet, Extranet, Virtual Private Network, World Wide Web, Search Engines, News groups, Electronic Mail, Web Portal, Chat, Video Conferencing, FTP, Remote Login, E-Commerce, E-Learning, E-Governance, E-Banking Difference between Internet, Intranet, Extranet, Internet Protocols (TCP,IP, UDP, FTP, HTTP), ISP (Internet Service Provider), E-mail, E-Learning, E-Banking, E-Governance, Social Networking, Instant Massaging, Audio and Video Conferencing, Data Encryption & Decryption, Concepts of Digital Signature, Concepts about Firewall Security	1	25 %
II	**HTML** HTML tag, Web Page and its Types, Publishing HTML Pages, Basic Tags. HTML document Structure, adding text in Newline , Creating heading: <H1> to <H6>,Creating a paragraph<P>--</P>, Creating a Horizontal ruler<HR>--</HR>, Scrolling text <marquee>-- </marquee>, Linking to other page :< a> and <link> tags, Text fomenting tags, Font tag with attribute, Working with List tags<OL> and <UL>,Creating Table: Related tags with attribute, Creating HTML From with adding controls, Frame and frameset tag, Putting Graphics on a Web page, Custom Background and colors.	1	25 %
III	**Introduction to Cascading Style Sheet** Concepts of workbook, Defining Style with HTML tags, Features of Style sheet, Types of Style Sheets: External, Internal, and Inline, Style Properties, Style Class & ID Selector.	1	25 %

IV	**Introduction to Java Script** Writing First Java Script, HTML and Java script, Variables: Rules for variable names, declaring the variable, assign a value to a variable, Scope of variable, Using Operators, Control Statements, JavaScript loops. Types of JavaScript: External, Internal. JavaScript Functions: Defining a Function, Returning value from function, User Define Function.	1	25 %

Reference Books:

1. Internet and Web DesignBased on DOEACC III Revised syllabus 'O' Level - Mac Millan India Ltd
2. Teach Yourself HTML 4 in 4 Hours By Dick Oliver – Tech Media 4th Edition
3. Introduction To Internet And HTML Scripting-Fourth Edition-Bhaumik Shroff

Suggested Readings:

1. Introduction To Internet And HTML Scripting-Fourth Edition-Bhaumik Shroff

Online Resources:

1. https://www.tutorialspoint.com/internet_technologies/internet_overview.htm
2. https://www.w3schools.com/html/
3. https://www.w3schools.com/w3css/defaulT.asp
4. https://www.geeksforgeeks.org/javascript/

Course Outcomes Internet & Web Design, CPMJDSCAHM201A	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	1		2		3	2	3							
CO-2	2		3			3	3						3	
CO-3	1		3		2		2				2			3
CO-4	2									1				

Program :	BCA	**Subject / Branch :**	NA
Year :	**2023/24**	**Semester :**	II
Course title :	Practical – Web Design	**Course code :**	CPMJDSCAWD202A
Course type :	Practical	**Course credit :**	02
Pre-requisite :	Basic knowledge of internet		
Rationale :	Students will develop and understanding of information design web page and usability as it applies to interactive media projects.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
0	0	4	10	15	25	50

Course Objective :

5. Learn about E-Services like E-Banking, E-Learning etc.
6. Understanding the basic concept of HTML tags.
7. Learn the language of the web: HTML and CSS.
8. Develop skills in analyzing the usability of a web site.

Course Outcome:

5. Demonstrate proficiency in creating well-structured web pages using HTML for content and CSS for styling.
6. Remember fundamental principles of web design, including HTML tags, CSS properties, and basic scripting concepts.
7. Apply web design principles to create a basic website. Implement interactive features using JavaScript.
8. Evaluate the reliability of internet sources. Assess the effectiveness of security measures in a network

Practical List

1. Develop an HTML document for a web page of your favorite teacher. Design the page with an attractive background color, text color and background image.
2. Develop an HTML document for a web page of your favorite National Leader. Design the page with an attractive color combination, with suitable headings and horizontal rules.
3. Develop an HTML document for a web page of your favorite teacher. Design the page with an attractive background color, text color and background image.
4. Develop an HTML document for a web page of your favorite National Leader. Design the page with an attractive color combination, with suitable headings and horizontal rules.
5. Write an HTML document with an example of Ordered List and Unordered List.
6. Write an HTML document with an example of Ordered List and Unordered List Using Nested list.
7. Write an HTML document with an example of Table format to print your Bio-Data.
8. Write an HTML document to create complex Table like Telephone Bill, Mark sheet, Time-table.
9. Write the Frameset tags and Frame tags for the following frameset.

<table>
<tr><td>Physics.html</td><td rowspan="2">Welcome.html</td><td>Maths.html</td></tr>
<tr><td>Chemistry.html</td><td rowspan="2">Computer.html</td></tr>
<tr><td>Biology.html</td><td rowspan="2">Heading.html</td></tr>
<tr><td>Zoology.html</td><td>Account.html</td></tr>
</table>

10. Develop a complete web page using Frames and Frameset which gives the Information about Hospital.
11. Write an HTML code for designing the subscription form of mail account in the e-mail Website with appropriate fields.
12. Write an example of External Stylesheet.
13. Write HTML program which contains Inline Style sheet for <p>, <h1> and <body> tags.
14. Write HTML program which contains Internal Style sheet for <p>, <h1> and

<body>tags.

15. Describe yourself on a webpage and experiment with colors in bicolor, text, and link, try out different and sizes and also the other tags you studies so far, such as the rules tag as wells.
16. Write HTML code to develop a web page having background in blue and title "Well come to my home page" in red other color.
17. Create an HTML document of giving details of your name, age, telephone no, address and enrolment no, aligned in proper order.
18. Calculate a web page that provides links to five different web page or to entirely different websites.
19. Write a HTML code for making table to containing different option for different questions.
20. Write HTML program which contains Internal Style sheet for <p>, <h1> and <body>tags.
21. Describe yourself on a webpage and experiment with colors in bicolor, text, and link, try out different and sizes and also the other tags you studies so far, such as the rules tag as wells.
22. Write HTML code to develop a web page having background in blue and title "Well come to my home page" in red other color.
23. Create an HTML document of giving details of your name, age, telephone no, address and enrolment no, aligned in proper order.
24. Calculate a web page that provides links to five different web page or to entirely different websites.
25. Write a HTML code for making table to containing different option for different questions.

Reference Books:

4. Internet and Web DesignBased on DOEACC III Revised syllabus 'O' Level - Mac Millan India Ltd
5. Teach Yourself HTML 4 in 4 Hours By Dick Oliver – Tech Media 4th Edition
6. Introduction To Internet And HTML Scripting-Fourth Edition-Bhaumik Shroff

Suggested Readings:

1. Introduction To Internet And HTML Scripting-Fourth Edition-Bhaumik Shroff

Online Resources:

5. https://www.tutorialspoint.com/internet_technologies/internet_overview.htm
6. https://www.w3schools.com/html/
7. https://www.w3schools.com/w3css/defaulT.asp
8. https://www.geeksforgeeks.org/javascript/

Course Outcomes Practical – Web Design, CPMJDSCAWD202A	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	1		2		3	2	3							
CO-2	2		3			3	3						3	
CO-3	1		3		2		2				2			3
CO-4	2									1				

Program :	BCA	**Subject / Branch :**	NA
Year :	**2023/24**	**Semester :**	II
Course title :	SYSTEM ANALYSIS	**Course code :**	CPMDCASA203
Course type :	Theory	**Course credit :**	04
Pre-requisite :	The purpose of the system requirements analysis is to structure the system independent of any implementation environment. This phase can determine system behavior and limitations		
Rationale :	This course mainly focuses on different of system analysis and design such as foundation , planning, analysis, design, implementation, and maintenance.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective :

1. Define system
2. Explain different phase of SDLC and their use
3. Design system component and environment
4. Analyze and specify the requirements of system

Course Outcome:

1. Design a complete system solution, including detailed system specifications, data models.
2. Evaluate the feasibility of proposed systems based on technical, operational, and economic factors.
3. Apply different system modeling techniques, such as data modeling and process modeling, to represent and analyze system requirements.
4. Explain the principles of system analysis and design methodologies, including their purpose and relevance in software development.
5. Recall basic concepts related to system analysis and design, such as the SDLC (Software Development Life Cycle), data flow diagrams, and entity-relationship diagrams.

Content

Unit	Description in detail	Credit	Weightage
I	Introduction to System, System Analysis and Design, Need for System Analysis and Design, Types of System, Role of the System Analyst. **System Development Strategies**: SDLC, Structured Analysis Development Method, System Prototype Method. **Fact-Fining Techniques**: Interview, Questionnaire, Record Review, Observation. Data Flow Diagram: Advantages, Notations, Rules, Logical and Physical DFD. Data Dictionary: Importance and detail **Structured Decisions:** Decision Tree, Decision Tables, Structured English	1	25 %
II	**Code Design**: Principle of Code Design, Types of code **Output**: Principle of output, types of output, output media **Form Designing**: Objectives, Guideline for Form design, Types of form **Designing User Interface**: Objectives, Types of user interface Check Digits, Data Validation and Data Verification **Case Tools**: Benefits of Computer-Assisted Tools, Categories of Automated Tools, Case Components.	1	25 %
III	System Engineering Definition, Quality assurance: definition and need **Design of software:** Importance, Software design principles **Software design and documentation tools:** Structure Flowchart, HIPO, Warier /Orr Diagrams. **System key concepts**: Testing, System conversion, Documentation.	1	25 %
IV	Financial Accounting System, Payroll System, Library System, Inventory / Stock System	1	25 %

Reference Books:

1. Analysis & Design of Information Systems, James A. Sen
2. System Analysis & Design, 1st Edition, Parthasarathy &B.W.Khalkar

Suggested Books:

1. Introduction to S.A.D, LEE VOL. 1 & 2

Online Resources:

1. https://www.tutorialspoint.com/system_analysis_and_design/system_analysis_and_design_quic k_guide.htm
2. https://study.com/academy/course/computer-science-302-system-analysis-design.html

Course Outcomes System Analysis, CPMDCASA203	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1			3		3									
CO-2		3						2						
CO-3					3			2				2	2	
CO-4						2	3			2			3	
CO-5			3				1	2						

Program :	BCA	**Subject / Branch :**	NA
Year :	**2023/24**	**Semester :**	II
Course title :	Communication Skills	**Course code :**	CPAECACS204
Course type :	Theory	**Course credit :**	02
Pre-requisite :	Basic Knowledge of English Language		
Rationale :	To make the students confident and make them aware about their personality development.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
2	0	0	15	10	25	50

Course Objective :

Students will develop their confidence.

Students will understand the importance of personality development and self awareness. Students understand the importance of language and learn different techniques of interview, presentation etc.

Course Outcome:

1. Demonstrate the ability to articulate ideas clearly and confidently in spoken form.
2. Develop active listening skills, enabling them to comprehend and respond appropriately to various communication cues.
3. Enhance their written communication skills, producing clear, concise, and organized written documents.
4. Evaluate the effectiveness of different communication methods

Content

Unit	Theory of Communication	Credit	Weightage
I	**Business Communication** ➔ Application for Job ➔ Loan ➔ Leave ➔ Demanding Original Documents from Office ➔ Business Letters for Inquiry ◆ Reply ◆ Quotation ◆ Placing of Order ◆ Complaint ◆ Adjustment ➔ Comprehension ➔ Paragraph Writing	1	25 %
II	**Listening and Speaking** ➔ Importance of Listening ➔ Listening Process ➔ Barriers of Listening ➔ Speech preparation ➔ Guidelines for Effective Speaking ➔ Group discussion ➔ Interview – types and preparation	1	25 %

Reference Books:

4. Communication Skills – Vithal Patel
5. English Grammar Composition and Effective Business Communication- Pink and Thomas – S. Chand

Suggested Readings:

1. Story books to increase vocabulary.
2. Listen Motivational videos.
3. Read interested area in English News Papers.

Online Resources:

1. https://learnenglish.britishcouncil.org/grammar-reference
2. https;//en.m.wikipedia.org/communication

Course Outcomes Communication Skills CPAECACS204	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1						2	3		3		3			
CO-2									3	1				
CO-3		2										2		
CO-4									3					

Program:	BCA	**Subject / Branch:**	NA
Year:	2023/24	**Semester:**	II
Course title:	Environmental Studies	**Course code:**	CPVACAES205
Course type:	Theory	**Course credit:**	2
Prerequisite:	Environmental studies require an interdisciplinary approach, drawing from fields such as biology, chemistry, geography, sociology, and economics to comprehend the complex interactions between humans and the environment.		
Rationale:	The importance of environmental studies is describes: Clarification of modern environmental concept like how to conserve biodiversity.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
2	0	0	10	15	25	50

Course Objective:

1. Inculcate environmental awareness as well as values in the students and translating them into pro- conservation actions.

Course Outcome:

1.Recall and identify key environmental concepts, theories, and terminology
2. Apply environmental principles to analyze real-world environmental problems.
3.Examine the factors contributing to a specific environmental issue.
4. Memorize key facts related to environmental issues such as pollution types.

Content

Unit	**Introduction to Environment**:	Credit	Weightage
Unit – 1	Definition and Components of Environment Human Environment Environmental Studies Man and Environment relationship ➔ Man,Environment and Religion ➔ Impact of technology on Environment Environmental Problems and causes **Human Population and Environment:** Population Growth, World and Indian scenario, Population and Environmental Degradation, Population explosion – Causes, Effects and Control. **Urbanization**: Urban population growth and Environmental problems.	1	25 %
Unit – 2	**Environmental Pollution:**		

	Water Pollution: Introduction, Water Quality Standards, Sources of Water Pollution: Industrial,Agricultural, Municipal; Classification of water pollutants,Effects of water pollutants **Air Pollution:** Composition of air, Structure of atmosphere, Ambient Air Quality Standards,Classification of air pollutants, Sources of common air pollutants,Effects of common air pollutants. **Noise Pollution:** Introduction, Sound and Noise,Causes and Effects **Land Pollution:** Land uses, Land degradation: causes, effects and control **Global Environmental Issues:** Climate Change, Global Warming and GreenHouse Effect, Acid Rain	1	25 %

Reference Books:

1. A Text Book of Environmental Studies: A Comprehensive Study of Environment and Ecology
2. Environmental Sciences by Daniel B Botkin & Edward A Keller Publisher: John Wiley &Sons.

Suggested Readings:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha Second edition,2013 Publisher: Universities Press (India) Private Ltd, Hyderabad.
2. Textbook of Environmental Studies by Deeksha Dave & SSKateva, CengagePublishers.
3. Environmental Sciences by Daniel B Botkin & Edward A Keller Publisher: John Wiley &Sons.

Online Resources:

1. **http://earlham.worldcat.org/oclc/46685085**
2. **http://earlham.worldcat.org/oclc/31901190**

Course Outcomes Environmental Studies CPVACAES205	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1		1				3	1			1				
CO-2		2				1								
CO-3							3			3				
CO-4							2			1				

Program:	BCA	**Subject / Branch:**	NA
Year:	**2023/24**	**Semester:**	II
Course title:	Adv. Mathematics	**Course code:**	CPSECAMT206
Course type:	Theory	**Course credit:**	2
Pre-requisite :	Have basic knowledge of maths		
Rationale :	By contrast, math in particular counting and probability allows students-even at the middle-school level-to very quickly explore non-trivial ”real world” problems that are challenging and interesting.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
2	0	0	15	10	25	50

Course Objective: Identify the number of rows and columns within a matrix. Solve a system of linear equations by row-reducing its augmented form. Understand the nature of a logical argument and mathematical proof and be able to produce examples of these.

Course Outcome: After completion of the course students are expected to be able to:

1. Determine whether or not a given matrix is invertible and if is, find its inverse.
2. Perform the matrix operations of addition, multiplication and express a system of simultaneous linear equation in matrix form.
3. Determine if an infinite sequence is bounded, monotonic or oscillating
4. Recall basic set theory, Function, Matrices and Determinants, Sequence and Series

Unit	Matrices and Determinants	Credit	Weightage
Unit -1	**Set Theory**	1	25 %
	Definition and notation of Set, Methods of representation of set (Property and List Method), set of numbers (Natural, Integers, Rational, Irrational, Real), Definition: Finite set, Infinite set, Empty set, Singleton set, Subset, Proper, subset of a set, Power set, Universal set, Complement of a set, Cardinality of set, Venn Diagrams, Set Operations: Union of two sets, Intersection of two sets, Disjoint sets, Equality of sets, Equivalent sets, Difference set, Symmetric Difference set, Properties of set operations (Cartesian product of sets Commutative, Associative, Distributive, De-Morgan's laws)		
Unit – 2	**Function**	**1**	25 %
	Introduction of Function, Definition of function, Domain, Co-domain, Image and Range of function, Types of function(with example): Linear, Quadratic, Polynomials, Rational, Irrational, Single value and Many value, Even and Odd, Explicit and Implicit, The Classification of functions: one-one, many-one, onto, into function, Evaluation of function, Composition of functions, Identity function, Mathematical functions (Definition with example): Floor and Ceiling function, Integer and Absolute value function, Remainder function, Exponential function, logarithm function and its properties, Recursive function.		

Reference Books:

1. Discrete Mathematics -Revised 3rd Edition Authors: **Seymour Lipschutz** and **Marc Lars Lipson,** Publication: McGraw-Hill Education (India) Pvt Limited
2. Elements of Discrete Mathematics -3rd Edition Authors: Chung Laung Liu and Durga Prasad Mohapatra Publication: McGraw-Hill Education (India) Pvt Limited
3. Discrete Mathematics -3rd Edition Author: J. K. Sharma

Course Outcomes Adv. Mathematics CPSECAMT206	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3	2												
CO-2						3	2							
CO-3	2	1												
CO-4		2				3	3			1			2	

GOKUL GLOBAL UNIVERSITY
विद्या अनन्तम्
Approved By Govt. of Gujarat
(Recognized by UGC under Section 22 & 2(f) of 1956)
(Gujarat Private State University Act 4 of 2018)

BCA

SEM-III,IV

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Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	III
Course title :	Object Oriented Programming using C++	**Course code :**	DPMJDSCAOP301
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Knowledge of Programming		
Rationale :	It is deliberated for software engineers, system analysts, data analysts and student support personnel who wish to learn the C++ programming language.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective :

1. Will understand the concept of object-oriented programming.
2. Will learn to create the C++ program.
3. Will handle the exception to control the error.

Course Outcome:

1. Design and implement complex C++ programs that involve multiple classes, inheritance, and polymorphism and Create reusable libraries.
2. Evaluate the appropriateness of different C++ features and techniques for specific programming tasks.
3. Analyze and debug complex C++ code to identify and fix errors.
4. Apply C++ programming concepts to solve problems and implement algorithms.
5. Recall the basic syntax and language constructs of C++.

Content

Unit	Description in detail	Credit	Weightage
I	**Fundamentals of programming:** Concept of Procedural, structured and object oriented programming, History of C++ and its object-oriented programming over procedural languages, Concept of Encapsulation, Abstraction, Data hiding, Inheritance, Operator Overloading and Polymorphism, Classes and objects, Advantages of object-oriented programming over procedural languages, parts of C++ program	1	25 %
II	Data types, variable and constants, Expression and statements, logical, relational, mathematical operators, turnery operator, Simple I/O statements- reading and writing. Statement for formatted I/O, Usage of header files using INCLUDE statement **Looping:** While... Do. While, for loop, Continue and break statement, Switch statement, IF statement, IF...ELSE statement **Array**: Initializing one-dimensional and two-dimensional array. Multidimensional array, Passing arrays to functions, Array classes	1	25 %
III	**Structures and Enumerated data types**: Declaration of Structure, Initialization of structures, Array of structure and pointers to structure, Structures within Structures **Classes**: Implementing class, Classes and members. Accessing class members, implementing class methods, constructors and Destructors, Private and public class, **Function**: Fundamental, passing structure variable to function, pass by value, pass by reference, overloading of function, Inline function, static variable and static function, friend function , friend class	1	25 %
IV	**Pointer**: concept of a pointer variable and its declaration, Pointer arithmetic, Pointers in string handling, Pointers to pointer, Arrays of Pointers, Pointers and array names, Dynamic Memory allocations, Pointers to objects **Inheritance:** Introduction, defining derived class, single inheritance, multilevel , multiple hierarchical, hybrid inheritance, containership **File Management**: c++ streams, c++ stream classes, Opening and closing a file, File modes, File pointers and their manipulations, Sequential Input and Output Operations, Random Access	1	25 %

Reference Books:

1. Object-Oriented Programming with C++ By E. Balagurusamy- TMH Publication
2. Object-Oriented Programming in Turbo C++ By RobertLafore- Galgotia
3. 'C++ Primer' by Stanley B. Lippman, Josée Lajoie, and Barbara E.

Suggested Readings:

1. A Complete Guide to Programming in C++, Ulla Kirch-Prinz, 1st Edition
2. Learn To Program With C++, John Smiley, 1st Edition
3. 'The C++ Programming Language' by Bjarne Stroustrup

Online Resources:

1. https://www.w3schools.com/
2. https://www.tutorialspoint.com/
3. https://www.programiz.com/
4. https://www.cprogramming.com/

Course Outcomes OBJECT ORIENTED PROGRAMMIN G USING C++, DPMJDSCAOP301	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**												
	PO -1	**PO -2**	**PO -3**	**PO -4**	**PO -5**	**PO -6**	**PO -7**	**PO -8**	**PO -9**	**PO -10**	**PO -11**	**PO -12**	**PSO -1**	**PSO -2**
CO-1			3				2	2				2		
CO-2	2		2											
CO-3		3					2							3
CO-4			3			2		1						3
CO-5	2						3						2	

	Program :	BCA	**Subject / Branch :**	NA
	Year :	**2024/25**	**Semester :**	III
	Course title :	DPMJDSCARD301A	**Course code :**	DPMJDSCARD 301A
	Course type :	Theory	**Course credit :**	04
	Pre-requisite :	Basic knowledge of Database management System.		
	Rationale :	Student will learn to use data manipulation language to query, update, and manage a database. Student will understand essential DBMS concepts such as: database security, integrity, concurrency, storage strategies etc. The students will get the hands on practice of using SQL and PL/SQL concepts.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	25	25	50	100

Course Objective:

1. Learn new ways to query and model data.
2. Become familiar with the expanding role of database technology.
3. To learn SQL functions and PL/SQL Program in SQL plus.

Course Outcome:

1. Recall database terminology, concepts, and data modeling techniques.
2. Interpret the principles of database design, query optimization, and transaction management.

3. Apply database design principles to create and optimize databases. Implement complex queries and transactions.
4. Analyze database structures, query performance, and troubleshoot issues.
5. Assess the security, scalability, and reliability of database systems.
6. Design and implement a comprehensive database system for a specific application or organization.

Content

Unit	Description in detail	Credit	Weightage
I	**Basic concepts of Database Systems** Client/server architecture **Relational and other models** Relational model concepts and constraints **Functional dependency** Basics of Functional Dependency Functional dependency diagram and examples Full function dependency (FFD) **Basics of Normalization** Normal Forms **ACID properties of transaction**	1	25 %
II	**Interactive SQL Part – I** • Introduction to SQL, • Logging into SQL * Plus, • Naming rules and Conventions, • Data Types • Components of SQL • DDL,DML, DCL, DQL • Creating a Table,	1	25 %

	• Inserting, • Viewing data in the tables • Sorting data in a table, Delete operations, Updating contents of a table • Modifying the structure of tables, Renaming, Truncating and Destroying tables, Dropping a column from a table		
III	**Interactive SQL Functions** **SQL Functions** • String Functions • Conversion Functions • Numeric Functions • Aggregate Function **Advance Queries:** • Group by Clause, Having Clause, EXISTS/ NOT EXISTS operator, **Set Operators** • Union, Intersect, Minus	1	25 %
IV	**Type of Join:** • Inner Join • Outer Join **PL/SQL-Introduction** • Syntax • Variable Declaration • Block Structures • Conditional Control in PL/SQL • Loops in PL/SQL Exception Handling in PL/SQL	1	25 %

Reference Books:

1. Database System Concepts: – Henry F. Korth &AbrahimSilberschatz –McGraw Hill Education
2. Introduction to Database System C. J. Date (7 Edition) Low Price Edition
3. Database System Concepts, A.Silberschatz, Henry Korth and S.Sudarshan,McGraw-Hill, 1997

Suggested Readings:

1. SQL, PL/SQL: The Programming Language of Oracle(3nd, 4rd edition)By Ivan Bayross-BPB

Online Resources:

1. https://www.w3schools.com/sql/sql_ref_sqlserver.asp
2. https://www.javatpoint.com/pl-sql-tutorial
3. https://www.tutorialride.com/plsql/plsql-control-statements.htm

Course Outcomes Advance Database Management System , FCAM110314	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3					3	3						3	
CO-2	2						3	3						
CO-3			3					3				1		
CO-4		3		2						2				
CO-5						3	2			3				
CO-6								3			2	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	III
Course title :	Practical - Object Oriented Programming using C++	**Course code :**	DPMJDSCAOP302
Course type :	Practical	**Course credit :**	02
Pre-requisite :	Knowledge of Programming		
Rationale :	It is deliberated for software engineers, system analysts, data analysts and student support personnel who wish to learn the C++ programming language.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
0	0	2	10	15	25	50

Course Objective :

1. Will understand the concept of object-oriented programming.
2. Will learn to create the C++ program.
3. Will handle the exception to control the error.

Course Outcome:

1. Design and implement complex C++ programs that involve multiple classes, inheritance,and polymorphism and Create reusable libraries.
2. Evaluate the appropriateness of different C++ features and techniques for specificprogramming tasks.
3. Analyze and debug complex C++ code to identify and fix errors.
4. Apply C++ programming concepts to solve problems and implement algorithms.
5. Recall the basic syntax and language constructs of C++.

Content

Practical:

1. Write a cpp program which explains the use of a scope resolution operator.
2. Write a cpp program which explains the use of a manipulators operator.
3. Write a cpp program which explains the use of reference variable.
4. Write a cpp program which explains the feature of a inline function.
5. Write a cpp program which explains the concept of default arguments.
6. Write a cpp program for function overloading.
7. Write a cpp program for arrays within a class. (How to use a array in a class).
8. Write a cpp program for static class member.(Class member should be a static variable)
9. Write a cpp program which shows use of “static member function".
10. Write a cpp program which explain concept of a “array of object".
11. Write a cpp program which explain concept of "object arguments".
12. Write a cpp program for a friend function.
13. Write a cpp program for a function friendly to two classes.
14. Write a cpp program of a swapping private data of classes.
15. Write a cpp program which explain concept of a returning objects.
16. Write a cpp program for class with constructors.

17. Write a cpp program for overloaded constructors.

18. Write a cpp program of copy constructors.

19. Write a cpp program of a constructing matrix objects.

20. Write a cpp program of implementation of destructors.

21. Write a cpp program for implementation of unary minus operator.

Reference Books:

1. Object-Oriented Programming with C++ By E. Balagurusamy- TMH Publication
2. Object-Oriented Programming in Turbo C++ By RobertLafore- Galgotia
3. 'C++ Primer' by Stanley B. Lippman, Josée Lajoie, and Barbara E.

Suggested Readings:

1. A Complete Guide to Programming in C++, Ulla Kirch-Prinz, 1st Edition
2. Learn To Program With C++, John Smiley, 1st Edition
3. 'The C++ Programming Language' by Bjarne Stroustrup

Online Resources:

1. https://www.w3schools.com/
2. https://www.tutorialspoint.com/
3. https://www.programiz.com/

Course Outcoms PRACTICAL - OBJECT ORIENTED PROGRAMMIN G USING C++ , DPMJDSCAOP 302	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO -1	**PO -2**	**PO -3**	**PO -4**	**PO -5**	**PO -6**	**PO -7**	**PO -8**	**PO -9**	**PO -10**	**PO -11**	**PO -12**	**PSO -1**	**PSO -2**
CO-1			3				2	2				2		
CO-2	2		2											
CO-3		3					2							3
CO-4			3			2		1						3
CO-5	2						3						2	

Program :	BCA	Subject / Branch :	NA

Year :	2024/25	Semester :	III
Course title :	PRACTICAL -RELATIONAL DATABASE MANAGEMENT SYSTEM	Course code :	DPMNDSCARD302A
Course type :	Practical	Course credit :	02
Pre-requisite :	Basic knowledge of Database management System.		
Rationale :	Student will learn to use data manipulation language to query, update, and manage a database. Student will understand essential DBMS concepts such as: database security, integrity, concurrency, storage strategies etc. The students will get the hands on practice of using SQL and PL/SQL concepts.		

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
0	0	4	Mid	CE		
			15	10	25	50

Course Objective :

1. Student will learn the physical and logical database designs, database modeling, relational, and network models.
2. Become familiar with the expanding role of database technology.
3. Understand PL/SQL concept: Cursor, Trigger, Stored Procedure etc.

Course Outcome:

1. Recall database terminology, concepts, and data modeling techniques
2. Interpret the principles of database design, query optimization, and transaction management.
3. Apply database design principles to create and optimize databases. Implement complex queries and transactions.
4. Analyze database structures, query performance, and troubleshoot issues.
5. Assess the security, scalability, and reliability of database systems
6. Design and implement a comprehensive database system for a specific application or organization.

1. Customer (Primary Key : CNUM)

CNUM	CNAME	CITY	BAL_DUE
2001	HARDIK	LONDON	5000
2002	GITA	ROME	4300
2003	LAXIT	SURAT	5200
2004	GOVIND	BOMBAY	1200
2005	CHANDRESH	LONDON	2000
2006	CHAMPAK	SURAT	2100
2007	PRATIK	ROME	3200
2008	MANOJ	LONDON	3400

1 Create table Customer 2 Insert above 8 Records.

3 Find the name of Customer whose Bal_due > 3500

4 Change the bal_due of CNUM "2004" to Rs. 3700

5 Change the table name Customer to Customer_Master

6 Display the bal_due heading as "BALANCE" 7 Add one Column Address of Customer 8 Delete Customer whose name is LAXIT.

9 Find out Total sum of BAL_DUE

2. Department (Primary Key : DEPT_ID)

DEPT_ID	DNAME
01	Computer Science
02	Arts
03	Engineering
04	Nursing

3. Employee (Primary Key : EMP_ID, Foreign Key: DEPT_ID)

EMP_ID	ENAME	CITY	SALARY	DEPT_ID
1001	HARESH	SIDDHPUR	5000	01

1002	NARESH	PATAN	8000	02
1003	PARESH	UNJHA	6000	03
1004	JAYESH	VISNAGAR	6500	01
1005	RAMESH	PALANPUR	7000	01
1006	MAHESH	AHMEDABAD	8000	02
1007	KAMLESH	GANDHINAGAR	4500	01

1. Create Department Table and Insert above Records Mention in Table.
2. Create Employee Table and Insert above Records Mention in Table.
3. Find out Emp_ID, name and Salary of All Employee.
4. Find the names of the employees who have a salary greater than or equal to 6200
5. List out the employees whose name is 'HARESH'
6. Find the names of the employees who works in departments 1,2 AND 3
7. Display the unique DEPT_ID
8. Display Employee Name in Ascending Order.
9. Find out the name of Department in which no single employee is working
10. Display the emp_id,ename, salary and dname from above table.
11. Find out Name of department in which paresh is working.
12. Count the number of Employees who worked in each departments.

Reference Books:

1. Database System Concepts: – Henry F. Korth &AbrahimSilberschatz –McGraw Hill Education

2. Introduction to Database System C. J. Date (7 Edition) Low Price Edition

3. Database System Concepts, A.Silberschatz, Henry Korth and S.Sudarshan,McGraw-Hill, 1997

Suggested Readings:

1. SQL, PL/SQL: The Programming Language of Oracle(3nd, 4rd edition)By Ivan Bayross-BPB

Online Resources:

1. https://www.w3schools.com/sql/sql_ref_sqlserver.asp
2. https://www.javatpoint.com/pl-sql-tutorial
3. https://www.tutorialride.com/plsql/plsql-control-statements.htm

Course Outcomes Advance Database	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
Management System DPMJDSCARD302A	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO-1	3					3	3						3	
CO-2	2						3	3						
CO-3			3					3				1		
CO-4		3		2						2				
CO-5						3	2			3				
CO-6								3			2	2		3

Program:	BCA	**Subject / Branch:**	NA
Year:	**2024/25**	**Semester:**	III
Course title:	Computer Network	**Course code:**	CPMDCACN303
Course type:	Theory	**Course credit:**	04

Pre-requisite :	The students should have a basic Understanding of computer Network, Models and Layer.
Rationale :	It gives information to students which gives the means of interconnectivity for a computer's hardware components as well as the mode of data transfer and processing exhibited.

Teaching Examination Scheme:

Teaching (Hours/week)			Examination Scheme			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective :

1. To understand the data and database management of computer system.
2. To identify and compare different method for computer I/O.
3. Identify and understand the models.

Course Outcome:

1. Recall basic terms and concepts related to computer networks, such as protocols, OSI model layers, and network topologies.
2. Interpret the principles behind networking protocols and technologies.
3. Apply networking knowledge to solve problems or configure network devices.
4. Assess the security, performance, and efficiency of computer networks.
5. Design and implement computer networks based on specific requirements

Content

Unit	Basic concepts of Database Systems	Credit	Weightage
I	Introduction of Computer Networks, Uses of Computer Networks, Advantage & Disadvantage of Computer Networks Transmission mode: Simplex communication, Half-duplex and Full-duplex	1	25 %

	troduction of Internet & Intranet, Baseband & Broadband Transmission		
II	✓ Network Hardware: PAN (Personal Area Network) , LAN (Local Area Network), MAN (Metropolitan Area Network), WAN (Wide Area Network) ✓ The Internet (network of all networks) ✓ Network Topology: Linear bus, Ring, Star, tree, mesh & Hybrid. ✓ Reference Model: OSI Reference Model & TCP/IP Reference Model, Comparison of OSI reference model ✓ Connecting Devices: Repeater, HUB, Switch, Bridge, Router, and Gateway. ✓ The Telephone System – its structure, the local loop, transmission Impairments Introduction of Modem, Introduction of Communication satellites.	1	25 %
III	Guided Media - Twisted Pair, coaxial cable, Fiber optics. Unguided transmission media - Radio wave, micro wave and infrared, Multiplexing – FDM, TDM, WDM. Switching – Circuit switching, Message Switching, Packet switching.	1	25 %
IV	Design Issues - Framing, Error control, Flow control, Error detection and correction. Elementary data link protocols - Simplex, stop and wait, sliding window protocol - Go Back N, Selective repeat. **The Medium Access Control Sublayer:**The channel allocation problem, Multiple Access protocols – CSMA/CD, CSMA/CA	1	25 %

Reference Books:

1. 1Data Communication & Networking by Behrouz A. Forouzan, Tata McGraw Hill Edition
2. Computer network, Andrew S. Tanenbaum, fourth edition, Pearson
3. TCP/IP Protocol Suit by Behrouz A. Forouzan, Tata McGraw Hill Edition.

Suggested Books:

1. Computer network, Andrew S. Tanenbaum, fourth edition, Pearson

Online Resources:

1. https://www.tutorialspoint.com/computer_fun damentals/computer_networking.htm

2. https://www.tutorialspoint.com/data_communication_computer_network/data_communication_computer_network/data_communication_computer_network_tutorial.pdf

Course Outcomes COMPUTER NETWORK , CPMDCA CN303	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3					3	3						2	
CO-2						3								
CO-3			1		2		2			2			3	
CO-4	3					2				2				
CO-5			2		1									

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	III
Course title :	Health Education	**Course code :**	CPAECAHE304
Course type :	Theory	**Course credit :**	02
Pre-requisite :	Patients need formal education on the disease condition; they need to know their ailment, understand their symptoms, be educated on the diagnostics, appropriate medication use, and should be taught when to call for help.		
Rationale :	health education is a continuous, dynamic, complex and planned teaching-learning process throughout the lifespan and in different settings that is implemented through an equitable and negotiated client and health professional 'partnership' to facilitate and empower the person to promote/initiate lifestyle-related behavioral changes that promote positive health status outcomes.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
2	0	0	10	15	25	50

Course Outcome:

1. Acquire a comprehensive understanding of health concepts, including positive health, nutrition, and the impact of lifestyle choices.
2. Demonstrate knowledge of the 3-tier healthcare system in India, environmental health issues, and epidemiology of both communicable and non-communicable diseases, enabling them to contribute to community well-being and public health initiatives.
3. Equipped to implement school health services and programs, integrating the expertise of physical education teachers, principals, and healthcare professionals..

Content

Unit	Introduction:	Credit	Weightage
I	• Concept of Health & Health education • Health Education- Aims, Principals, Contents and Methods. • Levels of Health Care in India 3-Tier system of health care. • Positive health: Meaning & Spectrums • Role of Heredity & Environment • Nutrition Proximate Principles, Balanced diet, Malnutrition • Effects of Smoking, Drugs and Alcohol • School Health Services and Programme Aspects, Role of P.E. Teacher, Principal and Doctor	1	25 %
II	• Community & Environmental Health • Pollution: Causes, Effects on Health, Air Pollution, Water Pollution, Noise Pollution • Occupational Hazards • Housing • Population Policy, Explosion, Dynamic and Family Welfare Programme • Epidemiology of Communicable Disease Small & Chicken pox, Tuberculosis Mussels and Mumps, Malaria, Dengue, Chicken gunia Rabies, Jaundice, Yellow Fever • Epidemiology of Non-Communicable Disease Coronary Heart Disease (CHD), Cancer Diabetes, Hypertension • • Sexually Transmitted Disease	1	25 %

Text & Reference Books:

1.Park J.E., Park K. Text Book for preventive and social MedicineJabalpur : Message Banarasidas Bhanet 1980 Edn.8

2.Turner C.E. The School Health and health Education (st. Louis: The C.V. Mosby Co. 1952) Edn. 2
3.Bedi, Yashpal, Social and preventive Medicine (Delhi: Atamaram & Sons 1983

CourseOutcomes Health Educations	**ExpectedMappingwithProgrammeOutcomes (1-WeakCorrelation; 2-Mediumcorrelation; 3-StrongCorrelation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1			3				2	2				2		
CO-2	2		2											
CO-3		3					2							3
CO-4			3			2		1						3

Program:	BCA	**Subject/Branch:**	NA
Year:	**2024/25**	**Semester:**	III
Course title:	Idea of Bharat	**Course code:**	DPIKSAIB305
Course type:	Theory	**Course credit:**	02
Pre-requisite:	**:** Knowledge of our history and heritage through which significant development in the history of the Indian sub continent from earliest. Respect for national ethics, human values and ideals constitution values.		
Rationale :	**:** Students will acquire knowledge regarding the primitive life. **:** They can gather knowledge about the society, culture, religion and political history of ancient India.		

Teaching Examination Scheme:

Teaching(Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
2	0	0	Mid	CE		
			10	15	25	50

Course Objective:

Student will learn about indian system.

Student will learn about indian culture

Course Outcome:

1. Acquire a comprehensive understanding of health concepts, including positive thinking, nationality, and the impact of Indian citizenship.
2. Demonstrate knowledge of the 3-tier ancient Indian system of India and can get much knowledge about our ancient Bharat which is incredible for us.
3. Equipped to implement of this knowledge students can get much awareness towards the their nation and give respect to it.

4. remember about indian system

Content

Unit	Introduction:	Credit	Weightage
I	● Understanding of Bharatvarsh ● The glory of Indian Literature: Ved, Vedanga, Upanishads, Smriti, Puranas. ● Jain and Buddhist Literature	1	25 %
II	● Indian perception of Dharma and Darshan. ● The concept of Vasudhaiv Kutumbakam: Man, Family, Society and World. ● Indian Educational system	1	25 %

Text & Reference Books:

1. A.S. Altekar, Education in Ancient India, Nand Kishor & Bros. Varansi, 1944
2. Bhagavdutt: Brahad Bharat ka Itihas, Pranav Prakashn, New Delhi.
3. R.K Shrivastava : Prachin Sanskruti ke char adhyay, akhil bhartiya itihas sankalan yojana, Delhi 2018

Course Outcomes IDEA OF BHARAT	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
CO-1						2	3		3		3			

CO-2									3	1				
CO-3		2										2		
CO-4									3					
CO-5									3	2				
CO-6	1					2	3							

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	III
Course title :	COMPUTER SECURITY-I	**Course code :**	CPSECACS306
Course type :	Theory	**Course credit :**	02
Pre-requisite :	Vulnerabilities in the Information Technology systems. Anticipating and detecting threats. Routing and switching. Being aware of the network architecture and protocol. Firewalls		
Rationale :	Computer security helps keep valuable information protected and maintain the health of a computer with no disruptive behavior in its performance caused by viruses and malware. That's all for the importance and need of computer security.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
2	0	0	10	15	25	50

Course Objective :

1. To prepare students with the technical knowledge and skills needed to protect and defend computer systems and networks.
2. To develop graduates that can plan, implement, and monitor cyber security mechanisms to help ensure the protection of information technology assets.
3. To develop graduates that can identify, analyze, and remediate computer security breaches.

Course Outcome:

4. Analyze and evaluate the computer security needs of an organization.
5. Conduct a computer security risk assessment.
6. Measure the performance and troubleshoot computer security systems.
7. Implement computer security solutions.

Content

Unit	Introduction:	Credit	Weightage
I	**Introduction:** What Does "Secure" Mean? Attacks, The Meaning of Computer Security, Computer Criminals, Methods of Defense. **Cyber security:** Making Business Case, Quantifying Security, Modeling Cyber-security, Current Research and Future Directions	1	25 %
II	**System Security** - Intruders • Intruders, Intruders detection, Password management. - Malicious Software • Viruses and Related Threats - Firewalls • Firewalls Design principle, established systems.	1	25 %

Textbooks:

1. Security in Computing, Fourth Edition By Charles P. P Fleeger, Shari Lawrence P Fleeger Publisher: Prentice Hall.
2. Cryptography and Network Security(2nd edition)William Stallings(Pearson Education).

Reference Books:

1. Computer Security Basics by Debby Russell, G.T.Gangemi (Orielly)
2. Network Security Private Communication in a Public World by Charlie Kamfman, Radia Parolman, Mike Speciner

Online Resources:

1. 1.https://www.britannica.com/technology/computer-security
2. 2.https://bootcamp.berkeley.edu/blog/what-is-computer-security/

Course Outcomes Computer security-1, CPSECACS306	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO -1	**PO -2**	**PO -3**	**PO -4**	**PO -5**	**PO -6**	**PO -7**	**PO -8**	**PO -9**	**PO -10**	**PO -11**	**PO -12**	**PSO - 1**	**PSO -2**
CO-1				1		3				2		2		2
CO-2		2		3			3							
CO-3	3	3								3				
CO-4			3				3	2						2

BCA SEMESTER – IV

Program :	BCA	**Subject / Branch :**	NA
Year :	2024/25	**Semester :**	IV
Course title :	Python Programming	**Course code :**	DPMJDSCAPP401
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Basic Knowledge of Programming		
Rationale :	Students can learn Basics of Python Programming, Arrays, Functions, Modules, Packages, Object Oriented Programming, Exception Handling, Data Science and Data Visualization.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. Student can learn Basic of Python Programming.
2. Arrays, Functions, Modules, Packages, Object Oriented Programming
3. Data Science and Data Visualization

Course Outcome:

1. Recall basic Python syntax, data types, and built-in functions
2. Interpret Python code, understand control flow, and grasp the concepts of functions and modules
3. Apply Python programming concepts to solve problems and write functional code.
4. Assess the efficiency and effectiveness of Python code. Evaluate the correctness of solutions.
5. Design and develop Python program to create complex applications.

Content

Unit	Description in detail	Credit	Weightage
I	**Basics of PythonProgramming:** History of Python, Python Features, Installation and Working with Python, Understanding Python variables, Python basic Operators, Understanding python blocks, Python data types, Declaring and using Numeric data types, using string data type and string operations, Defining list and list		

	slicing, Use of Tuple data type. Python program flow control, Conditional blocks using if, else and elif, simple for loops, for loop using ranges, string, list and dictionaries, Use of while loops, Loop manipulation using pass, continue, break and else statement, Programming using Pythonconditional and loops block, Python - Date & Time.	1	25 %
II	**Python Arrays, Functions, Modules and Packages:** Python arrays, create an array, accessing array elements, looping array elements, adding and removing an array element, array methods. Creating a function, calling a function, passing parameters to function, how to define default value of parameters of a function, passing a list asa parameter, function returning a value, Recursive function, Lambda function.Creating and using module, built-in modules, importing own module as well as external modules, Understanding Packages, Programming using functions, modules and external packages.	1	25 %
III	**OOPS, Exception Handling, File Handling, Thread, Pytest and working with Device:** Concept of class, object and instances, Constructor, class attributes and destructors, Inheritance, Adding and retrieving dynamic attributes of classes, Programming using Oops support and exception handling. Pytest, Threads & Locks, File	1	25 %

	Handling, Logging, Working with devices using paramiko ssh, telent, adb and serial.		
IV	**Data Science and Data Visualization:** Data Frame - Creating Data Frame from an Excel Spreadsheet, Creating Data Frame from.csv Files, Creating Data Frame from a Python Dictionary, Creating Data from Python List of Tuples, Operations on Data Frames,Bar Graph, Histogram, creating a Pie Chart, Stack chart, Creating Line Graph.	1	25 %

Reference Books:

1. Zero To Mastery In Python Programming, Author: Monu Singh Rakesh K. Yadav, Srinivas Arukonda, Publisher: Vayu Education Of India

2. Let Us Python, Author: Aditya Kanetkar Yashavant Kanetkar, Publisher: BPB Publications

3. Python Data Analytics: With Pandas, NumPy, and Matplotlib, Author:Fabio Nelli, Publisher:Apress

4. PythonDataScienceHandbook: Essential Tools for Working with Data, Author:Jake VanderPlas, Publisher:O'Reilly

Online Resources:

1. https://www.python.org/doc/

2. https://www.w3schools.com/python/default.asp
3. https://www.w3schools.com/python/pandas/default.asp
4. https://www.w3schools.com/python/matplotlib_intro.asp
5. https://www.tutorialspoint.com/python/index.htm
6. https://www.javatpoint.com/python-tutorial

Course Outcomes	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Python	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						2	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	2024-25	**Semester :**	IV
Course title :	**Web development using PHP**	**Course code :**	DPMJDSCAWP402
Course type :	Theory	**Course credit :**	04
Pre-requisite :	To learn PHP one must have a basic understanding of computer programming, Internet, database, HTML/XHTML and MySQL will be very helpful. Audience - It is designed for those who are unaware of the PHP concepts but have a basic understanding of computer programming.		
Rationale :	PHP is an open-source, server-side programming language that can be used to create websites, applications, customer relationship management systems and more.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. Develop PHP scripts to dynamically generate HTML content
2. Understand and apply the principles of object-oriented programming in PHP.

3. Perform a multitude of useful tasks for web development.

Course Outcome:

1. Recall and list the fundamental of PHP language
2. Describe principles of server-side scripting with PHP in web development
3. Evaluate the efficiency and performance of PHP code.
4. Innovate efficient solutions to solve real-world problems using PHP, HTML, CSS, and JavaScript and MySQL

Content

Unit	Description in detail	Credit	Weightage
Unit – 1	**PHP FUNDAMENTALS**	1	25 %
	Building blocks of PHP: Basic syntax, Variables, Data Types, Operators andexpressions, Constants. Flow Control: Switch flow, Loops, Code Block, Sendingdata to the browser. **Working with Arrays:** Arrays, Creating array, Array related Functions.		
Unit – 2	**PHP FUNCTIONS**	1	25 %

	Working with Function: Function, Calling Function, Defining Function, Returningthe Values from user defined function, Variable Scope, Argument. **Working with Strings,Date and Time Functions:** formatting String with PHP,Date and Time Function, String Manipulation and Investigating Strings with PHP. **Working with Forms:** Creating form, handling form, validating form data, accessing form data, use of Hidden fields to save State, redirecting user, fileUpload and Sending Mail on Form Submission.		
Unit – 3	**WORKING WITH FILE COOKIES & SESSION:**	1	25 %
	Working with Cookies and User Session: Introduction of Cookie, SettingaCookie with PHP, Introduction of Session and Improving Session Security, Startinga Session, Working with Session Variables, Passing Session Id in the query String, Destroying Session and Unsetting Variables. **Working with Directories**: Directory related function. **Working with files**: Include Files with INCLUDE, creating and deleting files, opening a file for reading, writing or Appending, Reading from files, Validating Files.		
Unit – 4	**DATABASE MYSQL**	1	25 %

	Understanding the Database Design Process: The importance of gooddatabase design, Types of Table Relationship, Understanding Normalization . **Learning Basic SQL Command:** Table Creation, Insert row, Select CommandUsing Where Clause, Update and Delete Command, Replace Command, Stored Procedures, Join, Indexing and Sortingquery. **Using MySQL with PHP**: Connecting to MySQL and selecting the database, executing simple queries, retrieving query results, counting return Records, updating, Record Addition, Viewing Record, and Deletion Record with PHP. **MYSQL Error Handling:** SQL and MySQL debugging techniques. Connecting database with DSN : ODBC Connectivity Function.		

Reference Books:

1. 1.PHP and MySQL for dynamic Web Sites: Visual Quickpro Guide, Second Edition by Larry.
2. Programming PHP By Rasmus Lerdorf, Kevin Tatroe, Peter Maclntyre.
3. The Complete Reference PHP by Steven Holzner

Suggested Books:

1. Beginning PHP 5 by Wrox.

2. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, PearsonEducation.

Online Resources:

https://www.w3schools.com/php/
https://www.tutorialspoint.com/php/index.htm
https://www.phptutorial.net/

Course Outcomes Web Development technology-PHP	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3					2	3							3
CO-2	3	1	1				2						2	
CO-3		3	3			2								
CO-4			3					3			3	3		2

Program :	BCA	**Subject / Branch :**	NA
Year :	2024-25	**Semester :**	IV
Course title :	Practical -Python	**Course code :**	DPMJDSCAPP401A
Course type :	Practical	**Course credit :**	02
Pre-requisite :	Students should have a good understanding of other web technologies such as HTML, CSS, AJAX, JavaScript, JQuery., C# etc		
Rationale :	It has a simple syntax that mimics natural language, so it's easier to read and understand. This makes it quicker to build projects, and faster to improve on them.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
0	0	4	15	15	70	100

Course Objective :

1. Student can learn Basic of Python Programming.
2. Arrays, Functions, Modules, Packages, Object Oriented Programming
3. Data Science and Data Visualization

Course Outcome:

1. Recall basic Python syntax, data types, and built-in functions
2. Interpret Python code, understand control flow, and grasp the concepts of functions and modules
3. Apply Python programming concepts to solve problems and write functional code.
4. Assess the efficiency and effectiveness of Python code. Evaluate the correctness of solutions.
5. Design and develop Python program to create complex applications.

Content

1	Write a Python Program to Convert Celsius to Fahrenheit and vice a versa.
2	Write a program in python to swap two variables without using temporary variable.
3	Write a Python Program to Convert Decimal to Binary, Octal and Hexadecimal
4	Write a program to make a simple calculator (using functions).
5	Write a program in python to find out maximum and minimum number out of three user entered number.
6	Write a program which will allow user to enter 10 numbers and display largest odd number from them. It will display appropriate message in case if no odd number is found.
7	Write a Python program to check if the number provided by the user is an Armstrong number or not.

8	Write a Python program to display all the prime numbers in user entered range.
9	Write a Python program to check if the number provided by the user is a palindrome or not.
10	Write a Python program to perform following operation on given string input: a) Count Number of Vowel in given string b) Count Length of string (donot use len()) c) Reverse string d) Find and replace operation e) check whether string entered is a palindrome or not
11	Define a procedure histogram() that takes a list of integers and prints a histogram to the screen. For example, histogram([4, 9, 7]) should print the following: **** ********* *******
12	Write a program in python to implement Fibonacci series up to user entered number. (Use recursive Function)
13	Write a program in python to implement Factorial series up to user entered number. (Use recursive Function)

14	Write a program in python to implement simple interest and compound interest values on chart using PyLab. Show the difference between both. (Note: Use of object oriented paradigm is compulsory.)
15	Write a program in Python to implement read lines, write line using file handling mechanisms.
16	Write a program in python to implement Salary printing file read operation. (File format: EmployeeNo, name, deptno, basic, DA, HRA, Conveyance) should perform below operations. a) Print Salary Slip for given Employee Number b) Print Employee List for Given Department Number

Course Outcomes Practical-Python,	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						2	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	2024-25	**Semester :**	IV
Course title :	**PRACTICAL - Web development using PHP**	**Course code :**	DPMJDSCAWP402A
Course type :	PRACTICAL	**Course credit :**	02
Pre-requisite :	To learn PHP one must have a basic understanding of computer programming, Internet, database, HTML/XHTML and MySQL will be very helpful. Audience - It is designed for those who are unaware of the PHP concepts but have a basic understanding of computer programming.		
Rationale :	Server-side programming language that can be used to create websites, applications, customer relationship management systems and more.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. Develop PHP scripts to dynamically generate HTML content
2. Understand and apply the principles of object-oriented programming in PHP.
3. Perform a multitude of useful tasks for web development.

Course Outcome:

1. Recall and list the fundamental of PHP language
2. Describe principles of server-side scripting with PHP in web development
3. Evaluate the efficiency and performance of PHP code.
4. Innovate efficient solutions to solve real-world problems using PHP, HTML, CSS, and JavaScript and MySQL

Content

CONTENT
1. Write a PHP program to display 'Hello World" Message on Screen.
2. Write a PHP program to display the today's date and current time.
3. Write a PHP program to display the Fibonacci series
4. Write a PHP program to calculate sum of given number.
5. Write a PHP Program that will use the concept form.
6. Write a PHP program to read the employee detail using form component.
7. Write a PHP program to demonstrate the use of array.
8. Write a PHP program to prepare student Mark sheet using Switch statement.
9. Write a PHP program to generate the multiplication of matrix.
10. Write a PHP program to send Mail from PHP Script.
11. Write a PHP Program for Create, Delete, and Copying file from PHP Script.
12. Write a PHP Program to Recursive Traversals of Directory. 13. Write a PHP Program to Validate Input Data 14. Write a PHP Program to Upload File.
15. Write a PHP program to perform demonstrates the college Website.
16. Write a PHP program for Error Handling.
17. Write a PHP Program for Session and Cookies.
18. Write a PHP program for connection with my Sql and display all record from the database

19. Write a PHP program for add record into database
20. Write a PHP program for search record from the database.
21. Write a PHP program for delete, update record from the database
22. Develop a PHP application to make following Operation I. Registration of user. ii. Insert the details of user.

iii. Modify the details

Reference Books:

1. PHP and MySQL for dynamic Web Sites: Visual Quickpro Guide, Second Edition by Larry.
2. Programming PHP By Rasmus Lerdorf, Kevin Tatroe, Peter Maclntyre.
3. The Complete Reference PHP by Steven Holzner

Suggested Books:

1. Beginning PHP 5 by Wrox.
2. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, PearsonEducation.

Online Resources:

1. https://www.w3schools.com/php/
2. https://www.tutorialspoint.com/php/index.htm
3. https://www.phptutorial.net/

Course Outcomes Practical-Web Development technology-PHP	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3					2	3							3
CO-2	3	1	1				2						2	
CO-3		3	3			2								
CO-4			3					3			3	3		2

Program :	BCA	**Subject / Branch :**	NA
Year :	2024-25	**Semester :**	IV
Course title :	E-COMMERCE	**Course code :**	DPMDCAEC403
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Basic knowledge of business		
Rationale :	E-commerce is to reach maximum customers at the right time to increase sales and profitability of the business.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	15	70	100

Course Objective :

1. After studying this lesson, you will be able to:
2. Understand the concept of E-Commerce
3. Know the Characteristics of E-Commerce
4. Explain the functions of E-Commerce
5. Define the scope of E-Commerce
6. Recognize the benefits and limitations of e-commerce
7. Identify E-Commerce opportunities and challenges

Course Outcome:

1. Evaluate the legal and ethical considerations in e-commerce.
2. Analyze and evaluate different e-commerce business models.
3. Apply knowledge of e-commerce platforms and technologies to set up and manage an online store.
4. Recognize fundamental concepts related to e-commerce.

Content

Unit	Description in detail	Credit	Weightage
I	Introduction to E-Commerce, Organizational E-Commerce, The Scope of Electronic Commerce, Impact of E-Commerce, ECommerce classification, Inter-Organizational & Intra organizational E-commerce, Electronic Markets, Electronic Data Interchange, Electronic Data Interchange (EDI),EDI: The Nuts and Bolts, EDI and Business, E-Commerce Application.	1	25 %
II	Framework of E-Commerce, B2B, B2C, C2C, G2C, B2G, Ecommerce benefits	1	25 %
III	Bar code, Product data exchange, E-forms; Inter Organizational Commerce - EDI, EDI , Implementation, Value added networks Intra Organizational Commerce - work Flow, Automation Customization & internal Commerce, SCM , Legal requirement in E-Commerce, CRM, CRM issues	1	25 %

IV	World Wide Web & Security, Encryption, Transaction security, Secret Key Encryption, Public Key Encryption, Virtual Private Network (VPN), Implementation Management Issues. Security Policy, Procedures and Practices, Site Security, Firewalls, Securing Web Service, Transaction Security, Authentication Protocols, Digital Signatures, Security protocols for Web Commerce	1	25 %

Reference Books:

1. K.C. Laudon & C.G. Traver, E-commerce, Pearson Education, 2003.
2. Kenneth C. Laudon, E-Commerce : Business, Technology, Society, 4th Edition, Pearson
3. S. J. Joseph, E-Commerce: an Indian perspective, PHI

Suggested Books:

1. K.C. Laudon & C.G. Traver, E-commerce, Pearson Education, 2003.

Online Resources:

1. https://www.tutorialspoint.com/e_commerce/index.htm
2. https://www.geeksforgeeks.org/e-commerce/
3. https://www.javatpoint.com/e-commerce

Course Outcomes E-COMMERCE,	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1						3				3				
CO-2		3			2	1								
CO-3	2			1								2	3	
CO-4							3			2			2	

Program :	**BCA**	**Subject / Branch :**	**NA**
Year :	**2024/25**	**Semester :**	**IV**
Course title :	**PERSONALITY DEVELOPMENT AND SOFT SKILLS**	**Course code :**	**DPAECAPD404**
Course type :	**Theory**	**Course credit :**	**02**
Prerequisite :	Soft skills like empathy, time management, and communication are vital for effective teamwork and workplace success.		
Rationale :	Work ethics like responsibility, punctuality, and stress management lead to increased productivity and employee satisfaction. Collectively, they drive innovation, improve customer relationships, and support career advancement.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	**15**	10	25	50

Course Objectives

It outline the instructor's intentions and the skills or knowledge students are expected to acquire during the course. They are broad, instructor-centered goals that guide the teaching process.

Course Outcomes

It describe the specific, measurable skills or knowledge students should demonstrate upon completing the course. They are student-centered and focus on the tangible achievements resulting from the learning experience.

Content

Unit	Description in detail	Credit	Weightage
I	1. GIVE UNDERSTANDING ABOUT MOST VALUED SOFT SKILLS. Commonsense, ambition, focus, situational awareness, empathy, time management skills. 2. Deep understanding about work ethics? What is work ethic? Work ethics like, hard work, high productivity, dedication, responsibility, punctuality, stress management, task planning. 3. team work: • Top 10 team work skills. • Reliability, respectfulness, tolerance, communication, conflict resolution, report building and listening, decision making, problem solving, organizational and planning skills, persuasion and influencing skills.	1	25 %
II	1. Importance of communication. 2. Importance of listening skills.	1	25 %

	3. Deep understanding about writing skill. 4. Barriers to communication. 5. Non verbal communication/ body language		

Reference Books

1. A Practical Guide to Soft Skills: Communication, Psychology, and Ethics for Your Professional *Life* by Richard Almonte.
2. The ACE of Soft Skills: Attitude, Communication and Etiquette for *Success* by Gopalaswamy Ramesh & Mahadevan Ramesh

Course Outcomes PERSONALITY DEVELOPMENT AND SOFT SKILLS	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						3	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							

Program :	BCA	**Subject / Branch :**	NA
Year :	2024/25	**Semester :**	IV
Course title :	YOG	**Course code :**	DPVACAYG405
Course type :	Theory	**Course credit :**	02
Prerequisite :	Be aware of your body's limitations and capabilities. Listen to your body to avoid overexertion or injury.		
Rationale :	The rationale for practicing yoga is multifaceted, encompassing physical, mental, and spiritual benefits.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	**15**	10	25	50

Course Objectives

Course Objective:

1. Enhance physical health and flexibility.
2. Promote mental clarity and emotional balance.
3. Facilitate spiritual growth and self-realization.

Course Outcomes

1. Develop a strong foundation in yoga postures, enhancing physical flexibility, strength, and balance.
2. Cultivate mental clarity and emotional stability through mindfulness and meditation practices.
3. Gain knowledge of the philosophical principles of yoga and their application to daily life.
4. Learn effective breathing techniques to manage stress and promote overall well-being.

Content

Unit	Description in detail	Credit	Weightage
I	Yoga, its origin, history and development. Yoga, its meaning, definitions. Different schools of yoga, Aim and Objectives of yoga, importance of prayer Yogic practices for common man to promote positive health Rules to be followed during yogic practices by practitioner Yoga its misconceptions, Difference between yogic and non-yogic practices Surya namaskar prayer. and its meaning, Need, importance and benefits of Suryanamaskar12 count, 2 rounds	1	25 %
II	Asana, Need, importance of Asana. Different types of asanas. Asana its meaning by name, technique, precautionary measures and benefits of each asana Different types of Asanas a. Sitting 1. Padmasana 2. Vajrasana b. Standing 1. Vrikshana 2. Trikonasana c. Prone line 1. Bhujangasana 2. Shalabhasana Supine line 1. Utthitadvipadasana 2. Ardhahalasana	1	25 %

Reference Books:

1. "Light on Yoga" by B.K.S. Iyengar
2. "The Heart of Yoga: Developing a Personal Practice" by T.K.V. Desikachar
3. "Yoga Anatomy" by Leslie Kaminoff and Amy Matthews
4. "The Yoga Sutras of Patanjali" by Swami Satchidananda
5. "The Key Muscles of Yoga" by Ray Long
6. "The Science of Yoga: The Risks and the Rewards" by William J. Broad
7. "Meditations from the Mat: Daily Reflections on the Path of Yoga" by Rolf Gates and Katrina Kenison
8. "Ashtanga Yoga: The Practice Manual" by David Swenson
9. "Jivamukti Yoga: Practices for Liberating Body and Soul" by Sharon Gannon and David Life
10. "Yin Yoga: Principles and Practice" by Paul Grilley
11.

Course Outcomes YOG	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						3	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							

Program :	BCA	**Subject / Branch :**	NA
Year :	2024/25	**Semester :**	IV
Course title :	Computer Security	**Course code :**	DPSECACS406
Course type :	Theory	**Course credit :**	02
Pre-requisite :	Basic Knowledge of Computer Security		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	15	10-	25	50

Course Outcome:

After Completion of course Students able to,

1. Apply practical knowledge of cyber security principles, including risk assessment, vulnerability analysis, and the deployment of effective countermeasures to safeguard computer systems and networks.
2. Demonstrate proficiency in configuring and managing firewall systems to control and monitor network traffic, protecting against unauthorized access and potential security breaches.

3. Analyze, identify, and mitigate the impact of various forms of malicious software, including viruses, worms, and ransom ware, through the use of antivirus tools and proactive security strategies.

Content

Unit	Description in detail	Credit	Weightage
I	**System Security:** Interception, Interruption,Modification & Fabrication Crackers & Career Criminals,Vulnerability & AbusesTransient vs Resident virus Control against threats Password Management		
II	**Cryptography:** duction to CryptogIntroraphy Encryption and Decryption Plain Text and Cipher Text Types of cryptography, Cryptanalysis **Network Security:** Protocols : Digital Signature Standards Electronic Mail Security, MIME **Web Security :** Secure Socket Layers (SSL) , Secure Electronic Transactions (SET)		

Reference Books:

1. Computer & Network Security, Gujarat Technical Publishers code. 3350704 Authors : Mr. Uresh Parmar, Prof. R.M. Shaikh, Dr. Paresh Kotak
2. Computer Security Basics by Debby Rusell, G.T. Gangemi (Orielly)
3. Network Security Private Communication in a Public world by Charlie Kamafman, Radia Parolman, Mike Speciner

Course Outcomes Computer Security	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						2	
CO-2			3		3									
CO-3		3	3					3				3		3

GOKUL GLOBAL UNIVERSITY

विद्या अनन्तम्

Approved By Govt. of Gujarat
(Recognized by UGC under Section 22 & 2(f) of 1956)
(Gujarat Private State University Act 4 of 2018)

BCA

SEM-V,VI

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Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	V
Course title :	Object Oriented Programming JAVA	**Course code :**	BPMJDSCAJA501
Course type :	Theory	**Course credit :**	04
Prerequisite :	Basic knowledge of JAVA Programming		
Rationale :	Java was designed to be easy to use and is therefore easy to write, compile, debug, and learn than other programming languages. Java is objected-oriented. This allows you to create modular programs and reusable code.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective:

1. To learn how to extend Java classes with inheritance and dynamic binding.
2. To learn how to implement object-oriented designs with Java.
3. To learn how to design a graphical user interface (GUI) with Java Swing.

Course Outcome:

1. Demonstrate a solid understanding of fundamental Object-Oriented Programming (OOP) principles, including encapsulation, inheritance, and polymorphism.
2. Learn to read from and write to files in Java and understand the concept of object.
3. Introduced to common design patterns and apply them to solve recurring design problems in Java applications.
4. Create application in Java enterprise development.

Content

Unit	Description in detail	Credit	Weightage
I	**Basic concepts of JAVA** The Byte-code, Features of Java, IDE for Java, Object-Oriented Programming in Java, Java Program Structure and Java's Class Library. **Data Types, Variables, and Operators:** The Simple Data Types, Literals, Variables, Type Conversion and Casting, Automatic Type Promotion in expressions, Java Operators, Operator Precedence. **Selection Statements:** Control Statements – if and switch, Scope of Variable, Iterative Statements – for, while, do…. While, Jump Statements. **Defining Classes:** Definition of a Class, Definition of Methods, Constructors, Creating Objects of a Class, Assigning Object Reference Variables, The Variable this, Defining and Using a Class, Automatic Garbage Collection.	1	25 %
II	**Arrays and Strings:** Arrays, Arrays of Characters, String Handling Using String Class, Operations on String Handling Using String Buffer Class. **Extending Classes and Inheritance:** Using Existing Classes, Class Inheritance, Choosing Base Class, Access Attributes, Polymorphism, Multiple Levels of Inheritance, Abstraction through Abstract Classes, Using Final Modifier, The Universal Super class-Object Class. **Packages & Interfaces:** Understanding Packages, Defining a Package, Packaging up Your Classes, Adding Classes from a Package to Your Program, Understanding CLASSPATH, Standard Packages, Access Protection in Packages, Concept of Interface. **Exception Handling:** The Idea behind Exceptions, Types of Exceptions, Dealing with Exceptions, Exception Objects, Defining Your Own Exceptions	1	25 %

	Multithreading Programming: The Java Thread Model, Understanding Threads, The Main Thread, Creating a Thread, Creating Multiple Threads, Thread Priorities, Synchronization, Inter-thread communication, Deadlocks		
III	**Input/output in Java :** I/O Basic, Byte and Character Structures, I/O Classes, Reading Console Input Writing Console Output, Reading and Writing on Files, Random Access Files, Storing and Retrieving Objects from File, Stream Benefits. **Creating Applets in Java:** ● Applet Basics, Applet Architecture, Applet Life Cycle, Simple Applet Display Methods, Requesting Repainting, Using the Status Window, The HTML APPLET Tag Passing Parameters to Applets.	1	25 %
IV	**Working with Graphics and Texts :** Working with Graphics, Working with Color, Setting the Paint Mode, Working with Fonts, Managing Text Output Using Font Metrics, Exploring Text and Graphics. **Working with AWT Controls, Layout Managers and Menus:** Control Fundamentals, Labels, Buttons, Check Boxes and Check, Box Groups, Choice Controls, Lists, Scroll Bars, Text Field and Text Area Controls, Understanding Layout Managers, Flow Layout Manager, Border Layout Manager, Grid Layout Manager, Using Insets Manager, Card Layout Manager, Menu Bars and Menus, Dialog Boxes, File Dialog **Handling Events in Java :** Two Event Handling Mechanisms, The Delegation Event Model, The Event Handling Process, Event Classes, Sources of Events, Event Listener Interfaces, Using the Delegation Event Model, Adapter Classes	1	25 %

Reference Books:

1. Teach Yourself JAVA, Josheph O'Neil & Herb Schildt, Tata McGrow Hill
2. JAVA 2 UNLEASHED, Tech Media Publications.

3. JAVA 2(1.3) API Documentations.
4. Programming with JAVA: A printer, Balagurusamy,2nd Edition, Tata McGrow Hill

Suggested Readings:

1. Java: A Beginner's Guide.Author: Herbert Schildt

Online Resources:

1. https://www.geeksforgeeks.org/introduction-to-java/
2. https://www.w3schools.com/java/java_intro.asp

Course Outcomes Object Oriented Programming JAVA	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO -1	**PO -2**	**PO -3**	**PO -4**	**PO -5**	**PO -6**	**PO -7**	**PO -8**	**PO -9**	**PO -10**	**PO -11**	**PO -12**	**PS O-1**	**PS O-2**
CO-1	2					2	3						2	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	V
Course title :	GUI Programming Using C# .Net	**Course code :**	BPMJDSCAGP501A
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Some helpful skills to know before learning. NET programming is web development, basic coding, JavaScript, and React. Knowing web development is helpful because. NET programming is often used for front end and back-end programming.		
Rationale :	.NET framework offers language support and has a wide community of developers. It offers more benefits than drawbacks when it comes to application development. This is the reason why startups and large enterprises choose. NET to develop robust applications.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective:

1. To learn about basic features of C# and its controls
2. To create an application using standard .NET Controls
3. To learn about connecting data sources using ADO.NET and managing them.

Course Outcome:

1. Recall basic concepts, syntax, and features of .NET C# and related technologies.
2. Interpret the principles behind .NET C# development, understand the role of .NET in web applications.
3. Apply .NET C# programming concepts to solve problems and develop functional web applications.
4. Assess the efficiency, security, and scalability of .NET C# code. Evaluate the effectiveness of web applications.
5. Design and develop original .NET C# web applications. Combine .NET C# with other web technologies for a comprehensive solution.

Unit	Description in detail	Credit	Weightage
Unit – 1	**Basic of the .Net Framework :** What .net technology?, Comparison of .net technology over other current technology, Advantages of .net technology, Comparison & Overview of all Frameworks, Introduction about applications to be developed by .net. **.Net Framework Architecture :** The .Net Framework Architecture, Role of CLR in .net framework, Introduction about language supported by .net, CLR architecture, Managed and unmanaged code, Compiling Source code into Managed module, Introduction about class library (FCL), MSIL code. Role of assembly and meta data., JIT compiler and its types, JIT vs Traditional compiler, Class Loader, Name space (Purpose and Types), CTS – Value types and reference types, CLS, Interoperability with unmanaged code.	1	25 %
Unit – 2	**Introduction about Visual studio Tool** Comparisons and overview with all visual studio Tools versions. Create new windows application with vb.net, C sharp and other language. Introduction about all categories of toolbox control. Design window, solution explorer, Server Explorer, Property and Event Explorer, Class view, Command window, Introduction about code window, Understand how to write code, run application, debugging application. Introduction about menus and functionalities of all menu bar available in Tools. Class and Event driven model. **Basics of C#** Advantages of OOPS. Creating Class and Object, Structure of Class. Data types, Operators, Constructor, Destructor, Abstraction, Interface, Polymorphism (Overloading, overriding), Inheritance, Garbage collection, Jagged Array, Collection (hast table and Array List), Indexer (One dimension) and property, Delegates and Event Multicasting), Exception handling, String handling functions, Creating function with all types.	1	25 %
Unit – 3	**Understanding Controls** **Net Common Controls:** Control Hierarchy, Label and Link Label, Text Box and Rich Text Box, Picture Box, Button, Group Box, Panel, Check Box and Radio Button, List Box, Checked List Box and Combo Box, Month	1	25 %

	Calendar and Date Time Picker, Tree View and List View, Timer, Track Bar and Progress Bar, Image List control, HScroll Bar, VScroll Bar, Tab Control. **Common Dialogs Control:** Color Dialog, Folder Browser Dialog, Font Dialog, Open File Dialog, Save File Dialog , MDI-Forms, Exploring Properties, Methods and Events, Menu bar, Context Menu, Message box, Input box.		
Unit – 4	Architecture Of ADO.Net, Data Base Manipulation, .Net Data Provider, Data Adapter, Data Set, Data Table, Introduction about SQL server. Connection with SQL server. Command, Data Reader, Data Grid View, Execute reader, Execute Non Query, Execute Scalar. **Crystal Reports Syllabus**: Introduction to Crystal Reports and its integration with Visual C#, Designing reports and working with data sources, Formatting, grouping, Adding parameters, and summarizing report data, Exporting and deploying reports in different formats.	1	25 %

Reference Books:

1. Professional Windows GUI Programming Using C# by Wrox Pubs.
2. Visual C#.Net Black book by Kogent Learning Solutions
3. Murach's C# by Anne & Murach Joel Boehm, Murach Pubs.

Suggested Books:

1. Programming in c# by E. Balagurusamy TMH
2.Complete Reference C# - Herbert schildt (TMH Publication)
3. Professional ASP.NET 4 in C#

Online Resources:

https://docs.microsoft.com/en-us/previous-versions/visualstudio/visual-studio-2010/kx37x362(v=vs.100)

Course Outcomes	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
GUI Programming Using C# .Net	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						3	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	V
Course title :	Object Oriented Programming JAVA	**Course code :**	BPMJDSCAJA501B
Course type :	Practical	**Course credit :**	04
Pre-requisite :	Basic knowledge of JAVA Programming		
Rationale :	Java was designed to be easy to use and is therefore easy to write, compile, debug, and learn than other programming languages. Java is objected-oriented. This allows you to create modular programs and reusable code.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	10	15	25	50

Course Objective:

1. To learn how to extend Java classes with inheritance and dynamic binding.
2. To learn how to implement object-oriented designs with Java.
3. To learn how to design a graphical user interface (GUI) with Java Swing.

Course Outcome:

1. demonstrate a solid understanding of fundamental Object-Oriented Programming (OOP) principles, including encapsulation, inheritance, and polymorphism.
2. Learn to read from and write to files in Java and understand the concept of object.
3. Introduced to common design patterns and apply them to solve recurring design problems in Java applications.
4. introduced its application in Java enterprise development.

Sr.	Practical List
1	Write a Java Program find the Area of circle using command-line arguments.
2	Write a Java Program that will display Factorial of the given number.
3	Write a Java Program that will display 25 Prime nos.
4	Write a java program which explains the concept of multilevel inheritance.
5	Write a java program which explains the concept of Hierarchical inheritance.
6	Write a java program which explains the concept of Single inheritance.
7	Write a java program which shows the application of constructors and constructors overloading.
8	Write a java program which shows the use of methods overloading.
9	Write a java program which shows the use of static members and methods.
10	Write a java program using runnable interface
11	Write a java program using Thread priority.
12	Write a java program that using all methods of Thread
13	Write a java program which use multiple catch blocks and also define finally block.
14	Write a java program which shows throwing our own exception.
15	Write a java program to explain the concept of single inheritance.
16	Write a java program which explains the concept of multilevel inheritance.
17	Write a java program which show the method overriding.
18	Write a java program for implements multiple inheritance using interface.
19	Write a java program which shows importing of classes from other packages.
20	Write a Java Program using Applet and its methods.
21	Write Java Program using Applet and perform some actions.

22	Write a Java Program using Frame
23	Write a Java Program for perform addition, subtraction operation using button and textbox

Course Outcomes	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Practical - Object Oriented Programming JAVA	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						2	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	V
Course title :	GUI Programming Using C# .Net	**Course code :**	BPMJDSCAGP501C
Course type :	Practical	**Course credit :**	04
Pre-requisite :	Some helpful skills to know before learning. NET programming is web development, basic coding, JavaScript, and React. Knowing web development is helpful because. NET programming is often used for front end and back-end programming.		
Rationale :	.NET framework offers language support and has a wide community of developers. It offers more benefits than drawbacks when it comes to application development. This is the reason why startups and large enterprises choose. NET to develop robust applications.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	10	15	25	50

Course Objective:

1. To learn about basic features of ASP.NET and its controls
2. To create an ASP.NET application using standard .NET Controls
3. To learn about connecting data sources using ADO.NET and managing them

Course Outcome:

1. Recall basic concepts, syntax, and features of .NET C# and related technologies.
2. Interpret the principles behind .NET C# development, understand the role of ASP.NET in web applications.
3. Apply .NET C# programming concepts to solve problems and develop functional web applications.
4. Assess the efficiency, security, and scalability of .NET C# code. Evaluate the effectiveness of web applications.
5. Design and develop original .NET C# web applications. Combine .NET C# with other web technologies for a comprehensive solution.

Programs

1. Develop a console application that prompts the user to enter various values like Name, Age, and City. Once the user inputs the data, display it back on the console.
2. Write a program that takes a number between 0 and 999 from the user and converts it into words. For example, if the user enters 98, the program should output "Ninety-eight". Consider special cases like zero and numbers with exact hundreds.
3. Create a program that asks the user for a main string and a substring. The program should then count how many times the substring occurs within the main string and display the result. 4. Define a class called Person with properties like Name and Age, and a method ShowDetails(). The program should create objects of the Person class, assign values to the properties, and call the method to display the details of each person.
5. Write a console program that demonstrates constructor overloading by creating a class Rectangle with multiple constructors (one for width and height, one with default values). Also, implement method overloading by creating multiple CalculateArea() methods that accept different parameters.
6. Create a class Animal with a virtual method MakeSound(). Derive two classes Dog and Cat from it, overriding the MakeSound() method in each. Instantiate the derived classes and demonstrate method overriding by calling MakeSound() on each object.
7. Write a program that demonstrates various string manipulation functions such as Substring, Replace, ToUpper, ToLower, and Split. Ask the user for a string input, then apply each function and display the results.
8. Create a console application that uses exception handling to prevent runtime errors. The program should include a try, catch, and finally block to handle cases like dividing by zero or accessing invalid array indices.
9. Write a program that defines a delegate Calculate which can point to methods for arithmetic operations like addition and multiplication. Demonstrate multicasting by allowing the delegate to call both methods sequentially and display the results.
10. Develop a console application that uses a jagged array to store and display values. For example, it can store different numbers of grades for different students, then print each student's grades using nested loops.

11.Create a Windows form that includes labels and textboxes for First Name, Last Name, and Email. Add a Register button that, when clicked, displays the entered data in a message box.
12. Develop an application with a textbox and three buttons labeled Left, Right, and Center. Clicking each button should adjust the text alignment within the textbox according to the selected button.
13. Create a Windows form that includes two TextBox controls for Username and Password, along with labels indicating where the credentials should be entered. Include a Login button that validates the inputs and displays an error message if either the username or password is empty.
14. Design a form that contains a GroupBox with several buttons. Each button will perform a different action, such as changing the form's background color, displaying a message box, or clearing all input fields on the form.
15. Create a Windows form with a ComboBox listing various countries. When a country is selected, the name of the selected country should be displayed on a label.
16. Develop a simple calculator application that performs basic arithmetic operations like addition, subtraction, multiplication, and division. Use buttons for numbers and operations, and a TextBox to display the result. Design the form to clearly display buttons in a grid layout for ease of use.
17. Create a form where users can select hobbies using CheckBox controls. When the user clicks a Submit button, all selected hobbies should be added to a ListBox.
18. Write a program that allows users to enter a series of numbers separated by commas into a textbox. Create a function that retrieves these numbers, checks whether each is odd or even, and stores the odd numbers in one ListBox and the even numbers in another. When the user clicks a button, the program should process the input and display the results in the respective ListBoxes.
19. Develop an application where users can input a sentence into a TextBox. The program will analyze the sentence and display the number of vowels, spaces, digits, special symbols, and words. Additionally, check if the sentence is a palindrome and display the result.
20. Create a To-Do List application where users can add tasks to a ListBox using a TextBox and an Add button. Users should be able to select and remove tasks from the ListBox using a Remove button.

21. Create a form that contains four RadioButton controls for selecting gender (Male, Female) and marital status (Married, Unmarried). When a button is clicked, display the selected gender and marital status in a message box.
22. Design a Windows form with a DateTimePicker control and a label. When the user selects a date from the DateTimePicker, display the selected date in the label
23. Create a form with two MonthCalendar controls and a Calculate button. When the user selects two dates and clicks the button, the program should display the difference between the two dates in days. This demonstrates date selection and simple date calculations.
24. Develop a form where users can choose a shape (like a circle or rectangle) using radio buttons. Once the user selects a shape, the chosen shape should be displayed on the form using simple drawing logic.
25. Create a form with a button that opens a ColorDialog. When the user selects a color, apply that color as the background color of the form.
26. Write a program that uses an ImageList to store multiple images. The form will include a TabControl with multiple tabs, each tab displaying a different image from the ImageList. The user can switch between tabs to view the images.
27. Create an application that includes a TrackBar control linked to a ProgressBar. As the user slides the TrackBar, the ProgressBar should reflect the progress corresponding to the current value of the TrackBar.
28. Design a stopwatch application using a Timer control. The program should include Start, Stop, and Reset buttons to control the timer, and it should display the elapsed time in a label or TextBox.
29. Develop a form that uses the SplitContainer control to separate the form into two sections. Place a TreeView control in one section to represent a directory structure, and a ListView control in the other section to display files from the selected directory. When a node in the TreeView is clicked, the files from that directory are displayed in the ListView.
30. Design an application that includes a ListBox and a ContextMenuStrip. When the user rightclicks on an item in the ListBox, the ContextMenuStrip should display options like Edit and Delete, and perform the selected action.
31. Create an MDI form that includes a File menu with options for Open, Close, and Exit. Users can open an image file using an open dialog box, and the image will be displayed in a

PictureBox. The child form will include buttons that allow the user to zoom in, zoom out, and reset the image to its original size.
32. Write a program that acts as a simple text editor. The user can use an OpenFileDialog to open a text file, edit it in a RichTextBox, and save the edited text back to the file system using a SaveFileDialog. The program should also allow basic text editing functions like Copy, Paste, and Undo.
33. Develop a database application using ADO.NET with SQL Server that allows users to perform Select, Insert, Update and Delete operations on a table named EMP. The table contains fields like EMP_ID, EMP_NAME, DOJ, GENDER, ADDRESS, MARITAL STATUS and Mobile. The form should include proper validation and use a DataGridView for display records. Perform navigation through buttons.
34. Develop a database application using ADO.NET with MS Access that allows users to perform Select, Insert, Update and Delete operations on a table named REGISTRATION. The table contains fields like ID, NAME, DOB, QUALIFICATION, GENDER, ADDRESS, MARITAL STATUS and Mobile. The form should include proper validation and use a DataGridView for display

Course Outcomes	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Practical-GUI Programming Using C# .Net	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						2	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	V
Course title :	Software Engineering	**Course code :**	BPMIDSCASE502
Course type :	Theory	**Course credit :**	04
Prerequisite :	You must **have strong project management skills** before learning software engineering skills. They can help you organize how you work on assignments and projects		
Rationale :	The reasoning and justification behind human decisions, opinions, and beliefs. In software engineering, rationale management focuses on capturing design and requirements decisions and on organizing and reusing project knowledge.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective:

1. Be employed in industry, government, or entrepreneurial endeavors to demonstrate professional advancement through significant technical achievements and expanded leadership responsibility;
2. Demonstrate the ability to work effectively as a team member and/or leader in an ever-changing professional environment; and
3. Progress through advanced degree or certificate programs in computing, science, engineering, business, and other professionally related fields.

Course Outcome:

1. Apply the principles of various software development methodologies, software systems design, considering architectural patterns, modularity, and scalability.
2. Learn techniques for gathering, analyzing, and documenting software requirements
3. Develop and execute test plans, ensuring the quality and reliability of software through testing methodologies.

4. Create comprehensive and well-organized documentation, including user manuals, technical specifications, and system documentation.

Content

Unit	Description in detail	Credit	Weightage
I	**Introduction to Software Engineering:** Define Software and System; Define Software Engineering, Software Characteristic, Difference between Software Engineering and Computer Science. Difference between Software Engineering and System Engineering. Software Costs, Software Application, Evolution of software Engineering, Software Crisis-Problem and Causes, Software Myths, Professional and Ethical Responsibility, Software Process, Principal of Software Engineering, Software Quality Factors, Software Quality Attributes, Software Engineering Methods. **Software Process Model :** Waterfall Model, Prototyping Model, Incremental Model, Spiral Model	1	25 %
II	**Software Requirement Specification** What is Requirement, Types of Requirement, SRS (Software Requirement Specification), Software Engineering Benefits, Role of Management in Software Development, Role of Metrics and Measurement. **System Design** Software Design Strategy, Become a Master Designer, Evaluating a Design, Problem Partitioning, Abstraction, Strategy of Design, Function Oriented v/s Object Oriented Approaches	1	25 %
III	**Coding**	1	25 %

	Programming Practices, Top down Approaches & Bottom up Approaches, Structure Programming, Information hiding, Programming Style		
IV	**Testing** Testing Fundamental, Top Down Approaches & Bottom Up Approaches, Test Cases and Test Criteria, Psychology of Testing, Regressing Testing, Functional Testing, Structure Testing. Equivalence Class Partitioning, Boundary Value Analysis, Cause Effect Graphing, Type of Testing, Test Plan.	1	25%

Reference Books:

1. SOFTWAREENGINEERING- Roger S. Pressman

Practical Approach of Software Engineering- Dr. Munesh Trivedi, Avinash

Suggested Books:

1. Pres sman R.S: Software Engineering: A Practitioner approach, McGraw-Hill
2. Software Engineering, Addison Wesley

Online Resources:

1. https://medium.com/fantageek/best-resources-for-software-engineering-77a5b8f7280c
2. https://www.coursera.org/specializations/software-engineering
3. https://www.knowledgehut.com/blog/web-development/software-engineering-books

Course Outcomes Software Engineering	Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						3	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	V
Course title :	Operating System	**Course code :**	BPMIDSCAOS502A
Course type :	Theory	**Course credit :**	04
Pre-requisite :	The students should have general idea about Operating System Concept, types of Operating System and their functionality		
Rationale :	The course provides the students with an understanding of human computer interface existing in computer system and the basic concepts of operating system and its working.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective :

1. To familiarize the operations performed by OS as a resource Manager.
2. To learn and understand the Concepts of operating systems.
3. To Learn and understand operating system services.
4. To teach the different memory management techniques.

Course Outcome:

1. Recall key operating system concepts, including process, memory management, and file systems
2. Understand the role of virtual memory and its impact on system performance.
3. Implement synchronization mechanisms to address concurrent programming challenges.
4. Analyze the impact of different scheduling algorithms on system performance.

Content

Unit	**Description in detail**	**Credit**	**Weightage**
I	**Operating System Overview:** Introduction to Operating System, Types of Operating system, Operating System Services functionality and characteristics of OS Buffering & Spooling	1	25 %
II	**Process Management:** Process, Process, Process States, Control Block (PCB),	1	25 %

	Scheduling – Types of Schedulers, Scheduling & Performance Criteria, Scheduling Algorithms – FCFS, SJF, Priority & Round Robin (RR) Scheduling. Deadlock: Concept, Deadlock detection, and prevention		
III	**Memory Management:** Static Memory Allocation, Dynamic Memory Allocation, Segmentation, Virtual memory – Paging, Demand Paging, Page Replacement, Fragmentation & Defragmentation, Cache memory	1	25 %
IV	**I/O Management:** Program Controlled I/O, Interrupt Driven I/O, USART, PIT File Management: File concept, Access method, Directory structure, Disk Space Management - Continuous allocation, non continuous allocation, File related system services	1	25 %

Reference Books:

1. Operating System Concept, Wiley, Sixth Edition - Silberschatz & Galvin
2. Operating Systems, Tata McGraw – Hill, Second Edition- Milan Milenkovi'c
3. Operating Systems, PHI, Fourth Edition - William Stallings

Suggested Readings:

1. Operating System Concept, Wiley, Sixth Edition - Silberschatz & Galvin

Online Resources:

1. https://www.tutorialspoint.com/operating_system/index.htm
2. https://www.geeksforgeeks.org/operating-systems/
3. https://www.javatpoint.com/operating-system

Course Outcomes	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Operating System	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						3	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	V
Course title :	Project Development	**Course code :**	BPSECAPD507
Course type :	Practical	**Course credit :**	04
Pre-requisite :	Student can study, analyze, design, implement and evaluate the information system.		
Rationale :	To make the students confident in software development.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	10	15	25	50

Course Objective :

1. Study, analyze, design, implement and evaluate the information system

Course Outcome:

1. Understand analysis of real-world problems and solutions.
2. Design and implement software based on user requirements.
3. Evaluate and test the result after the implementation with maintenance.
4. Understand the working mechanism using system diagram.
5. Describe the software documentation as per software development lifecycle.

General Guidelines

- The **In Semester Project** is designed to provide practical, hands-on experience in project development.
- The course will run throughout the semester, where students work in groups under the guidance of a project guide.
- The project work will culminate in an internal and external evaluation based on the project's functionality, innovation, and documentation.
- This subject is mandatory and plays a significant role in preparing students for real-world challenges.
- Students will form groups of 2 members (3 in specific cases with approval). Each group will be assigned a **Project Guide** at the start of the semester.
- Students will select a project topic that aligns with course goals and get approval from their project guide or the subject teacher.
- Internal Examination Conducted by the assigned project guide, and results will be submitted to the subject teacher.
- External Examination Conducted at the end of the semester, the external examiner will assess the projects, supported by documentation and functional demonstration.
- Subject teacher must maintain clear and comprehensive records of project development and progress.
- Students group has to develop a comprehensive project report to be submitted at the end of the semester. The report should cover all phases of development, including planning, implementation, testing, and results.

Guidelines for Subject Teacher

- Select one project at the start of the semester and develop it in front of the students, demonstrating the entire project development process from start to finish in entire semester.
- Break down the project into manageable modules, covering each stage during lectures, so students can understand the workflow, coding practices, and troubleshooting involved.
- Maintain records of each student group's project definition, attendance, project progress, and internal examination results.
- Offer regular guidance to students, addressing challenges they may face during development.
- Collection of internal examination results from project guides.

Course Outcomes Project Development	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	3	3				3								2
CO-2			3		3								3	
CO-3								3			3	3	2	
CO-4			3		3									
CO-5													3	

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	VI
Course title :	Advance JAVA Programming	**Course code :**	BPMJDSCAJP601
Course type :	Theory	**Course credit :**	04
Prerequisite :	Basic knowledge of Advance JAVA Programming		
Rationale :	Java was designed to be easy to use and is therefore easy to write, compile, debug, and learn than other programming languages. Java is objected-oriented. This allows you to create modular programs and reusable code.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective:

4. To learn how to extend Java classes with inheritance and dynamic binding.
5. To learn how to implement object-oriented designs with Java.
6. To learn how to design a graphical user interface (GUI) with Java Swing.

Course Outcome:

After Completion of course,

1: explain the relationship between servlets and JSP

2: Apply advance concepts of java programming with database connectivity

3 : Design web applications on the internet

4 : Describe JavaBeans programs and executing the programs using Bean Development Kit.

Content

Unit	Description in detail	Credit	Weightage
I	**Introduction to J2EE Platform and Architecture** The J2EE Platform, the J2EE Architecture Containers , J2EE Technologies Developing J2EE Applications , Introducing Java Mail and JMS **Database Programming** ODBC and JDBC Drivers, Connecting to Database with the java.sql Package, Using JDBC, Connecting to Databases, CRUD Operations (Create, Read, Update, Delete)	1	25 %
II	**Servlet** Introduction of servlet, Servlet Life Cycle,Servlet API, GenericServlet, HttpServlet, servletRequest method, RequestDispatcher, sendRedirect, Reading Form Data from Servlets, Session Tracking: Cookies, Hidden Form field, URL Rewriting, HttpSession. **Remote Method Invocation (RMI):** The RMI Architecture , RMI Exceptions, Developing Applications With RMI, Parameter Passing in RMI	1	25 %

III	**JSP** Introduction of JSP, Advantages of JSP over Servlet, Life cycle of JSP, JSP API, Scriplet Elements, Implicit Objects, Directive Elements, Action Elements. ● **JDBC with JSP and Servlets** JDBC Examples using Servlets and JSP.	1	25 %
IV	**Hibernate** Overview of Hibernate, Hibernate Architecture, Hibernate Mapping Types, Working with Object, Persistent, Entity, Relation (ORM), Hibernate APIs, Mappings: Basic Mapping, Primary Key Mapping and Relational Mapping, Hibernate Annotation, Hibernate Query Language, Using database CRUD operations like INSERT, UPDATE, DELETE, SELECT with hibernate.	1	25 %

Reference Books:

1. Programming with JAVA: A Primer, Balagurusamy,2nd Edition, Tata McGrow Hill

2. Core Servlets and Java Server Pages Volume1 and 2, Second Edition, 2004 By Marty Hall and Larry Brown, PEARSON Education

3. The Complete Reference JAVA 2, 4th Edition, TMH Publication.

4. Beginning JAVA 2 (JDK1.3 Edition), Ivor Horton, WROX Public.

5. Professional Java Server Programming by Subrahmanyam Allamaraju

Course Outcomes	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Advance JAVA Programming	**PO -1**	**PO -2**	**PO -3**	**PO -4**	**PO -5**	**PO -6**	**PO -7**	**PO -8**	**PO -9**	**PO -10**	**PO -11**	**PO -12**	**PS O-1**	**PS O-2**
CO-1	2					2	3						2	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							

Program :	B.C.A	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	VI
Course title :	Web Development Using Asp.Net	**Course code :**	BPMJDSCASP601A
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Basic programming in C# or VB.NET Understanding of HTML, CSS, JavaScript Knowledge of databases (SQL) Familiarity with Visual Studio IDE Basics of web servers and networking.		
Rationale :	Scalable and high-performance web apps Supports MVC and Web Forms Integrates well with Microsoft technologies Built-in security features Large developer community and career opportunities		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective:

4. To learn about basic features of C# and its controls
5. To create an application using standard .NET Controls
6. To learn about connecting data sources using ADO.NET and managing them.

Course Outcome:

After Completion of course, Student able to

- Understanding of Web Forms, MVC architecture, and application lifecycle management.
- Develop dynamic web applications using standard controls, validation, and navigation features, while implementing state management and AJAX for enhanced user experience.
- Work with data connections, optimize performance through caching, and integrate web services and APIs.
- Understand ASP.Net Core and Entity Framework

Unit	Description in detail	Credit	Weightage
Unit – 1	**Introduction to ASP.NET** ▪ Overview of ASP.NET, Key Features and Benefits ▪ Comparing ASP.NET with Other Web Technologies ▪ Web Forms, Code Behind. ▪ Introduction of MVC architecture. **Life Cycles:** ▪ ASP.NET Application Life Cycle, ASP.NET Page Life Cycle. **ASP.NET Application Structure** ▪ Web Forms structure: HTML, server controls, view state, and postback. ▪ Introduction to server-side programming. ▪ Understanding ASP.NET file types: .aspx, .ascx, .config, etc.	1	25 %

	▪ Introduction to IIS and Deployment Options		
Unit – 2	**Standard Controls** Label, TextBox, Button, CheckBox, RadioButton, DropDownList, ListBox etc.. **Validation controls** ▪ RequiredFieldValidator and CompareValidator ▪ RangeValidator and RegularExpressionValidator ▪ CustomValidator and ValidationSummary **Master Pages and Themes** ▪ Creating and using Master Pages for consistent layout. ▪ Implementing themes and CSS in ASP.NET. ▪ Working with skins and style sheets. **Navigation Controls** ▪ Site Navigation: TreeView, Menu, and SiteMapPath.	1	25 %
Unit – 3	**State Management** ▪ Client Side state management: Cookies, View State, Query Strings. ▪ Server Side state management: Session, Application, Cache. ▪ Global.asax file and event handling. **ASP.NET AJAX Controls** ▪ Introduction to AJAX ▪ Using ScriptManager and UpdatePanel ▪ Partial page updates and asynchronous postbacks ▪ Working with Timer and UpdateProgress controls.	1	25 %

	Introduction to AJAX Control Toolkit ▪ Discuss 5-6 Controls. **ASP.NET Security:** ▪ Authentication and Authorization. ▪ Form Authentication, Windows Authentication.		
Unit – 4	**Working with Data in ASP.Net** ▪ Data Connection with different databases. ▪ Data binding to controls: GridView, DataList, Repeater, and FormView. ▪ Using LINQ in ASP.NET. **Caching and Performance Optimization** ▪ Output caching, data caching, and fragment caching. **Web Services and API Integration** ▪ Introduction to Web Services: SOAP and REST. ▪ Creating and consuming Web Services in ASP.NET. ▪ Working with JSON and XML. ▪ Introduction to ASP.NET Web API.	1	25 %

Reference Books:

1. **"Professional ASP.NET 4.5 in C# and VB"** by Jason N. Gaylord, Christian Wenz, Pranav Rastogi, Todd Miranda, Scott Hanselman – Wrox.

2. **"Beginning ASP.NET for Visual Studio 2015"** by William Penberthy – Apress.

3. **"ASP.NET AJAX in Action"** by Alessandro Gallo, David Barkol, Rama Krishna Vavilala – Manning Publications.

4. **ASP.NET Web API 2: Building a REST Service from Start to Finish"** by Jamie Kurtz and Brian Wortman – Apress.

Course Outcomes	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Web Development Using Asp.Net	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						3	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	VI
Course title :	Practical – Advance JAVA Programming	**Course code :**	BPMJDSCAJP601B
Course type :	Practical	**Course credit :**	04
Pre-requisite :	Basic knowledge of Advance JAVA Programming		
Rationale :	Java was designed to be easy to use and is therefore easy to write, compile, debug, and learn than other programming languages. Java is objected-oriented. This allows you to create modular programs and reusable code.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	10	15	25	50

Course Objective:

4. To learn how to extend Java classes with inheritance and dynamic binding.
5. To learn how to implement object-oriented designs with Java.
6. To learn how to design a graphical user interface (GUI) with Java Swing.

Course Outcome:

5. demonstrate a solid understanding of fundamental Object-Oriented Programming (OOP) principles, including encapsulation, inheritance, and polymorphism.

6. Apply advance concepts of java programming with database connectivity
7. Design web applications on the internet
8. Describe JavaBeans programs and executing the programs using Bean Development Kit.

Sr.	Practical List
1	Write an application program to demonstrate the use of simple SQL statements by performing Insertion, Deletion, Update, and Selection operations.
2	Write an application program to implement the above (1) using a PreparedStatement.
3	Write an application program to illustrate the concept of CallableStatement to execute stored procedures.
4	Write a Java application that demonstrates the Servlet lifecycle.
5	Write a Servlet program to perform database-driven operations such as Insertion, Deletion, Update, and Selection on an Employee table..
6	Write a Servlet program to maintain session using the Hidden Field concept (Prepare 3 Servlets).
7	Write a Servlet program to implement session tracking using Persistent Cookies.
8	Write a Servlet program to maintain session using URL Rewriting.
9	Write a Servlet program to implement Request Forwarding and include an external resource in the current Servlet context..
10	Create a simple Login and Logout system using HttpServlet, HttpSession, and Cookies
11	Write an RMI program to perform arithmetic operations on two entered numbers.

12	Fetch and display a list of records from a database table using JSP and JDBC.
13	Create a JSP form to capture user details and Insert them in a database using JDBC.
14	Create a JSP form to display user details and Delete record them in a database using JDBC.
15	Write a JSP program to perform database-driven operations such as Insertion, Deletion, Update, and Selection on an Employee table.
16	Write a JSP page to manipulate and navigate student data. (Use JSP include action tag to include a file that creates a connection to the database).
17	Write a JSP program to demonstrate the concept of scripting elements (e.g., scriptlets, expressions, declarations).
18	Write a JSP program to implement session tracking using HttpSession.
19	Write a program to implement the MVC pattern using JSP, Servlets, and JavaBeans.
20	Create a simple Hibernate application with an in-memory H2 database and explain core components of Hibernate architecture (SessionFactory, Session, Transaction, Query).
21	Define a Hibernate entity class with basic mapping (e.g., User with id, name, and email) Configure primary key mapping using @Id and @GeneratedValue annotations.
22	Use Hibernate APIs to perform basic CRUD operations (INSERT, UPDATE, DELETE, SELECT) on a single entity. Implement a DAO class to handle these operations
23	Create entity classes to demonstrate different Hibernate mapping types (e.g., String, Integer, Date) and a one-to-many relationship (e.g., Department with multiple Employee entities). Use both annotations and XML configuration
24	Write HQL queries to perform SELECT operations on entities, including conditions, joins, and grouping. Demonstrate data retrieval and manipulation using HQL.

Course Outcomes	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Practical – Advance JAVA Programming	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						2	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	VI
Course title :	**Practical:** Asp .Net	**Course code :**	BPMJDSCASP601C
Course type :	Practical	**Course credit :**	04
Pre-requisite :	Basic programming in C# or VB.NET Understanding of HTML, CSS, JavaScript Knowledge of databases (SQL) Familiarity with Visual Studio IDE Basics of web servers and networking.		
Rationale :	Scalable and high-performance web apps Supports MVC and Web Forms Integrates well with Microsoft technologies Built-in security features Large developer community and career opportunities		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	10	15	25	50

Course Objective:

4. To learn about basic features of ASP.NET and its controls
5. To create an ASP.NET application using standard .NET Controls
6. To learn about connecting data sources using ADO.NET and managing them

Course Outcome:

6. Interpret the principles behind .NET C# development, understand the role of ASP.NET in web applications.
7. Understanding of Web Forms, MVC architecture, and application lifecycle management.
8. Develop dynamic web applications using standard controls, validation, and navigation features, while implementing state management and AJAX for enhanced user experience.
9. Work with data connections, optimize performance through caching, and integrate web services and APIs.
10. Understand ASP.Net Core and Entity Framework

Programs

1. Develop a simple ASP.NET web application that demonstrates basic Web Form with serverside code (in a code-behind file).

2. Write a program that uses Request, Response, and Server objects to handle HTTP requests and responses.

3. Implement code in an ASP.NET Web Form to track and display information at various lifecycle events (e.g., Page_Load, Page_Init) to understand the order of operations.

4. Write a program to demonstrate different common Control.

5. Implement a registration form using standard controls and validate user input with Required Validation Controls. (Use TextBox, DropDownList, RadioButton, etc.)

6. Create a custom validator control to enforce a specific business rule (e.g., password complexity) on a Web Form.

7. Write a program that demonstrates the use of rich controls such as Calendar, FileUpload, or Chart.

8. Design a site navigation menu using TreeView to display hierarchical data and allow users to navigate between different sections of the application.

9. Write a program demonstrating the use of CSS for styling Web Forms in ASP.NET.

10. Develop a Master Page with a common header and footer, and apply it to multiple Web Forms to ensure a consistent layout across the site.

11. Apply a theme to your Web Forms and use skins to customize the appearance of controls, ensuring a uniform design across the application.

12. Develop a Web Form to pass data via query strings and retrieve it on the destination page.

13. Develop a Web Form that uses cookies to remember user preferences.

14. Develop a Web Form that uses session variables to store and retrieve user-specific data.

15. Write a program to demonstrate use of Global.asax.

16. Use UpdatePanel to create a Web Form that performs partial page updates, such as loading data asynchronously without a full page refresh.

17. Create a simple web application that triggers an event at a specified interval using the Timer control.

18. Create a simple web application that implements 3-4 controls from the AJAX Control Toolkit.

19. Develop a web page to establish a connection to a SQL Server database and perform basic CRUD operations from an ASP.NET Web Form using ADO.NET.

20. Write a program to design ASP.net Login Page for website with session and cookies. Connect page with database to authenticate user.

21. Develop a Web Form that retrieves data from a database and binds it to a GridView control, allowing users to view and interact with tabular data.

22. Write a program for Insert, Update, Delete and Search using GridView Control.

23. Write a program for Insert, Update, Delete and Search using DetailView Control.

24. Write a program for Insert, Update, Delete and Search using FormView Control.

25. Write LINQ queries to fetch and display data in a Web Form, demonstrating how LINQ simplifies data access compared to traditional SQL queries.

26. Develop a Web Form application using LINQ to perform CRUD operations with SQL Server.

27. Implement a Repeater control to display a list of data items with a custom layout defined in item templates.

28. Configure output caching on a Web Form to store frequently generated content and reduce server load.

29. Implement data caching to store the results of database queries and improve the performance of data retrieval operations.

30. Develop a Web Form that parses and uses JSON data retrieved from a web service or API in an ASP.NET application.

31. Develop a Web Form that reads and displays XML data, demonstrating how to handle XML data in ASP.NET.

32. Create a report that displays data using GridView and visualizes it with Chart controls, integrating data binding and visualization techniques.

33. Develop a simple dynamic website.

34. Package and deploy a completed Web Form application to Internet Information Services (IIS), and configure settings for proper execution.

Course Outcomes **Practical:** Asp .Net	**Expected Mapping with Programme Outcomes** **(1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						2	
CO-2			3	2	3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	VI
Course title :	Unified Modeling Language (UML)	**Course code :**	BPMIDSCAUM605
Course type :	Theory	**Course credit :**	04
Prerequisite :	Basic understanding of software development Knowledge of object-oriented programming (OOP) Familiarity with system analysis & design Experience with databases & data modeling		
Rationale :	The reasoning and justification behind human decisions, opinions, and beliefs. In software engineering, rationale management focuses on capturing design and requirements decisions and on organizing and reusing project knowledge.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective:

- UML as a standardized modeling language for software design. Students will learn to visualize, document, and communicate complex software structures using UML diagrams. It focuses on enhancing analytical and design skills, improving collaboration between developers and stakeholders, and enabling structured project development. Mastering UML will help students develop maintainable, scalable, and well-organized software systems.

Course Outcome:

1. Express software design with UML diagrams
2. Design software applications using OO concepts
3. Identify various scenarios based on software requirements
4. Transform UML based software design into pattern based design using design patterns
5. Understand the various testing methodologies for OO softwareContent

Unit	Description in detail	Credit	Weightage
I	**Overview of UML** • Purpose and Application of UML • History and Evolution of UML **Conceptual Model of UML** • Building Blocks of UML: **Things:** Structural, Behavioural, Grouping, Annotational Elements **Relationships:** Dependency, Association, Generalization, Realization **Diagrams:** Overview of UML Diagrams (Structural and Behavioural) • UML Rules and Common Mechanisms • The Architecture of UML • View of UML **Software Development Life Cycle (SDLC)**	1	25 %

	• UML Modeling in Various Phases of SDLC		
II	**Classes and Their Structure** • Class Names, Attributes, and Operations • Organizing Attributes and Operations • Defining Responsibilities of Classes **Advanced Class Features** • Classifiers, Visibility, and Scope • Abstract, Root, Leaf, and Polymorphic Elements **Relationships** • Dependency, Generalization, Association, Realizations • Advanced Relationships. **Interface Types and Roles** • Defining Interface Names, Operations, and Relationships Understanding Interfaces, Types, and Roles in UML	1	25 %
III	**Packages in UML** • Package Names and Owned Elements • Visibility, Importing and Exporting Packages • Generalization within Packages **Use Cases:** • Names, Use Cases and Actors, Use Cases and Flow of Events, Use cases and Scenarios, Use Cases and Collaborations, Organizing Use Cases. **Use Case Diagrams:** • Common Uses, Common Modeling Techniques	1	25 %

	Class Diagrams • Common Properties and Contents of Class Diagrams • Common Uses and Modeling Techniques Forward and Reverse Engineering in Class Diagrams		
IV	**Interactions** : • Context, Object and Roles, Links, Messages, Sequencing, Creation, Modification and Destruction, Representation. **Interaction Diagram:** • Sequence Diagram, Collaboration Diagram **Activity Diagram:** • Action and Activity States, Transactions, Branching, Forking and Joining, Swim lanes, Object Flow **State chart Diagram** **Component Diagram** **Deployment Diagram**	1	25%

Reference Books:

1 The Unified Modeling Language User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Publication

Reference Books:

1. UML Bible by Tom Pender, Wiley Publishing Inc.
2. Teach Yourself UML in 24 Hours by Joseph Schmuller, Pearson Education.
3. Object-Oriented Modeling and Design with UML by Michael Blaha and James Rumbaugh, Pearson.
4. Applying UML and Patterns by Craig Larman, Prentice Hall.

Course Outcomes	**Expected Mapping with Programme Outcomes** **(1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Unified Modeling Language (UML)	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						3	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							
CO-5			3								1	2		3

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	VI
Course title :	Digital Communication and Marketing Skills	**Course code :**	BPAECADCM606
Course type :	Theory	**Course credit :**	04
Pre-requisite :	Basic understanding of communication principles Familiarity with digital platforms (social media, websites, etc.) Knowledge of marketing fundamentals Analytical thinking and creativity Basic writing and graphic design skills (optional but useful)		
Rationale :	Digital communication and marketing skills are essential in today's fast-paced, technology-driven world. They enable effective brand positioning, audience engagement, and business growth through digital channels. Mastering these skills helps individuals and businesses create impactful campaigns, analyze consumer behavior, and stay competitive in the evolving digital landscape.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	**15**	10	25	50

Course Objective :

- The course aims to develop essential digital communication and marketing skills for effective online engagement and business growth. Students will learn strategies for branding, content creation, social media marketing, SEO, and data-driven decision-making. By mastering digital marketing techniques, they will enhance brand visibility,

optimize campaigns, and build strong customer relationships in a competitive digital environment.

Course Outcome:

- Understand core digital marketing concepts, including SEO, social media, email, and content marketing strategies.
- Apply tools and techniques to create and execute effective online campaigns for brand promotion and customer engagement.
- Analyze digital marketing metrics to optimize strategies
- improve overall campaign performance

Content

Unit	Description in detail	Credit	Weightage
I	**Overview of Digital Media Marketing** ▪ Understanding Digital Media Marketing ▪ Differences and ROI comparison between Digital and Traditional Marketing ▪ Importance and growth of E-commerce ▪ Various methods for generating digital marketing **Categories of Digital Media Marketing** ▪ Channels like SEO, SEM, Social Media, Content Marketing, Email Marketing, and more **Introduction to Popular Digital Marketing Platforms** ▪ Facebook, Instagram, LinkedIn, Twitter ▪ Blogging (WordPress) and Video (YouTube)	1	25 %

II	**Search Engine Optimization (SEO)** ▪ Basics of SEO: Organic and Paid search results ▪ On-page and Off-page SEO Techniques ▪ Keyword research, Google's algorithms, and tools like Google Analytics **Social Media Optimization (SMO)** ▪ Enhancing online presence through platforms like Facebook, Twitter, LinkedIn ▪ Social Media Analytical Tools for tracking performance **Search Engine Marketing (SEM)** ▪ Introduction to Google AdWords and AdSense ▪ Foundation of YouTube Channel and Video Ads ▪ Role of M-commerce and E-commerce in Digital Marketing	1	25 %

Reference Books:

1.**Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation** – Damian Ryan, 5th Edition, Kogan Page.

2.**Digital Marketing All-in-One For Dummies** – Stephanie Diamond, 2nd Edition, John Wiley & Sons.

Suggested Readings:

1.**The Ultimate Guide to Digital Marketing – Digital Marketer**, 1st Edition, Independently Published.

2.**Digital Marketing: Strategy, Implementation, and Practice** – Dave Chaffey and Fiona Ellis-Chadwick, 8th Edition, Pearson.

Course Outcomes	**Expected Mapping with Programme Outcomes (1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
Digital Communication and Marketing Skills	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PSO-1**	**PSO-2**
CO-1	2					2	3						3	
CO-2			3		3									
CO-3		3	3					3				3		3
CO-4						2	2							

Program :	BCA	**Subject / Branch :**	NA
Year :	**2024/25**	**Semester :**	VI
Course title :	Industrial Project	**Course code :**	BPINTAIP607
Course type :	Practical	**Course credit :**	04
Pre-requisite :	Student can study, analyze, design, implement and evaluate the information system.		
Rationale :	To make the students confident in software development.		

Teaching Examination Scheme:

Teaching (Hours/week)			**Examination Scheme**			
Lecture	Tutorial	Practical	Internal		External	Total
			Mid	CE		
4	0	0	30	20	50	100

Course Objective :

2. Study, analyze, design, implement and evaluate the information system

Course Outcome:

6. Understand analysis of real-world problems and solutions.
7. Design and implement software based on user requirements.
8. Evaluate and test the result after the implementation with maintenance.
9. Understand the working mechanism using system diagram.

10. Describe the software documentation as per software development lifecycle.

In this course, students are required to gain industry experience by working on information system development, software design, or software development projects in collaboration with an organization, company, or institute.

Students will be assigned one or more system development projects, which must be external and require a minimum of 120 hours of work. Work on the project will begin after the completion of the Semester VI exams. Students are expected to work full-time, committing at least 5 days per week, with a minimum of 5 hours per day

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Before starting the project, students (or groups) must submit a Project Allotment Letter to the college. This letter should include the project definition and a detailed list of the tools and technologies that will be used during the project. Students can start searching for a suitable project at the beginning of Semester VI to ensure timely allocation.

Projects can be completed either individually or in teams of up to three students to gain hands-on experience in system development.

Possible Project Types:

1. Development of a system for an IT or computer company, institution, or government department.
2. Development of a hypothetical application.

3. Analytical or descriptive projects related to information systems, such as those involving cyber laws or standards, which may not require source coding.

4. Network design and deployment, which may involve minimal coding depending on the nature of the work.

5. Development or design of a website or web scripting.

The project must cover all phases of the system development life cycle, including:

- System analysis
- Design and source coding
- Documentation
- Implementation
- System updates (if applicable)

Evaluation Criteria:

The project evaluation will be divided into two parts:

1. **Internal Marks (50 marks):**

The college will conduct at least three progress report presentations during the project, which will be worth 50 internal marks.

2. **Final Viva/Presentation Examination (50 marks):**

After completing the project, students will participate in a viva or presentation. The panel, including academic experts, will evaluate the student's performance and assign marks out of 50.

Additional Requirements:

1. Upon completing the project, the organization or company where the student worked must provide a certificate of work completion.

2. The university will arrange the final viva or presentation examination, with marks awarded based on the student's performance.

Course Outcomes Project Development	**Expected Mapping with Programme Outcomes** **(1- Weak Correlation; 2- Medium correlation; 3- Strong Correlation)**													
	PO -1	**PO -2**	**PO -3**	**PO -4**	**PO -5**	**PO -6**	**PO -7**	**PO -8**	**PO -9**	**PO -10**	**PO -11**	**PO -12**	**PSO -1**	**PSO - 2**
CO-1	3	3				3								2
CO-2			3		3								3	
CO-3								3			3	3	2	
CO-4			3		3									
CO-5													3	