Detailed Program

Bachelor of Computer Applications

(BCA)

Semester-III

(2025-2029)

DOC202506200010

RNB GLOBAL UNIVERSITY

Educating stars for tomorrow

RNB GLOBAL UNIVERSITY

RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

OVERVIEW

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June).**Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

The curriculum for BCA Program for (July-December) Odd Semester, 2026 along with examination pattern is as follows:

Course Scheme

Semester –III

S. No	Course Code	Course Category	Course Name	L	T	P	Credits
1.	BCAC14200	DSC 7 (a)	Python	3	0	0	3
2.	BCAC14201	DSC 7 (b)	Python Lab	0	0	2	1
3.	BCAC14202	DSC 8 (a)	Database Management System	3	0	0	3
4.	BCAC14203	DSC 8 (b)	Database Management System Lab	0	0	2	1
5.	BCAC14204	DSC 9 (a)	Object Oriented Programming with C/C++	3	0	0	3
6.	BCAC14205	DSC 9 (b)	Object Oriented Programming with C/C++ Lab	0	0	2	1
7.		DSE 1	One from the Pool of DSE Courses	3	1	0	4
8.	AECH55003	AEC-3	Hindi -II	2	0	0	2
9.	IAPC99249	IAPC – 1	Internship/apprenticeship / project/ **community outreach**	2	0	0	2
10.		VAC – 3	One from the pool of VAC Group A	2	0	0	2
11.	WHNN99000		Workshops & Seminars/ Human Values & Social Service/NCC/NSS	-	-	-	1
			Total	**19**	**1**	**6**	**23**

DSC – Discipline specific Course
DSE – Discipline Specific Elective
SEC – Skill Enhancement Course
VAC – Value addition course
GE – General Elective

Discipline Specific Course

Discipline Specific Electives (DSE)						
S.No	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
1.	BCAE14001	Computer Architecture (DSE -1)	3	1	0	4

Value Addition Courses (VAC)

Value Addition Courses (VAC)						
SN	**Course Code**	**Group A Odd Semester**	**L**	**T**	**P**	**Credits**
1.	VAC088005	Principles of Accounting -1 (VAC -3)	2	0	0	2

EVALUATION SCHEME- THEORY

The evaluation of the theory paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Mid Term	One Mid-term Sessional	25
Quiz	Quiz based on MCQs	5
Marks obtained in various Tests, Assignments, Presentations, Tutorials etc.	Average of Marks obtained	15
Academic Performance including Attendance	Eligibility >75% Attendance	5
TOTAL		**50**

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME -PRACTICAL

The evaluation of the practical paper of BCA would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Academic Performance including Attendance	Eligibility >75% Attendance	5
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

EVALUATION SCHEME- WORKSHOPS & SEMINARS AND HUMAN VALUES & SOCIAL SERVICE/NCC/NSS

1. The evaluation of Workshops & Seminar and Human Values & Social Service/NCC/NSS will be completed from Semester I – Semester VI. It will be evaluated internally by the various Forums & Schools Concerned. The credit for this will be given at the end of each Semester.

2. The students have to join club/clubs/Forums with the active participation in different activities of club. The students would be continuously assessed from Semester-I to Semester-IV and credits and marks would be given after the end of each Semester.

1. Vision

To create an environment where a holistic education is given in order to ignite an inquisitive mind, inculcate the qualities of excellence, perceive the intricacies of research, seek out obstacles, overcome them, and carve out a niche for oneself.

2. Mission

- Enabling students to maximize their potential and use their professional standards through ethics and education to raise their level of competence and become change agents.
- Fostering a scholarly culture that fosters the phenomenon of giving back to society via research and creative endeavours.
- To integrate partnerships that enhance knowledge in order to create a dynamic intellectual capital.
- To employ emerging technology to create an inclusive learning environment that is integrated with an improved educational process.
- To create a teaching-learning atmosphere that fosters resilience, sensitivity, and critical thinking, ultimately leading to the development of a strong personality.

3. Programme Educational Objectives (PEOs)

PEO1: To facilitate in development of basic fundamentals of Computer Applications that fit as a perfect foundation towards a beginning a professional career in industry.

PEO2: To develop programming skills of students by using fundamental knowledge of computer science

PEO3: To apply new designs and solutions to complex real life problems using technologies.

PEO4: To play a creative role during professional life through turning problems to opportunities.

4. Program Outcomes (POs)

PO1: **Technical understanding:** Solve complicated problems using mathematics, physics, technical foundations, and a specialization in technology.

PO2: **Problem analysis:** Identify, formulate, analyze research materials, and analyse complex engineering problems using foundational principles of mathematics, natural sciences, and sciences to reach justifiable conclusions.

PO3: **Application of modern technologies:** Create, select, and apply appropriate approaches, tools, and advanced engineering and IT tools, such as predictions and modelling, to technically challenging processes while taking into account the constraints.

PO4: **Expert Principles and Cyber Systems:** The ability to use and provide expert principles and cyber systems in a global monetary environment.

PO5: **Ultimate Education:** Determine the demand for and expand the capacity to work as a Computing certified in permanent education.

PO6: **The expert and society:** Apply reasoning informed by contextual information to evaluate societal, health, safety, legal, and cultural issues, as well as the obligations that come with them, in the context of professional engineering activity.

PO7: **Environmental and sustainable development:** Display knowledge of the need for sustainable development by identifying the implications of professional technological solutions in society and the environment contexts.

PO8: **Personality and Cooperative Learning:** Ability to work as a member or manager in a variety of diverse teams.

PO9: **Ethics:** Adhere to professional ethics, duties, and automotive technology norms by adopting ethical ideas.

PO10: **Communication:** Interact well with the technical community and society at large on associated technical activities, such as being able to understand and write effective reports and design documentation, give and receive clear directions.

PO11: **Finance and project management:** Demonstrate knowledge and understanding of technical and professional principles and apply those to one's own work, as a member of the team and leader, to manage projects and in multidisciplinary domains.

PO12: **Life-long learning:** With socio-technological advancements, students will be able to engage in independent and life-long learning.

5. Program Specific Outcome (PSOs)

PSO1: Prepare for a potentially lucrative and employable profession of computer applications.

PSO2: Continue your education in Computer Science/Applications.

PSO3: Work for yourself in the Indian and worldwide software markets.

PSO4: Comply with all applicable industrial standards.

6. Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14200 - Python	**CO1:**	Discuss the logical solutions through Flowcharts, Algorithms and Pseudo code
	CO2:	Explain the syntax for python programming constructs
	CO3:	Demonstrate proficiency in handling Strings and File Systems
	CO4:	Develop, run and manipulate Python programs using Core data structures like Lists, Dictionaries, and use of Strings Handling methods.
	CO5:	Develop, run and manipulate Python programs using Data structures and searching pattern using regular expressions.
BCAC14201- Python Lab	**CO1:**	Write, test, and debug simple Python programs.
	CO2:	Apply the concept of conditionals and loops in Python programs
	CO3:	Develop the Python programs step-wise by defining functions and calling them
	CO4:	Use Python lists, tuples, dictionaries for representing compound data
	CO5:	Develop, run data structures searching and sorting pattern using regular expression
BCAC14202 - Database Management System	**CO1:**	Define, appreciate and effectively explain the underlying concepts of database Technologies.
	CO2:	Demonstrate and implement a database schema for a given problem-domain
	CO3:	Construct a database and Populate and query a database using SQL DML/DDL commands
	CO4:	Examine and enforce integrity constraints on a database
	CO5:	Determine an understanding of Procedures and Functions
BCAC14203 - Database Management System Lab	**CO1:**	Relate an understanding of the relational data model.
	CO2:	Demonstrate an information model into a relational database schema and to use a data definition language and/or utility to implement the schema using a DBMS
	CO3:	Organize using relational algebra, solutions to a broad range of query problems.
	CO4:	Compare using SQL, solutions to a broad range of query and data update problems
	CO5:	Decide the concept of Indexing, Views, Rollback, Commit, Grant and Revoke Permission

BCAE14001 - Computer Architecture	**CO1:**	List the fundamentals of different instruction set architectures and their relationship to the CPU design.
	CO2:	Classify the principles and the implementation of computer arithmetic
	CO3:	Identify about Primary and Secondary storage System
	CO4:	Distinguish about parallel computer structure and Pipelining
	CO5:	Evaluate the concepts of parallel processing, pipelining and inter processor communication
BCAC14204 - Object Oriented Programming with C/C++	**CO1:**	Identify the difference between structured program and procedure oriented program Compare these features to program design and implementation
	CO2:	Demonstrate the use of constructors, destructors and also the behaviour of inheritance and its implementation. Examine some practical experience of C++
	CO3:	Apply the I/O operations and choose the facilities offered by C++ for Object-Oriented Programming
	CO4:	Define Loops, Array, Function and pointers
	CO5:	Apply object-oriented concepts and implement Encapsulation of data in virtual functions
BCAC14205 - Object Oriented Programming with C/C++ Lab	**CO1:**	Label key features of the object-oriented programming language such as encapsulation (abstraction), inheritance, and polymorphism
	CO2:	Explain and implement object-oriented applications
	CO3:	Apply the facilities offered by C++ for Object-Oriented Programming
	CO4:	Analyze problems and implement simple C++ applications using an object-oriented software engineering approach
	CO5:	Design and develop Object Oriented systems
VAC088005 - Principles of Accounting - I (VAC)	**CO1:**	Define the basic concepts of accounting and financial statements
	CO2:	Remember the execution of the accounting process- Recording-Classifying and Summarizing
	CO3:	Apply the principles and concepts of accounting in preparing the financial statements
	CO4:	Apply the use of accounting software
	CO5:	Determine software in preparation of Financial Statements
AECH55003 -	**CO1:**	हिंदी भाषा के मूल इतिहास और उसकी लिपि देवनागरी को समझाने में
	CO2:	हिंदी शब्द की उत्पत्ति, अर्थ और प्रयोग समझाने में

Hindi-II	**CO3:**	हिंदी लिपि के विकास को समझाने में सक्षम
	CO4:	हिंदी भाषा की सभी प्रकार की बोलियों को सूचीबद्ध करने में
	CO5:	देवनागरी की विशेषताएँ एवं विशिष्टता समझाने में

6. CO PO Mapping

BCAC14200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	2	-	1	2		2	-	-
CO2	2	1	1	1	-	1	-	-	2		-	-
CO3	2	1	-	-	2	-	1	1		2	-	-
CO4	3	1	-	-	3	2	2	2	-	-	-	-
CO5	2	-	2	1	3	-	1	-	2	1	2	2

BCAC14201	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	1	1	2	-	1	2	-	2	-	2
CO2	2	-	-	1	2	1		-	2		2	2
CO3	2	-	-	1	-	-	-	1		-	-	-
CO4	3	1	1	1	-	-	2	2	-	-	-	-
CO5	2	2	2	1	3	-	1		2	1	2	2

BCAC14202	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	-	2	1		3	2		2	1
CO2	2		3	1	2	3	-	-	-	-	1	3
CO3	3	3	3	-	-	-	-	-	-	-	-	-
CO4	3	2	1	-	-	1		3		3	-	-
CO5		2	-	3	-	-	3	-	3	3	-	1

BCAC14203	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	-	2	1	-	3	2	-	2	1
CO2	2		3	1	2	3	2		2	-	-	-
CO3	3	3	3	-	3	2	1	3		-	-	-
CO4	3	2	1	3	-	-	-	3	-	3	-	-
CO5	-	3	3	-	3	-	3	2	-	-	-	-

BCAE14001	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	-	2	1	-	3	2	-	-	-
CO2	2		3	1	2	3	2	-	2	2	-	-
CO3	3	3	3	-	-	-	1	3	-	-	-	-
CO4	3	2	1	3	2	1	-	3	-	3	2	2
CO5	-	3	-	3	-	2	3	1	3	3	-	-

BCAC14204	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	-	2	1	-	3	2	-	2	-
CO2	2		3	1	2	3	2	-	2	2	1	-
CO3	3	3	3	-	3	2	1	3	-	-	-	3
CO4	3	2	1	3	-	-	-	3	-	-	-	-
CO5		3		3	-	-	3	-	3	3	-	-

BCAC14205	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	-	2	1	-	3	2	-	2	1
CO2	2	-	3	1	2	3	2		2	2	-	-
CO3	3	3	3	-	3	2	1	3	-	-	-	-
CO4	3	2	1	3	-	-		3	-	3	-	-
CO5	-	3	-	3	-	-	3	-	3	3	-	-

VAC088005	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1	-	-	3	3	-	3	3	3
CO2	3	2	2	1	1	-	3	3	-	-	-	-
CO3	3	-	3	2	-	3	-	-	-	-	-	-
CO4	2	3	3	-	2		3	1	2	-	-	2
CO5	2	-	-	2	-	3	-	2	-	2	3	-

AECH55003	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2	3	3	2	-	3	3	3	2	-	-
CO2	2	2	-	2	2	-	-	3	-	-	-	-
CO3		3	3	2	-	3	-	-	-	-	-	-
CO4	3	2	-	2	2	-	3	3	2	2	2	2
CO5	2	3	2	3	2	3	2	3	2	-	2	3

8.Curriculum

Course Name: Python

Course Code: BCAC14200

Course Objectives

- Design, implement, and test Python applications, utilizing best practices in coding, debugging, and version control.
- Apply Python Programming to real-world scenarios and projects, enhancing the practical understanding of the language's capabilities.
- Python, fostering teamwork and communication skills while working on complex programming tasks.

Course Outline

Unit I

Planning the computer program: concept of problem solving, problem definition, program design, debugging, types of errors in programming, documentation. Techniques of problem solving: flowcharting, decision table, algorithms, structured programming concepts, programming methodologies viz. Top-down and bottom-up programming. Overview of programming: structure of a python program, elements of python.

Unit II

Introduction to python: python interpreter, using python as calculator, python shell, indentation. Atoms, identifiers and keywords, literals, strings, operators (arithmetic operator, relational operator, logical or Boolean operator, assignment, operator, ternary operator, bit wise operator, increment or decrement operator) Creating python programs: input and output statements, control statements(branching, looping, conditional statement, exit function, difference between break, continue and pass.), defining functions, default arguments, errors and exceptions. Iteration and recursion: conditional execution, alternative execution, nested conditionals, the return statement.

Unit III

Recursion, stack diagrams for recursive functions, multiple assignment, the while statement, tables, two-dimensional tables Strings and lists: string as a compound data type, length, traversal and the for loop, string slices, string comparison, a find function.

Unit IV

Looping and counting, list values, accessing elements, list length, list membership, lists and for loops, list operations, list deletion. Cloning lists, nested lists Object oriented programming: introduction to classes, objects and methods, standard libraries.

Unit V

Data structures: arrays, list, set, stacks and queues. Searching and sorting: linear and binary search, bubble, selection and insertion sorting.

Suggested Readings:

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011
2. How to think like a computer scientist: learning with Python / Allen Downey, Jeffrey Elkner, Chris Meyers. 1st Edition – Freely available online.
3. http://docs.python.org/3/tutorial/index.html
4. http://interactivepython.org/courselib/static/pythonds

Course Name: Python Lab

Course Code: BCAC14201

Course Objectives

- Understand and apply the basic concepts of Python programming, including syntax, data types, control structures, functions, and modules.
- Develop problem-solving skills by writing efficient and readable Python code to solve various computational problems.

Course Outline

1. Using for loop, print a table of Celsius/Fahrenheit equivalences. Let c be the Celsius temperatures ranging from 0 to 100, for each value of c, print the corresponding Fahrenheit temperature.
2. Using while loop, produce a table of sins, cosines and tangents. Make a variable x in range from 0 to 10 in steps of 0.2. For each value of x, print the value of sin(x), cos(x) and tan(x).
3. Write a program that reads an integer value and prints “leap year” or “not a leap year”.
4. Write a program that takes a positive integer n and then produces n lines of output shown as follows. For example enter a size: 5 * ** *** **** *****
5. Write a function that takes an integer ‘n’ as input and calculates the value of 1 + 1/1! + 1/2! + 1/3! + ... + 1/n
6. Write a function that takes an integer input and calculates the factorial of that number.
7. Write a function that takes a string input and checks if it’s a palindrome or not. • Write a list function to convert a string into a list, as in list (‘abc’) gives [a, b, c].
8. Write a program to generate Fibonacci series.
9. Write a program to check whether the input number is even or odd.
10. Write a program to compare three numbers and print the largest one.
11. Write a program to print factors of a given number.

12. Write a method to calculate GCD of two numbers.
13. Write a program to create Stack Class and implement all its methods. (Use Lists)
14. Write a program to create Queue Class and implement all its methods. (Use Lists)
15. Write a program to implement linear and binary search on lists.
16. Write a program to sort a list using insertion sort and bubble sort and selection

Course Name: Database Management System

Course Code: BCAC14202

Course Objectives

- To understand the different issues involved in the design and implementation of a database system.
- To study the physical and logical database designs, database modeling, relational, hierarchical, and network models.
- To understand and use data manipulation language to query, update, and manage a database.
- To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency.
- To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

Course Outline

Unit I: Introduction
An overview of database management system, database system Vs file system, Characteristics of database approach, DBMS architecture, data models, schema and instances, data independence.
Data Modeling using Entity Relationship Model: Entity, Entity types, entity set, notation for ER diagram, attributes and keys, Concepts of composite, derived and multivalued attributes, Super Key, candidate key, primary key, relationships, relation types, weak entities, enhanced E-R and object modelling, Sub Classes: Super classes, inheritance, specialization and generalization.
Unit II: Introduction to SQL
Overview, Characteristics of SQL. Advantage of SQL, SQL data types and literals. Types of SQL commands: DDL, DML, DCL. Basic SQL Queries. Logical operators: BETWEEN, IN, AND, OR and NOT Null Values: Disallowing Null Values, Comparisons Using Null Values Integrity constraints: Primary Key, Not NULL, Unique, Check, Referential key Introduction to Nested Queries, Correlated Nested Queries, Set-Comparison Operators, Aggregate Operators: The GROUP BY and HAVING Clauses, Joins: Inner joins, Outer Joins, Left outer, Right outer, full outer joins. Overview of views and indexes.
Unit III
Relational Data Model: Relational model terminology domains, Attributes, Tuples, Relations, characteristics of relations, relational constraints domain constraints, key constraints and

constraints on null, relational DB schema. Codd's Rules Relational algebra: Basic operations selection and projection, Set Theoretic operations Union, Intersection, set difference and division, Join operations: Inner, Outer, Left outer, Right outer and full outer join.ER to relational Mapping: Data base design using ER to relational language. Data Normalization: Functional dependencies, Armstong's inference rule, Normal form up to3rd normal form.

Unit IV

Transaction processing and Concurrency Control: Definition of Transaction, Desirable ACID properties, overview of serializability, serializable and non-serializable transactions Concurrency Control: Definition of concurrency, lost update, dirty read and incorrect summary problems due to Concurrency Control Techniques: Overview of Locking,2PL,Timstamp ordering, multi versioning, validation Elementary concepts of Database security: system failure, Backup and Recovery Techniques, authorization and authentication.

Suggested Readings:

1. R. Elmarsi and SB Navathe, "Fundamentals of Database Systems", Pearson,5th Ed.
2. Singh S.K., "Database System Concepts, design and application", Pearson Education
3. Ramakrishnan and Gherke, "Database Management Systems", TMH.
4. Abraham Silberschatz, Henry Korth, S. Sudarshan, "Database Systems Concepts", 4th Edition, McGraw Hill, 1997.
5. Jim Melton, Alan Simon, "Understanding the new SQL: A complete Guide", Morgan Kaufmann Publishers, 1993.
6. K. Majumdar, P. Battacharya, "Data Base Management Systems', TMH, 1996.
7. Bipin Desai, "An Introduction to database Systems", Galgotia Publications, 1991.

Course Name: Database Management System Lab

Course Code: BCAC14203

Course Objectives

The aim of this course to make student understand about the practical uses of database.

Course Outline

1. **Creating Database**
    a. Creating a Database
    b. Creating a Table
    c. Specifying Relational Data Types
    d. Specifying Constraints
    e. Creating Indexes

2. **Table and Record Handling**
    a. INSERT statement
    b. Using SELECT and INSERT together
    c. DELETE, UPDATE, TRUNCATE statements
    d. DROP, ALTER statements

3. **Retrieving Data from a Database**
    a. The SELECT statement
    b. Using the WHERE clause
    c. Using Logical Operators in the WHERE clause
    d. Using IN, BETWEEN, LIKE , ORDER BY, GROUP BY and HAVING

4. **Clause**
    a. Using Aggregate Functions
    b. Combining Tables Using JOINS
    c. sub- queries
5. **Database Management**
    a. Creating Views
    b. Creating Column Aliases
    c. Creating Database Users
    d. Using GRANT and REVOKE

Course Name: Object Oriented Programming in C/C++

Course Code: BCAC14204

Course Objectives

- To provide an overview of the various business process, analyse operations, production planning.

Course Outline

Unit I

Review: Review of basic concepts of object-oriented programming, Comparison between procedural programming paradigm and object-oriented programming paradigm. Classes and Objects: Specifying a class, Creating class objects, Accessing class members, Access specifiers – public, private, and protected, Classes, Objects and memory, Static members, The const keyword and classes, Static objects, Friends of a class, Empty classes, Nested classes, Local classes, Abstract classes, Container classes, Bit fields and classes.

Unit II

Console Based I/O: Concept of streams, Hierarchy of console stream classes, Input/output using Overloaded operators >> and << and Member functions of I/O stream classes, Formatting Output, Formatting using ios class functions and flags, Formatting using

manipulators. Constructors and Destructors: Need for constructors and destructors, Copy constructor, Dynamic constructors, Destructors.

Unit III

"for", "while" and "do – while" loops, break and continue statement, nested control statement, value returning functions, void functions, value versus reference Parameters, local and global variables, static and automatic variables, enumeration type, one dimensional array, two dimensional array, character array, pointer data and pointer variables.

Unit IV

Object Oriented Concepts: Abstraction, encapsulation, inheritance and its types, static and dynamic binding, overloading. Program Development: Object oriented analysis, design, unit testing & debugging, system testing & integration, maintenance.

Virtual Functions and Polymorphism: Concept of Binding - Early binding and late binding, Virtual functions, Pure virtual functions, Abstract classes, Virtual destructors & polymorphism.

Suggested Readings:

1. Lippman, S.B. and Lajoie, J., C++Primer, Pearson Education (2005) 4th ed.
2. Stroustrup, Bjarne, The C++ Programming Language, Pearson Education (2000)3rd ed.
3. Eills, Margaret A. and Stroustrup , Bjarne, The Annonated C++ Reference Manual, Pearson Education (2002).
4. Rumbaugh, J.R., Premerlani, W. and Blaha, M., Object Oriented Modeling and Design with UML, Pearson Education (2005) 2nd ed.
5. Kanetkar, Yashvant, Let us C++, Jones and Bartlett Publications (2008) 8th ed

Course Name: Object Oriented Programming in C/C++ Lab

Course Code: BCAC14205

Course Objectives

To provide an overview of the various business process, analyze operations, production planning.

Course Outline

List of Programs

1. WAP to print the sum and product of digits of an integer.
2. WAP to reverse a number.
3. WAP to compute the sum of the first n terms of the following series S =
4. 1+1/2+1/3+1/4

5. Write a function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.
6. WAP to compute the factors of a given number.
7. Write a program that swaps two numbers.
8. WAP to print a triangle of stars as follows (take number of lines from user):

```
    *
   ***
  *****
 *******
********
```

9. WAP to perform following actions on an array entered by the user: i) Print the even-valued elements ii) Print the odd-valued elements.
10. Calculate and print the sum and average of the elements of array
11. Print the maximum and minimum element of array
12. Write a program that swaps two numbers using pointers.
13. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main() function.
14. WAP to display Fibonacci series using recursion.
15. WAP to display Fibonacci series using iteration.
16. WAP to calculate Factorial of a number using iteration
17. WAP to calculate Factorial of a number using recursion
18. Create Matrix class using templates. Write a menu-driven program to perform following Matrix operations (2-D array implementation): a) Sum b) Difference
19. Create a class Box containing length, breath and height. Include following methods in it:
    a) Calculate surface Area
    b) Calculate Volume
20. Create a class Triangle. Include overloaded functions for calculating area. Overload assignment operator and equality operator.
21. Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.

Course Name: Computer Architecture (DSE – 1)

Course Code: BCAE14001

Course Objectives

- The fundamental concepts underlying modern computer architecture. Main objective of the course is to familiarize students about hardware design including logic design, basic structure and behavior of the various functional modules of the computer and how they interact to provide the processing needs of the user. It will cover machine level representation of data, instruction sets, computer arithmetic, CPU structure and functions, memory system organization and architecture, system input/output,

multiprocessors, and digital logic. The emphasis is on studying and analysing fundamental issues in architecture design and their impact on performance.

Course Outline:

Unit I: Basics of Digital Electronics

Codes, Logic gates, Flip flops, Registers, Counters, Multiplexer, De multiplexer, Decoder, Encoder. Register Transfer and Micro operations: Register transfer Language, Register transfer, Bus & memory transfer, Logic micro operations, Shift micro operation. Basic Computer Organization: Instruction codes, Computer instructions, Timing & control, Instruction Cycles, Memory reference instruction, Input/output & Interrupts, Complete computer description & design of basic computer.

Unit II: Control Unit

Hardwired vs. Micro programmed control unit. Central Processing General register organization, Stack organization, Instruction format, Data transfer & manipulation, Program control, RISC, CISC.

Computer Arithmetic: Addition & subtraction, Multiplication Algorithms, Division algorithms.

Unit III: Input-Output Organization

Peripheral devices, I/O interface, Data transfer schemes, Program control, Interrupt, DMA transfer, I/O processor.

Memory Unit: Memory hierarchy, Processor vs. memory speed, High-speed memories, Cache memory, Associative memory, Interleave, Virtual memory, Memory management.

Unit IV: Introduction to Parallel Processing

Pipelining, Characteristics of multiprocessors, Interconnection structures, Inter processor arbitration, Inter processor communication & synchronization.

Suggested Readings:

1. Mano, Morris M., Computer System Architecture, Prentice Hall (1992) 3rd ed.
2. Hayes, J.P., Computer Architecture and Organization, McGraw Hill (1998) 3rd ed.
3. Hennessy, J.L., Patterson, D.A, and Goldberg, D., Computer Architecture A Quantitative Approach, Pearson Education Asia (2006) 4th ed.
4. Leigh, W.E. and Ali, D.L., System Architecture: software and hardware concepts, South Wester Publishing Co. (2000).

Course Name: Principles of Accounting – I (VAC)

Course Code: VAC088005

Objectives

- To provide an overview of the various Principle of Accounting and main objective of study of accounting process and cycle, analyse operations and profit planning.
- To get the Knowledge about the important concepts and characteristics of accounting.
- To study the application of accounting in the general business environment.

Course Outline

Unit I

Meaning and nature of accounting, Scope, Objectives & Limitations financial accounting, Distinction between Accounting & Book Keeping, Interrelationship of Accounting with other disciplines, Branches of Accounting, Accounting concepts and convention, accounting standards in India.

Unit II

Accounting Equation, Journal, Rules of Debit and Credit, Sub Division of Journal: Cash Journal, Petty Cash Book, Purchase Journal, Purchase Return, Sales Journal, Sales Return Journal, Ledger, Trial Balance, Errors - Types - Rectification of Errors, Preparation of Trading Account, Profit & Loss Account & Balance Sheet- Without adjustments and with adjustments.

Suggested Readings:

1. Maheshwari, S.N. and Maheshwari, S. K., (2009) An Introduction to Accountancy ,Eighth Edition, Vikas Publishing House.
2. Tulsian, P.C., (2009) Financial Accountancy, 2nd edition, Pearson Education.
3. Gupta R. L., & Gupta V.K., "Principles & Practice of Accounting", Sultan Chand &Sons, 1999.
4. Monga J R, "Introduction to Financial Accounting", Mayur Paperbacks, 2010.
5. Raja Sekaran/Lalitha, "Financial Accounting", Pearsons .

Course Name: Hindi-II

Course Code: AECH55003

Course Objectives

पाठ्यक्रम के परिणाम

इस कोर्स के पूरा होने के बाद छात्र सक्षम हो सकेंगे

- हिंदीभाषा के मूल इतिहास और उसकी लिपि देवनागरी को समझाने में
- हिंदी शब्द की उत्पत्तिए अर्थ और प्रयोग समझाने में
- हिंदी लिपि के विकास को समझाने में सक्षम
- हिंदी भाषा की सभी प्रकार की बोलियों को सूचीबद्ध करने में
- देवनागरी की विशेषताएँ एवं विशिष्टता समझाने में

Course Outline

ईकाई–1 : हिंदीभाषा के विकास की पूर्वपीठिका

•भारोपीय भाषा–परिवार एव ंअर्थभाषाएँ (संस्कृत, पालि, प्राकृत, अपभ्रंश आदि)

•हिंदी का आरंभिक रू

•'हिंदी' शब्द का अर्थ एवंप्रयोग

•हिंदी का विकास(आदिकाल, मध्यकाल, आधुनिककाल)

इकाई–2 : हिंदीभाषा का क्षेत्रा एवंविस्तार

•हिंदीभाषा : क्षेत्र एवंबोलियाँ

•हिंदी के विविध रूप(बोलचाल की भाषा, राष्ट्रभाषा, राजभाषा, संपर्क–भाषा, संचार भाषा)

•हिंदी का अखिलभारतीय स्वरूप

•हिंदी का अंतर्राष्ट्रीय संदर्भ

इकाई–3 : लिपि का इतिहास

•भाषाऔर लिपि का अंतःसंबंध

•परिभाषा, स्वरूप एवंआवश्यकता

•लिपि के आरंभिक रूप(चित्रालिपि, भावलिपि, ध्वनि–लिपि)

•भारतमें लिपि का विकास

इकाई–4 : देवनागरी लिपि

•देवनागरी लिपि का परिचय एवंविकास

•देवनागरी लिपि का मानकीकरण

•आदर्श लिपि के गुणऔरदेवनागरी लिपि की विशेषताएँ

•देवनागरी लिपि औरकम्प्यूटर

सहायकग्रंथ

- हिंदीभाषा का इतिहास.धीरेंद्रवर्मा
- भारतीय पुरालिपि.डॉ. रामबलिपाण्डेय (लोकभारती प्रकाशन)
- हिंदीभाषा का उद्‌गमऔरविकास.उदयनारायण तिवारी
- हिंदीभाषा की पहचान से प्रतिष्ठातक.डॉ. हनुमानप्रसाद शुक्ल
- लिपि की कहानी.गुणाकरमुले
- भाषाऔरसमाज.रामविलास शर्मा

9.Lesson Plans

BCAC14200- Python

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Planning the computer program: concept of problem solving, problem definition	C-1	Lecture
Unit-I	program design, debugging,	C-2	Lecture
Unit-I	types of errors in programming documentation.	C-3	Lecture
Unit-I	Presentation	C-4	Presentation
Unit-I	Techniques of problem solving: flowcharting decision table, algorithms	C-5	Lecture
Unit-I	structured programming concepts,	C-6	Lecture
Unit-I	programming methodologies viz. Top-down	C-7	Lecture
Unit-I	Clarification Class	C-8	Clarification Class
Unit-II	Overview of programming: structure of a python program, elements of python	C-9	Lecture
Unit-II	Introduction to python: python interpreter using python as calculator	C-10	Lecture
Unit-II	Atoms, identifiers and keywords, literals, strings python shell, indentation	C-11	Lecture
Unit-II	assignment, operator, ternary operator, bit wise operator, increment or decrement operator	C-11	Tutorial
Unit-II	Creating python programs: input and output statements control statements (branching, looping, conditional	C-12	Lecture
Unit-II	statement, exit function, difference between break, continue and pass.), defining functions, default arguments, errors and exceptions	C-13	Tutorial
Unit-II	Iteration and recursion: conditional execution, alternative execution, nested conditionals, the return statement.	C-14	Lecture
Unit-II	Presentation	C-15	Presentation
Unit-II	Class Room Assignment	C-16	Class Room Assignment
Unit-II	Clarification Class	C-17	Clarification Class
Unit-III	Recursion	C-18	Lecture

Unit-III	stack diagrams for recursive functions	C-19	Presentation
Unit-III	multiple assignment	C-20	Lecture
Unit-III	the while statement, tables	C-21	Lecture
Unit-III	two-dimensional tables	C-22	Tutorial
Unit-III	Strings and lists: string as a compound data type, length	C-23	Lecture
Unit-III	traversal and the for loop, string slices	C-24	Lecture
Unit-III	string comparison, a find function.	C-25	Lecture
Unit-III	Presentation	C-26	Presentation
	Clarification Class	C-27	Clarification Class
Unit -IV	Looping and counting	C-28	Lecture
Unit -IV	list values, accessing elements,	C-29	Lecture
Unit -IV	list length, list membership, l	C-30	Lecture
Unit -IV	lists and for loops,	C-31	Lecture
Unit -IV	List operations, list deletion, Cloning lists, nested lists	C-32	Lecture
Unit -IV	Classroom Assignment	C-33	Classroom Assignment
Unit -IV	Object oriented programming: introduction to classes,	C-34	Lecture
Unit -IV	objects and methods, standard libraries.	C-35	Tutorial
	Clarification Class	C-36	Clarification Class
Unit-V	Data structures: arrays	C-37	Lecture
Unit-V	Presentation	C-38	Presentation
Unit-V	list, set	C-39	Lecture
Unit-V	stacks and queues	C-40	Lecture
Unit-V	Searching and sorting: linear and binary search	C-41	Tutorial
Unit-V	bubble, selection and insertion sorting.	C-42	Lecture
Unit-V	Quiz	C-43	Quiz
Unit-V	Group discussions	C-44	Group discussions
	Clarification Class	C-45	Clarification Class

BCAC14201- Python Lab

S.No.	Particulars	Class No.	Pedagogy of Class
1	Using for loop, print a table of Celsius/Fahrenheit equivalences. Let c be the Celsius temperatures ranging from 0 to 100, for each value of c, print the corresponding Fahrenheit temperature.	P-1,2	Practical
2.	Using while loop, produce a table of sins, cosines and tangents. Make a variable x in range from 0 to 10 in steps of 0.2. For each value of x, print the value of sin(x), cos(x) and tan(x).	P-3,4	Practical
3	Write a program that reads an integer value and prints "leap year" or "not a leap year".	P-5,6	Practical
4	Write a program that takes a positive integer n and then produces n lines of output shown as follows. For example enter a size: 5 * ** *** **** *****	P-7,8	Practical
5	Write a function that takes an integer 'n' as input and calculates the value of 1 + 1/1! + 1/2! + 1/3! + ... + 1/n	P-9,10	Practical
6	Write a function that takes an integer input and calculates the factorial of that number.	P-11,12	Practical
7	Write a function that takes a string input and checks if it's a palindrome or not. • Write a list function to convert a string into a list, as in list ('abc') gives [a, b, c].	P-13,14	Practical
8	Write a program to generate Fibonacci series. Write a program to check whether the input number is even or odd	P-15,16	Practical
9	Write a program to compare three numbers and print the largest one	P-17,18	Practical
10	Write a program to print factors of a given number	P-19,20	Practical
11	Write a method to calculate GCD of two numbers.	P-21,22	Assignment
12	Write a program to create Stack Class and implement all its methods. (Use Lists)	P-23,24	Practical
13	Write a program to create Queue Class and implement all its methods. (Use Lists)	P-25,26	Practical

14	Write a program to implement linear and binary search on lists	P-27,28	Practical
15	Write a program to sort a list using insertion sort and bubble sort and selection	P-29,30	Practical

BCAC14202– Database Management System

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction of Database, Purpose of database, application of database, Data view and data schema	C-1	Lecture
Unit-I	Data Model in Database, Hierarchical model, network model, E-R model and Object Oriented Model	C-2	Lecture
Unit-I	Relational Data Model, How it works, application of relational data model	C-3	Lecture
Unit-I	Presentation	C-4	Presentation
Unit-I	Data base key and importance of key, Super Key, Primary Key	C-5	Lecture
Unit-I	Candidate Key, Composite Key, Compound Key, Alternate key	C-6	Lecture
Unit-I	Example of each type key, database instance, database design schema	C-7	Tutorial
Unit-I	Presentation	C-8	Presentation
Unit-I	Introduction of SQL, Application of SQL, Advantages and disadvantage of SQL, Create database	C-9	Lecture
Unit-I	Implementation of Primary Key, Creation of Table, Dropping of table, modifying of table, alternation of table	C-10	Lecture
Unit-I	Introduction of Insert Query, Select Query, Select Query with Example and condition	C-11	Lecture
Unit-I	Example of each type of SQL Query	C-12	Tutorial
Unit-I	Conductive Operator with Example	C-13	Lecture
Unit-I	Update query, Delete Query,	C-14	Tutorial
Unit-I	Like Clause, Order By, Having, Group by, In between	C-15	Lecture
Unit-I	Presentation	C-16	Presentation
	Clarification Class	C-17	Clarification Class
Unit-II	Logical Operators, Between, IN, AND or NOT Null	C-18	Lecture
Unit-II	Presentation	C-19	Presentation
Unit-II	Using Null Values, Constraints, Integrity Constraints	C-20	Lecture
Unit-II	Introduction of Nested Queries, Correlated Nested Comparison operators,	C-21	Lecture
Unit-II	All Problems related to SQL Queries	C-22	Tutorial
Unit-II	Group By, Having Clause, Join, Inner join, left	C-23	Lecture

	join, right join, fuller join, Overview of Index		
Unit-II	Relational Data Model, Relational model terminology, domains, attributes, characteristics of relation	C-24	Lecture
	Clarification Classes	C-25	Clarification Class
	Presentation	C-26	Presentation
Unit-III	Introduction of Nested Queries, Correlated Nested Comparison operators,	C-27	Lecture
Unit-III	Overview of Indexes and Views	C-28	Lecture
Unit-III	Relational Data Model, Relational model terminology, domains, attributes, characteristics of relation, database schema	C-29	Lecture
Unit-III	Basic Operation selection and projection, Set Theoretic operation,	C-30	Lecture
Unit-III	Database designing using ER Model, Data Normalization	C-31	Clarification Class
Unit-III	Transaction Processing and concurrency, definition of transaction, Desirable ACID properties, Types of transaction	C-32	Lecture
Unit-III	Definition of concurrency, lost, update, dirty read, problem due to concurrency control	C-33	Lecture
	Clarification Classes	C-34	Clarification Class
Unit-IV	Discussion of all problems related to course	C-35	Tutorial
Unit-IV	Overview of Locking, Validation	C-36	Lecture
Unit-IV	Concepts of Database Security	C-37	Lecture
Unit-IV	Presentation	C-38	Presentation
Unit-IV	System Failure, Backup and Recovery Techniques	C-39	Lecture
Unit-IV	Authorization and Authentication	C-40	Lecture
Unit-IV	Problem Solving Classes	C-41	Tutorial
Unit-IV	Revision of Unit Wise Problem	C-42	Clarification Class
Unit-IV	Multiple choices question quiz for job oriented	C-43	Quiz
Unit-IV	Discuss about various topic decided my faculty	C-44	Group discussions
Unit-IV	Clarification Class	C-45	Clarification Class

BCAC14203– Database Management System Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Installation of database, Introduction of SQL server Management studio	P-1,2	Practical
2	Create Database, Drop Database, Create Table, Insertion of data	P-3,4	Practical
3	Updation of data, deletion of data, Review of all query	P-5,6	Practical
4	Order By, Group By, Having Clause, Like	P-7,8	Practical
5	Min, Max, AVG, Count,	P-9,10	Practical
6	SUM, IN, BETWEEN	P-11,12	
7	Combining Table Using Joins, Aggregate Functions	P-13,14	Practical
8	Working with Sub Queries	P-15,16	Practical
9	Workshop based on previous operation	P-17,18	Workshop
10	Creating Views, Creating Column Aliases	P-19,20	Practical
11	Creating Database users	P-21,22	Practical
12	Using Grant and Revoke	P-23,24	Practical
13	Extra Practical	P-25,26,27,28	Practical
14	Revision of all practical	P-29,30	Practical

BCAE14001– Computer Architecture

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Basic of Digital Electronics, Why we need digital Electronics, Application of Digital Electronics, Number System	C-1	Lecture
Unit-I	Introduction of Logic Gates	C-2	Lecture
Unit-I	Introduction of Combinational circuits, Adder, Half adder, full adder	C-3	Lecture
Unit-I	Multiplexer and De-Multiplexer	C-4	Lecture
Unit-I	Presentation	C-5	Presentation
Unit-I	introduction of CA	C-6	Presentation
Unit-I	Register transfer Language, Register transfer,	C-7	Lecture
Unit-I	Class Room Assignment	C-8	Class Room Assignment
Unit-I	Bus & memory transfer	C-9	Lecture
Unit-I	Logic micro operations, Shift micro operation.	C-10	Lecture
Unit-I	Instruction codes, Computer instructions, Timing & control,	C-11	Lecture
Unit-I	Instruction Cycles, Memory reference instruction, Input/Output & Interrupts,	C-12	Lecture
Unit-I	Complete computer description & design of basic computer.	C-13	Lecture
	Classroom Assignment	C-14	Classroom Assignment
	Clarification Class	C-15	Clarification Class
Unit-II	question paper solutions and discussion	C-16	Lecture
Unit-II	Workshop	C-17	Workshop
Unit-II	Functional units, Basic operational concepts and Bus structures	C-18	Lecture
Unit-II	instruction and instruction Sequencing	C-19	Lecture
Unit-II	Addressing modes	C-20	Lecture
Unit-II	viva, application	C-21	Activity
Unit-II	Basic instruction cycle, Single Bus Organisation of processor	C-22	Lecture
Unit-II	multi Bus Organisation of processor	C-23	Lecture
Unit-II	execution of the instruction and Hardwird Control	C-24	Lecture
Unit-II	Micro programmed control	C-25	Lecture
	Clarification	C-26	Clarification
Unit-III	general register and stack organization	C-27	Lecture
Unit-III	computer arithmetic	C-28	Lecture

Unit-III	computer arithmetic	C-29	Lecture
Unit-III	computer arithmetic	C-30	Tutorial
Unit-III	Input-Output Organization	C-31	Lecture
Unit-III	Input-Output Organization	C-32	Lecture
Unit-III	Memory hierarchy	C-33	Lecture
Unit-III	cache memory - mapping, I/O organization	C-34	Lecture
Unit-III	numerical of cache mapping	C-35	Tutorial
Unit-III	Interrupt, DMA	C-36	Lecture
	Clarification	C-37	Clarification
Unit-IV	Data transfer schemes, Program control,	C-38	Lecture
Unit-IV	Pipelining, Characteristics	C-39	Lecture
Unit-IV	Interconnection structures, Inter processor arbitration,	C-40	Lecture
Unit-IV	Inter processor communication & synchronization.	C-41	Lecture
	Clarification	C-42	Clarification
	Classroom Assignment	C-43	Classroom Assignment
	Presentation	C-44	Presentation
	Wokshop	C-45	Workshop

BCAC14204– Object Oriented Programming with C/C++

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Programming Concepts: Algorithm and its characteristics	C-1	Lecture
Unit-I	pseudo code / flow chart, program	C-2	Lecture
Unit-I	identifiers, variables, constants	C-3	Lecture
Unit-I	primitive data types, expressions	C-4	Lecture
Unit-I	structured data types	C-5	Lecture
Unit-I	Arrays	C-6	Lecture
Unit-I	compilers and interpreters	C-7	Lecture
Unit-I	Home Assignment		Home Assignment
Unit-I	Clarification Class	C-8	Clarification Class
Unit-II	Statements: Assignment statement, if then else statements	C-9	Lecture
Unit-II	switch statement	C-10	Lecture
Unit-II	looping statements- while, do while, for	C-11	Lecture
Unit-II	break, continue, input/output statements	C-12	Lecture
Unit-II	functions/ procedures	C-13	Lecture
Unit-II	Classroom Assignment	C-14	Assignment
Unit-II	Clarification Class	C-15	Clarification Class
Unit-III	Object Oriented Concepts: Abstraction, encapsulation	C-16	Lecture
Unit-III	objects, classes	C-17	Lecture
Unit-III	methods, constructors,	C-18	Lecture
Unit-III	Inheritance	C-19	Lecture
Unit-III	Polymorphism	C-20	Lecture
Unit-III	static and dynamic binding	C-21	Lecture
Unit-III	Overloading	C-22	Lecture
Unit-III	Program Development: Object oriented analysis design	C-23	Lecture
Unit-III	unit testing & debugging	C-24	Lecture
Unit-III	system testing & integration, maintenance	C-25	Lecture
Unit-III	Classroom Assignment	C-26	Assignment
Unit-III	Clarification Class	C-27	Clarification Class
Unit-III	Home Assignment		Home Assignment
Unit-IV	data types- simple data types, floating data types, character data types, string data types,	C-28	Lecture
Unit-IV	Arithmetic operators and operator precedence, variables and constant declarations	C-29	Lecture
Unit-IV	expressions, input using the extraction operator >> and cin, output using the insertion operator << and cout	C-30	Lecture
Unit-IV	preprocessor directives, increment (++) and	C-31	Lecture

	decrement operations (--)		
Unit-IV	creating a C++ program	C-32	Lecture
Unit-IV	input/output, relational operators, logical operators and logical expressions	C-33	Lecture
Unit-IV	if and if … else statement	C-34	Lecture
Unit-IV	switch and break statements	C-35	Lecture
Unit-IV	Assignment No. 5 (Home)	C-36	Lecture
Unit-IV	Presentation	C-37	Presentation
Unit-IV	"for", "while" and "do – while" loops, Break and continue statement	C-38	Assignment
Unit-IV	Clarification Class	C-39	Clarification Class
Unit-V	Nested control statement, value returning functions	C-40	Lecture
Unit-V	Void functions, value versus reference Parameters	C-41	Lecture
Unit-V	Local and global variables, Static and automatic variables	C-42	Lecture
Unit-V	Enumeration type, One dimensional array	C-43	Lecture
Unit-V	Character array, Pointer data, Pointer variables	C-44	Lecture
Unit-V	Clarification Class	C-45	Clarification Class

BCAC14205– Object Oriented Programming with C/C++ Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	sum and product of digits of an integer, reverse a number	P-1,2	Practical
2	sum of the first n terms, Prime No.	P-3,4	Practical
3	Factors, Swapping	P-5,6	Practical
4	Triangle of stars, Array: Print even-valued elements, odd-valued elements	P-7,8	Practical
5	sum and average of the elements of array, maximum and minimum element of array	P-9,10	Practical
6	array in reverse order, Swapping using pointers	P-11,12	Practical
7	Swapping using pointers, Finding out the area and circumference of circle, radius given as input and use function for calculating area.	P-13,14	Practical
8	Finding out the area and circumference of circle, radius given as input and use function for calculating area, Show address of each character in string	P-15,16	Practical
9	Calculate number of vowels, WAP to display Fibonacci series using recursion	P-17,18	Practical
10	WAP to display Fibonacci series using iteration, WAP to calculate Factorial of a number using iteration, WAP to calculate Factorial of a number using recursion, Create Matrix class using templates	P-19,20	Practical
11	Assignment	P-21,22	Assignment
12	Create Matrix class using templates	P-23,24	Practical
13	Create a class Box containing length, breath and height and calculate surface area and volume.	P-25,26	Practical
14	Assignment	P-27,28	Assignment
15	Minor Project	P-29,30	Minor Project

VAC088005– Principles of Accounting – I

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Meaning and nature of accounting	C-1	Lecture
Unit-I	Scope	C-2	Lecture
Unit-I	Objectives & Limitations financial accounting	C-3	Lecture
Unit-I	Distinction between Accounting & Book Keeping	C-4	Lecture
Unit-I	Interrelationship of Accounting with other disciplines	C-5	Lecture
Unit-I	Branches of Accounting,	C-6	Lecture
Unit-I	Preparation of Final Accounts	C-7	Lecturer
Unit-I	Preparation of Final Accounts	C-8	Lecture
Unit-I	Profit & Loss Account, Balance Sheet	C-9	Lecture
Unit-I	Accounting concepts and convention,	C-10	Lecture
Unit-I	Meaning of Inventory,	C-11	Lecture
Unit-I	Objectives of Inventory Valuation	C-12	Lecture
Unit-I	Accounting standards in India.	C-13	Lecture
	Class Room Assignment	C-14	Class Room Assignment
	Clarification Class	C-15	Clarification Class
Unit-II	Accounting Equation, Sales Journal	C-16	Lecture
Unit-II	Journal	C-17	Lecture
Unit-II	Rules of Debit and Credit	C-18	Lecture
Unit-II	Sub Division of Journal: Cash Journal	C-19	Lecture
Unit-II	Petty Cash Book,	C-20	Lecture
Unit-II	Purchase Journal, Purchase Return	C-20	Lecture
Unit-II	Sales Return Journal, Ledger	C-22	Lecture
Unit-II	Trial Balance, Errors - Types - Rectification of Errors	C-23	Lecture
Unit-II	Preparation of Trading Account	C-24	Lecture
Unit-II	Preparation of Trading Account	C-25	Lecture
Unit-II	Profit & Loss Account &	C-26	Lecture
Unit-II	Profit & Loss Account &	C-27	Lecture
Unit-II	Balance Sheet- Without adjustments and with adjustments	C-28	Lecture
Unit-II	Balance Sheet- Without adjustments and with adjustments	C-29	Lecture
Unit-II	Clarification Class	C-30	Clarification Class
	Home Assignment		Home Assignment

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Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	थ्हंदी भाषा के विकास की पूर्वपीठिका	C-1	Lecture
Unit-I	भारोपीय भाषा–परिवार एवंअर्थभाषाएँ (संस्कृत, पालि, प्राकृत, अपभ्रंश आदि)	C-2	Lecture
Unit-I	हिंदी का आरंभिक रूप	C-3	Lecture
Unit-I	हिंदी' शब्द का अर्थ एवं प्रयोग	C-4	Activity
Unit-I	हिंदी का विकास (आदिकाल, मध्यकाल)	C-5	Class Assignment
Unit-I	Clarification Class	C-6	Clarification Class
Unit-II	ब्संतपपिबंजपवद ब्सें	C-7	Lecture
Unit-II	हिंदी भाषा का क्षेत्र एवं विस्तार	C-8	Lecture
Unit-II	हिंदी भाषा : क्षेत्र एवं बोलियाँ	C-9	Class Assignment
Unit-II	ब्सें त्ववउ ेपहदउमदज	C-10	Lecture
Unit-II	हिंदी के विविध रूप (बोलचाल की भाषा, राष्ट्रभाषा, राजभाषा, संपर्क–भाषा, संचार भाषा)	C-11	Group Discussion
Unit-II	हिंदी का अखिल भारतीय स्वरू	C-12	Clarification Class
Unit-III	ब्संतपपिबंजपवद ब्सें	C-13	Lecture
Unit-III	ब्सें त्ववउ ेपहदउमदज	C-14	Lecture
Unit-III	हिंदी का अंतर्राष्ट्रीय संदर्भ	C-15	Lecture
Unit-III	लिपि का इतिहास	C-16	Class Assignment
Unit-III	भाषा और लिपि का अंतः संबंध	C-17	Presentation
Unit-III	Clarification Class	C-18	Clarification Class
Unit-III	लिपि के आरंभिक रूप (चित्रालिपि, भावलिपि, ध्वनि–लिपि)	C-19	Lecture
Unit-III	ब्संतपपिबंजपवद ब्सें	C-20	Group Discussion
Unit-III	च्तमेमदजंजपवद	C-21	Lecture
Unit-III	भारत में लिपि का विकास	C-22	Lecture
Unit-IV	देवनागरी लिपि	C-23	Presentation
Unit-IV	देवनागरी लिपिकापरिचय एवंविकास		Home Assignment
Unit-IV	Clarification Class	C-24	Clarification Class
Unit-IV	च्तमेमदजंजपवद	C-25	Project
Unit-IV	आदर्श लिपि के गुण	C-26	Lecture
Unit-IV	देवनागरी लिपि की विशेषताएँ	C-27	Lecture
Unit-IV	देवनागरी लिपि और कम्प्यूटर	C-28	Lecture
Unit-IV	हिंदी भाषा और उसकी लिपि का इतिहास	C-29	Quiz
Unit-IV	Clarification Class	C-30	Clarification Class

Note: The review of Syllabus happens on periodic basis for the benefit of the students. In case there are changes in curriculum due to review, students would be intimated in writing.

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