VIVEKANAND COLLEGE, KOLHAPUR (An EMPOWERED AUTONOMOUS Institute)

STATEMENT OF SYLLABUS COVERED

Year- 2024-25

 $Term\text{-} II^{nd}$

Name of teacher- Miss. Shivani Subhash Kagale

Department-BCA

Name of teacher- Miss. Shivani Subhash Kagale			Department- BCA		
Class	Subject	Syllabus assigned	Syllabus Covered	Syllah us not to Cover ed	Remark
B.C.A I Sem-I (AICTE Approved)	PROBLEM SOLVING TECHNIQUES	Module I: Fundamentals of Object Oriented Programming: Basic Concepts of Object Oriented Programming (OOP), Benefits and Applications of OOP. Java Evolution: Java Features, Difference between Java, C and C++, Javaand Internet, Java Environment. Overview of Java Language: Introduction to Simple Java Program, Use ofComments and Math function, Application of two classes, Java Program Structure, Java Tokens and statements, Implementing Java programAnd JVM, Command Line Arguments.	Module I: Fundamentals of Object Oriented Programming: Basic Concepts of Object Oriented Programming (OOP), Benefits and Applications of OOP. Java Evolution: Java Features, Difference between Java, C and C++, Javaand Internet, Java Environment. Overview of Java Language: Introduction to Simple Java Program, Use ofComments and Math function, Application of two classes, Java Program Structure, Java Tokens and statements, Implementing Java programAnd JVM, Command Line Arguments.	×	er er
	26 East East East East East East East East	Module II: Constants, Variables and Data Types: Constants, Variables, Data Types, Declaration of Variables, Giving values to Variables, Symbolic Constants, Typecasting. Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, conditional operators, Bitwise operators, Arithmetic Expressions, Evaluation of Expressions, Type Conversions in Expressions, Operator Precedence & Associativity. Decision Making, Branching & Looping: Decision Making with Control Statements, Looping statements, Jump in loops, Labelled loops	Module II: Constants, Variables and Data Types: Constants, Variables, Data Types, Declaration of Variables, Giving values to Variables, Symbolic Constants, Typecasting. Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, conditional operators, Bitwise operators, Arithmetic Expressions, Evaluation of Expressions, Type Conversions in Expressions, Operator Precedence & Associativity. Decision Making, Branching & Looping: Decision Making with Control Statements, Looping statements, Jump in loops, Labelled loops		
	N X	Module III: Classes. Objects and Methods: Defining Class.	Module III: Classes. Objects and Methods: Defining Class.	•••••	

		KA KA KA PERIKEBA	Methods Declaration, Constructors, Methods Overloading, Overriding Methods, Inheritance Arrays, Strings and Vectors: 1D arrays, Creating an Array, 2D arrays, Strings, Vectors, Wrapper Classes, Enumerated Types Inheritance: Defining, extending classes, and Implementing Interfaces. Multiple inheritance and polymorphism, overriding methods, concept of Multithreading in Java	Methods Declaration, Constructors, Methods Overloading, Overriding Methods, Inheritance Arrays, Strings and Vectors: 1D arrays, Creating an Array, 2D arrays, Strings, Vectors, Wrapper Classes, Enumerated Types Inheritance: Defining, extending classes, and Implementing Interfaces. Multiple inheritance and polymorphism, overriding methods, concept of Multithreading in Java	sa sa sa ŝ	4 jij 19 84 84	305 MA
		,	Module IV: Packages: Basics of packages, System packages, Creating and accessing packages, Creating user defined packages, Adding class to a package. Exception Handling: Using the main keywords of exception handling: try, catch,throw, throws and finally; Nested try, Multiple catch statements, Creating user defined exceptions	Module IV: Packages: Basics of packages, System packages, Creating and accessing packages, Creating user defined packages, Adding class to a package. Exception Handling: Using the main keywords of exception handling: try, catch,throw, throws and finally; Nested try, Multiple catch statements, Creating user defined exceptions			
,	B.C.A II Sem-IV (NEP 1.0)	Database Management System	Module I Relational Database Management System: Concept of RDBMS, Difference between DBMS andRDBMS, Features of RDBMS, Introduction of Oracle, Role and responsibilities of DBA, RDBMS Terminology- Relation, Tuple, Cardinality, Attribute, Degree, Primary Key, Domain, Codd's Rules, Relational Mode!, Functional Dependencies, Normalization and its types	Module I Relational Database Management System: Concept of RDBMS, Difference between DBMS andRDBMS, Features of RDBMS, Introduction of Oracle, Role and responsibilities of DBA, RDBMS Terminology- Relation, Tuple, Cardinality, Attribute, Degree, Primary Key, Domain, Codd's Rules, Relational Model, Functional Dependencies, Normalization and its types		in .	
		274 407 909 909 909 909 90 04 909 90 908-95 (275) 80	Module II Organization of DatabaseSystem: Features of SQL, Data types, Classification of SQL Commands – DDL (create, alter,drop), DML (insert, Update, delete), DCL (grant, revoke), TCL (rollback, commit),SQL Integrity Constraints-(Primary key, Foreign key,unique key, not null, default, check), Select statement with group by and order by clause, SQL Operators-arithmetic, relational, Logical, Like,Between, IN operator, SQL Functions-Arithmetic functions, ConversionFunctions, Date function, Aggregate functions, String functions	Module II Organization of DatabaseSystem: Features of SQL, Data types, Classification of SQL Commands – DDL (create, alter,drop), DML (insert, Update, delete), DCL (grant, revoke), TCL (rollback, commit),SQL Integrity Constraints-(Primary key, Foreign key,unique key, not null, default, check), Select statement with group by and order by clause, SQL Operators-arithmetic, relational, Logical, Like,Between, IN operator, SQL Functions-Arithmetic functions, ConversionFunctions, Date function, Aggregate functions, String functions	10 (2014) (2014) 2 (2014) (2014)	0 - 00 - 00 - 00 - 00 - 00 - 00 - 00 -	

	MARIA DE LA TOTAL AND CUD OTIEDIEC.	Module III JOIN AND SUB QUERIES:		
	Module III JOIN AND SUB QUERIES:			
	Join types - Inner Join, Outer Join, Cross Join	Join types - Inner Join, Outer Join, Cross Join		1 1
	and selfJoin, Sub-queries, Multiple sub queries,	and selfJoin, Sub-queries, Multiple sub queries,	en en en e	
	nesting of sub queries, sub queries in DML	nesting of sub queries, sub queries in DML		
	commands, Correlated queries, Indexes,	commands, Correlated queries, Indexes,	•••••	1
	Sequences. Views-Create View, Drop, View and	Sequences. Views-Create View, Drop, View		
-	its Advantages., Denial of service (DoS),	and its Advantages., Denial of service (DoS),		
	Firewall and proxy server.	Firewall and proxy server.		
	Module IV INTRODUCTION TO PL/SQL:	Module IV INTRODUCTION TO PL/SQL:		
	Introduction to PL/SQL, Block Structure, Data	Introduction to PL/SQL, Block Structure, Data		
	types in PL-SQL, Control Structures-Branching	types in PL-SQL, Control Structures-Branching		
	statements, Iterative Control statements, Cursors	statements, Iterative Control statements, Cursors		
	-Concept, Types- Implicit, Explicit, Procedure	-Concept, Types- Implicit, Explicit, Procedure		
	tocreate explicit cursors, Cursor Attributes,	tocreate explicit cursors, Cursor Attributes,		
	TRIGGERS: Concept and types.	TRIGGERS: Concept and types.		

(Signature of the Head of Department)

HEAD

DEPARTMENT OF B. C. A.

VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)



VIVEKANAND COLLEGE, KOLHAPUR (An EMPOWERED AUTONOMOUS Institute)

STATEMENT OF SYLLABUS COVERED

Year- 2024-25

Term- Ist

Name of teacher- Miss. Shivani Subhash Kagale

Department- BCA

Class	Subject	Syllabus assigned	Syllabus Covered	Syllabus not to Covered	Remark
B.C.A I Sem-I (AICTE Approved)	PROBLEM SOLVING TECHNIQUES	Module I: Problems And Problem Instances, Generalization and Special Cases, Types of Computational Problems, Classification of Problems, Analysis of Problems, Solution Approaches, Algorithm Development, Analysis of Algorithm, Efficiency, Correctness, Role of Data Structures in Problem Solving, Problem-Solving Steps (Understand the Problem, Plan, Execute, And Review),Breaking the Problem into Sub problems Input / Output Specification, Input Validation, Pre and Post Conditions.	Module I: Problems And Problem Instances, Generalization and Special Cases, Types of Computational Problems, Classification of Problems, Analysis of Problems, Solution Approaches, Algorithm Development, Analysis of Algorithm, Efficiency, Correctness, Role of Data Structures in Problem Solving, Problem-Solving Steps (Understand the Problem, Plan, Execute, And Review),Breaking the Problem into Sub problems Input / Output Specification, Input Validation, Pre and Post Conditions.	*	×
		Module II: Structured Programming Concepts: Sequence (Input/Output/Assignment), Selection (If, If-Else) And Repetition (For, While, Do-While) Statements, Control Structure Stacking and Nesting. Different Kinds of Repetitions: Entry Controlled, Exit Controlled, Counter Controlled, Definite, Indefinite and Sentinel-Controlled Repetitions. Pseudocode and Flowcharts. Definition And Characteristics of Algorithms, Standard Algorithm Format. Problems Involving Iteration and Nesting: Displaying Different Patterns and Shapes Using Symbols and Numbers, Generating Arithmetic and Geometric Progression, Fibonacci and Other Sequences. Different Kinds of Data in The Real World and How	Problems Involving Iteration and Nesting: Displaying Different Patterns and Shapes Using Symbols and Numbers, Generating Arithmetic and Geometric Progression, Fibonacci and Other Sequences. Different Kinds of Data in The Real World and How		

			Memory. Representation of Integers: Signed Magnitude Form, 1's Complement And 2's Complement. Representation of Real Numbers: IEEE 754 Floating Point Representation. Representation of Characters: ASCII, UNICODE. C Language: Introduction To Programming Languages, Different Generations of Programming Languages. Typed Vs Typeless Programming Languages. Typed Vs Typeless Programming Languages, History of C Language, An Empty C Program. C Language Counterparts For Input (scanf()), Output (printf()) Statements, Assignment, Arithmetic, Relational and Logical Operators. If, If-Else Statements, For, While, Do-While Statements. Data Types. Translating Pseudocode/Algorithm to C	Representation. Representation of Characters: ASCII, UNICODE. C Language: Introduction To Programming Languages, Different Generations of Programming Languages. Typed Vs Typeless Programming Languages, History of C Language, An Empty C Program. C Language Counterparts For Input (scanf()), Output (printf()) Statements, Assignment, Arithmetic, Relational and Logical Operators. If, If-Else Statements, For, While, Do-While Statements. Data Types. Translating Pseudocode/Algorithm o C Program. Incremental Compilation and Festing of The C Program. Simple Problems Involving Input, Output, Assignment Statement, Selection and Repetition. Good		
15 4016 4016 4016 4016 4016 9016 902 1 10 10 10 10 10	204 8004 8018 8018 8018 8018 8 8000 0858 8	O KO KO KO KOSOCKO OKO POSIK WY V Z SS SY S	Module III: Problems on Numbers: Extracting Digits of a Number (Left to Right and Right to Left), Palindrome, Prime Number, Prime Factors, Amicable Number, Perfect Number, Armstrong Number, Factorial, Converting Number from One Base to Another. Statistics (Maximum, Minimum, Sum and Average) on a Sequence of Numbers which are Read using Sentinel-Controlled Repetition using only a few Variables. C Language: else-if Ladder, switch Case, Increment/Decrement Operators, break and continue Statements	Number (Left to Right and Right to Left), Palindrome, Prime Number, Prime Factors, Amicable Number, Perfect Number, Armstrong Number, Factorial, Converting Number from One Base to Another. Statistics (Maximum, Minimum, Sum and Average) on a Sequence of Numbers which are Read using Sentinel- Controlled Repetition using only a few Variables. C Language: else-if Ladder, switch Case, Increment/Decrement Operators, break and continue Statements	01 801 801 801 801 801 8 1000 801 7	7 8 9 8 9 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
			Module IV: Modular Programming, Top- Down and	Module IV: Modular Programming, Top- Down and		

	Die eine eine eine eine		Bottom-Up Approaches to Problem Solving. Recursion. Problems on Arrays: Reading and Writing of Array Elements, Maximum, Minimum, Sum, Average, Median and Mode. Sequential And Binary Search. Anyone Sorting Algorithm. Matrix Operations. C Language: Function Definition and Declaration (Prototype), Role of Return Statement, One Dimensional and Two-Dimensional Arrays. String Functions. Other Operators, Operator Precedence and Associativity. Debugging	Bottom-Up Approaches to Problem Solving. Recursion. Problems on Arrays: Reading and Writing of Array Elements, Maximum, Minimum, Sum, Average, Median and Mode. Sequential And Binary Search. Anyone Sorting Algorithm. Matrix Operations. C Language: Function Definition and Declaration (Prototype), Role of Return Statement, One Dimensional and Two- Dimensional Arrays. String Functions. Other Operators, Operator Precedence and Associativity. Debugging		
*	B.C.A II Sem-III (NEP 1.0)	Database Management System	Module I Introduction of Database: Introduction :Definition of DBMS, file processing system Vs DBMS, Limitation of file processing system, Comparison of File processing system and DBMS, Advantages and Disadvantages of DBMS, Users of DBMS, Database Designers, Application programmer, Sophisticated Users, End Users ,Capabilities of good DBMS, Types of Database System: Centralized database system, client-server system, Distributed database system.	Module I Introduction of Database: Introduction :Definition of DBMS, file processing system Vs DBMS, Limitation of file processing system, Comparison of File processing system and DBMS, Advantages and Disadvantages of DBMS, Users of DBMS, Database Designers, Application programmer, Sophisticated Users, End Users, Capabilities of good DBMS, Types of Database System: Centralized database system, client-server system, Distributed database system.	yr *******	Çe .
	non this too too too		Module II Organization of Database System: Logical and Physical Files: Logical and Physical Files Definitions, File Structure :Basic File Operations, Opening Files , Closing Files, Reading and Writing, Seeking, File Organization: Field and Record structure in file, Record Types, Types of file organization: Files of Unordered Records (Heap Files), File of Ordered Records (Sorted Files), Hash Files, Indexed file	Logical Model, Record Base Logical Model a.		

	NA		Relationship Model, Entity Set, Attribute, Relationship Set, E-R Model terms Introduction a. Relation b. Tuple c. Attribute d. Cardinalitye. Degree f. Domain, Keys: Super Key, Candidate Key, Primary Key, Foreign Key,. Relational Database Design, Introduction Normalization: Normal Form 1 NF, 2 NF,3 NF	Model, Entity Set, Attribute, Relationship Set, E-R Model terms Introduction a. Relation b. Tuple c. Attribute d. Cardinality e. Degree f. Domain, Keys: Super Key, Candidate Key, Primary Key, Foreign Key,. Relational Database Design, Introduction Normalization: Normal Form 1 NF, 2 NF,3 NF		ta ta ta ta ta
	4		Module IV Relational algebra: Introduction, Operations- a. Select, b. Project, c. Union, d. Difference, e. Intersection, f. Cartesian Product, g. Natural Join, SQL (Structured Query Language: Introduction, History of SQL, Basic Structure, DDL Commands, DML Commands, Simple Queries, Nested Queries, Aggregate Functions, Clauses	Module IV Relational algebra: Introduction, Operations- a. Select, b. Project, c. Union, d. Difference, e. Intersection, f. Cartesian Product, g. Natural Join, SQL (Structured Query Language: Introduction, History of SQL, Basic Structure, DDL Commands, DML Commands, Simple Queries , Nested Queries, Aggregate Functions, Clauses	•••••	24
	B.C.A III Sem-IV	Python Programming	Module I introduction TO PYTHON: Installation, Spyder IDE, Python Interpreter, History Of Python, Python Features, Applications Of Python, Data Types, Types Of Operators, Operators Precedence, Expressions, Statements, Functions, Comment, Strings - Accessing Values In Strings, Updating Strings, Escape Characters, Built-In String Methods, User Input	Module i INTRODUCTION TO PYTHON: Installation, Spyder IDE, Python Interpreter, History Of Python, Python Features, Applications Of Python, Data Types, Types Of Operators, Operators Precedence, Expressions, Statements, Functions, Comment, Strings - Accessing Values In Strings, Updating Strings, Escape Characters, Built-In String Methods, User Input		
ভ হাতি হ'ব হ'ব হ'ব হ'ব ত কেন্দ্ৰোৱাত কন্তা			Module II CONTROL FLOW AND LOOPS: Conditionals: Boolean Values And Operators, Conditional (If), Alternative (If-Else), Chained Conditional (If-Elif-Else) Looping-While Loop, The Infinite Loop, For Loop, Iterating BySequence Index, Using Else Statement With Loops, Nested Loops, Break, Continue & Pass Statement. Functions: Function With Arguments, Lambda Functions	Module II CONTROL FLOW AND LOOPS: Conditionals: Boolean Values And Operators, Conditional (If), Alternative (If-Else), Chained Conditional (If-Elif-Else) Looping-While Loop, The Infinite Loop, For Loop, Iterating BySequence Index, Using Else Statement With Loops, Nested Loops, Break, Continue & Pass Statement, Functions: Function With Arguments, Lambda Functions		
ti.			Module III LISTS, TUPLES, DICTIONARIES AND SET: Lists-Create	Module III LISTS, TUPLES, DICTIONARIES AND SET: Lists-Create a		

a List, Get and Set Items ,Add and Remove	List, Get and Set Items, Add and Remove		
Items, List Slices, Different List Methods	Items, List Slices, Different List Methods		
 TUPLES - Creation and Accessing Values,	TUPLES - Creation and Accessing Values,	* *** *** *** *** *** ***	
Updating Tuples, Deleting Tuple Elements,	Updating Tuples, Deleting Tuple Elements,		
Basic Tuples Operations, Indexing, Slicing	Basic Tuples Operations, Indexing, Slicing		
DICTIONARYAccessing Values in	DICTIONARYAccessing Values in		
Dictionary, Updating Dictionary, Delete	Dictionary, Updating Dictionary, Delete		
Dictionary Elements, Properties of	Dictionary Elements, Properties of Dictionary		
Dictionary Keys, BuiltInDictionary	Keys, BuiltInDictionary Functions and		
Functions and Methods. SETS -Concept of	Methods. SETS -Concept of Sets, Creating,		
Sets, Creating, Initializing and Accessing	Initializing and Accessing the Elements, Sets		
the Elements, Sets Operation.	Operation.		
Module IV MODULES, FILES	Module IV MODULES, FILES I/O,GUI:		
I/O,GUI: The Import Statement, Modules	The Import Statement, Modules (Datetime,		
(Datetime, Calendar, Math Module) Files	Calendar, Math Module) Files I/O: Text Files,		
I/O: Text Files, Reading And Writing Files	Reading And Writing Files Introduction To		
Introduction To GUI In Python	GUI In Python		

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(Signature of the Head of Department)

DEPARTMENT OF B. C. A.
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)



VIVEKANAND COLLEGE, KOLHAPUR (An Empowered Autonomous Institute)

STATEMENT OF SYLLABUS COVERED

Year- 2024-25

Term- I & II

Name of teacher- Miss. Prajakta Popat Misal

Department-BCA

Class	Subject	Syllabus assigned	Syllabus Covered	Syllabus not to Covered	Rema rk
B.C.A- II Sem- III	Object Oriented Programming using C++ Object Oriented Programming using C++	Module I Principles of Objective Oriented Programming History of OOP, Introduction to Object Oriented Programming, Basic Concepts of Object Oriented Programming, Benefits of Object Oriented Programming, Object Oriented Languages, Difference between C and C++. Beginning with C++ Tokens, Keywords, Identifiers and Constants, Data Types, Type Compatibility, Variables, Operators in C++, Operator Precedence, Control Structures (Conditional, Unconditional and Leoping).	Module I Principles of Objective Oriented Programming History of OOP, Introduction to Object Oriented Programming, Basic Concepts of Object Oriented Programming, Benefits of Object Oriented Programming, Object Oriented Languages, Difference between C and C++. Beginning with C++ Tokens, Keywords, Identifiers and Constants, Data Types, Type Compatibility, Variables, Operators in C++, Operator Precedence, Control Structures (Conditional, Unconditional and Looping).	******	
62 E/S S/S S/S S/S 62 E/S S/S S/S	2012 12012 1202 1202 1202 1202 1202 120	Module II Functions in C++, Classes & Objects Concept of Function, main() Function, Inline Functions, Function Overloading, Specifying a Class, Data members and Member Functions, Access Specifiers, Friend Function, Static data Member, Object declaration and Initialization, Arrays of ObjectsConstructors & Destructors, Inheritance Constructors-Definition, Use of Constructors, Types of Constructors (Default, Parameterized, Copy, Dynamic), Destructors- Definition, Use, Inheritance Definition, Types of Inheritance (Single, Multiple, Multilevel, Hierarchical, Hybrid)		**************************************	-13 -13 -13 23 - 25 -2 23 - 25 -2

Sign (Sign State S	636 FOX #07 80 F	na wa wa wa mana	Module III Pointers, Virtual runctions & Polymorphism Pointer, Pointer to Object, this pointer, Pointer to Derived Classes, Polymorphism: Meaning, compile Time and Run time polymorphism, Rules for Operator Overloading, Operator Overloading (Unary & Binary)-with member function and friend function.	Module III Pointers, Virtual Functions & Polymorphism Pointer, Pointer to Object, this pointer, Pointer to Derived Classes, Polymorphism: Meaning, compile Time and Run time polymorphism, Rules for Operator Overloading, Operator Overloading (Unary & Binary)-with member function and friend function.	******	OS DE OS O
			Module IV Working with Files File-Definition, Use, Classes for File Stream Operations, Opening and Closing a File, File Opening Modes, File Pointers, Manipulation of File Pointer(using seekg,seekp,tellg,tellp), Input Output Operationsget ()Put (), read () Write ().	Module IV Working with Files File-Definition, Use, Classes for File Stream Operations, Opening and Closing a File, File Opening Modes, File Pointers, Manipulation of File Pointer(usingseekg,seekp,tellg,tellp), Input Output Operationsget ()Put (), read () Write ().		
2	2. 2	2.	23 Y2 III	rán Si Na	: 2	
	B.C.A- III Sem- V	Python	Module I INTRODUCTION TO PYTHON Installation, Spyder IDE, Python Interpreter, History Of Python, Python Features, Applications Of Python, Data Types, Types Of Operators, Operators Precedence, Expressions, Statements, Functions, Comment, String-Accessing Values In Strings, Updating Strings, Escape	Module I INTRODUCTION TO PYTHON Installation, Spyder IDE, Python Interpreter, History Of Python, Python Features, Applications Of Python, Data Types, Types Of Operators, Operators Precedence, Expressions, Statements, Functions, Comment, String-Accessing Values In Strings, Updating Strings, Escape		
#1.105.505.508.508.508.508.508.508.508.508.5	লাল গাল কাল কাল ক বেকি প্ৰকাশ কাল	1 (\$2,00)\$1 * 1\$0 * 06 (\$26, 60) (\$3.00) 505 (\$7,50) (\$5.00)	Characters, Built-In String Methods, User Input Module II CONTROL FLOW AND LOOPSConditionals: Boolean Values And Operators, Conditional (If), Alternative (If-Else), Chained Conditional (If- Elif-Else) Looping-While Loop, The Infinite Loop, For Loop, Iterating By Sequence Index, Using Else Statement With Loops, Nested Loops, Break, Continue & Pass Statement.Functions:	Characters, Built-In String Methods, User Input Module II CONTROL FLOW AND LOOPS Conditionals: Boolean Values And Operators, Conditional (If), Alternative (If-Else), Chained Conditional (If-Elif-Else) Looping-While Loop, The Infinite Loop, For Loop, Iterating By Sequence Index, Using Else Statement With Loops, Nested Loops, Break,	. 20.5 20.5 20.5 20.5 20.5 20.5 20.5 20.	* *07 *0* *0* 109 *0

			Module III	Module III		
kie kraliena era era e n	VIII.	कार प्राप्त कार कार्य कार्य कार्य	LISTS, TUPLES, DICTIONARIES AND SET	LISTS, TUPLES, DICTIONARIES AND SET		n warevered
			Lists-Create a List, Get and Set Items, Add and	Lists-Create a List, Get and Set Items ,Add and		
			Remove Items, List Slices, Different List Methods	Remove Items, List Slices, Different List Methods		
			TUPLES - Creation and Accessing Values,	TUPLES - Creation and Accessing Values,		
			Updating Tuples, Deleting Tuple Elements, Basic	Updating Tuples, Deleting Tuple Elements, Basic		
			Tuples Operations, Indexing, Slicing	Tuples Operations, Indexing, Slicing		
			DICTIONARY- Accessing Values in Dictionary,	DICTIONARY- Accessing Values in Dictionary,		
			Updating Dictionary, Delete Dictionary	Updating Dictionary, Delete Dictionary Elements,		
			Elements, Properties of Dictionary	Properties of Dictionary		
			Keys, Built In Dictionary Functions and Methods.	Keys, Built In Dictionary Functions and Methods.		
			SETS -Concept of Sets, Creating, Initializing and	SETS -Concept of Sets, Creating, Initializing and		
			Accessing the Elements, Sets Operation.	Accessing the Elements, Sets Operation.		
			Module IV MODULES, FILES I/O,GUI The Import	Module IV MODULES, FILES I/O,GUI The Import		
			Statement, Modules (Date time, Calendar, Math	Statement, Modules (Date time, Calendar, Math		
15			Module) Files I/O: Text Files, Reading And	Module) Files I/O: Text Files, Reading And		
			Writing .Files Introduction To GUI In Python	Writing. Files Introduction To GUI In Python		
			Module I	Module I		
			Introduction to data structures	Introduction to data structures		
			Introduction to Array, Introduction to Data	Introduction to Array, Introduction to Data		
			Structures, Concept of Abstract Data types, Array	Structures, Concept of Abstract Data types, Array as		
	B.C.A II	Data	as ADT, Data structures and its types,Data	ADT, Data structures and its types, Data structures		
	Sem-IV	Structure	structures operations	operations		
		Using C++	Module II	Module II		
			Searching and Sorting and Methods	Searching and Sorting and Methods		
			Introduction to Searching and Sorting, Searching:	Introduction to Searching and Sorting,		
			Linear search, Binary search and hashing,	Searching: Linear search, Binary search and	•••••	
			Sorting: Bubble Sort, Insertion sort, Selection	hashing, Sorting: Bubble Sort, Insertion sort,		
			sort, Merge sort,	Selection sort, Merge sort,		

	Stack in C++, Application of stack: Prefix and Postfix Expressions Evaluation, Definition of queue, Operations on queue,	Stack in C++, Application of stack: Prefix and Postfix Expressions Evaluation, Definition of queue, Operations on queue,	* *** *** *** ***	E
#S	Types of queue-Linear, Circular, Applications of queue Module IV Linked Lists and Trees Introduction to Pointer, Introduction to linked lists, Implementation of Linked list, Types of Linked List: Singly, Doubly and Circular, Operations on linear linked list: Traversal, Insertion, Deletion, Searching Trees: definition, terminologies, representation, types, Tree Traversal- (Preorder, Inorder,	Types of queue-Linear, Circular, Applications of queue Module IV Linked Lists and Trees Introduction to Pointer, Introduction to linked lists, Implementation of Linked list, Types of Linked List: Singly, Doubly and Circular, Operations on linear linked list: Traversal, Insertion, Deletion, Searching Trees: definition, terminologies, representation, types, Tree Traversal- (Preorder, Inorder,	5 12	
Java Programmin g	Module I JavaFundamentals Introduction to Java, History and Features of Java, C++ vs Java, Simple Java Program, Internal path seting, JDK, JRE, and JVM (Java Virtual Machine), JVM Memory Management, data types, Unicode System, Operators, Keywords, and Control Statements, methods, constructor, class, objects, methods, Accessmodifiers, statickey	Module I JavaFundamentals Introduction to Java, History and Features of Java, C++ vs Java, Simple Java Program, Internal path seting, JDK, JRE, and JVM (Java Virtual Machine), JVM Memory Management, data types, Unicode System, Operators, Keywords, and Control Statements, methods, constructor, class, objects, methods, Accessmodifiers, statickeywo		X 6. 6.X
	Programmin	Stacks and Queues Introduction to stack, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C++, Application of stack: Prefix and Postfix Expressions Evaluation, Definition of queue, Operations on queue, Types of queue-Linear, Circular, Applications of queue Module IV Linked Lists and Trees Introduction to Pointer, Introduction to linked lists, Implementation of Linked list, Types of Linked List: Singly, Doubly and Circular, Operations on linear linked list: Traversal, Insertion, Deletion, Searching Trees: definition, terminologies, representation, types, Tree Traversal- (Preorder, Inorder, Postorder) Java Programmin g Module I JavaFundamentals Introduction to Java, History and Features of Java, C++ vs Java, Simple Java Program, Internal path seting, JDK, JRE, and JVM (Java Virtual Machine),JVM Memory Management, data types, Unicode System, Operators, Keywords, and Control Statements, methods, constructor, class,objects,methods,Accessmodifiers,statickey word,finalkeyword,STRING Manipulation.Array-	Stacks and Queues Introduction to stack, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C++, Application of stack: Prefix and Postfix Expressions Evaluation, Definition of queue, Operations on queue, Types of queue-Linear, Circular, Applications of queue Module IV	Stacks and Queues Introduction to stack, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C++, Application of stack: Prefix and Postfix Expressions Evaluation, Definition of queue, Operations on queue, Types of queue-Linear, Circular, Applications of queue Module IV Linked Lists and Trees Introduction to Pointer, Introduction to Pointer, Introduction to Pointer, Introduction to Iinked list, Types of Linked List: Singly, Doubly and Circular, Operations on linear linked list: Traversal, Insertion, Deletion, Searching Trees: definition, terminologies, representation, types, Tree Traversal- (Preorder, Inorder, Postorder) Module I Java Programmin g Module I JavaFundamentals Introduction to Java, History and Features of Java, C++ vs Java, Simple Java Program, Internal path setting, JDK, RE, and JVM (Java Virtual Machine),JVM Memory Management, data types, Unicode System, Operators, Keywords, and Control Statements, methods, class, objects, methods, Accessmodifiers, statickey word, finalkeyword, STRING Manipulation, Array Stacks and Queues Introduction to stack, Primitive Stack operations: Introduction to Stack in C++, Application of Stack: Prefix and Postfix Expressions Evaluation, Definition of queue, Operations on queue, Types of queue-Linear, Circular, Applications of queue Module IV Linked Lists and Trees Introduction to Diniter, Introduction to Pointer, Introduction to Diniter, Intr

	Module II Inheritance, Polymorphism and Encapsulation Inheritance in Java, Is-A Relationship, Aggregation and Composition(HAS-A), Types of inheritance, this & super keyword Polymorphism in Java, Types of polymorphism, Static and	Module II Inheritance, Polymorphism and Encapsulation Inheritance in Java, Is-A Relationship, Aggregation and Composition(HAS-A), Types of inheritance, this & super keyword Polymorphism in Java, Types of polymorphism, Static and Dynamic Binding, Abstract class and method	# EYE EXE E[SE
	Dynamic Binding, Abstract class and method Module III Package, Multithreading and Exception	Module III Package, Multithreading and Exception	
v	handling Defining & create packages, system packages, Introduction of Exception, Pre - Defined Exceptions, Try-Catch-Finally, Throws, throw, User Defined Exception examples, Multithreading- introduction, Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods	handling Defining & create packages, system packages, Introduction of Exception, Pre -Defined Exceptions, Try-Catch-Finally, Throws, throw, User Defined Exception examples, Multithreading- introduction, Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods	es a
	Module IV AWT,SWING (JFC) Introduction and Components of AWT, Event-Delegation Model, Listeners, Layouts, Individual Components Label, Button, Check Box, Radio Button, Introduction Diff B/W AWT and SWING, Components hierarchy, Panes, Individual Swings components J Label, JButton, JText Field, JTextArea	Module IV AWT,SWING (JFC) Introduction and Components of AWT, Event-Delegation Model, Listeners, Layouts, Individual Components Label, Button, Check Box, Radio Button, Introduction Diff B/W AWT and SWING, Components hierarchy, Panes, Individual Swings components J Label, JButton, JText Field, JTextArea	

VIVERAMAND CONLECTE NO LHAPUR
(EMPOWERED AUTOMOMOUS)

(Signature of the Head of Department)

VIVEKANAND COLLEGE, KOLHAPUR (Empowered Autonomous Institution) STATEMENT OF SYLLABUS COVERED

Year- 2024-25

Name of teacher- Miss Pratiksha Prakash Deshmukh

Term- I &II Department-BCA

Class	Subject	Syllabus assigned	Syllabus Covered	Syllabus not to Covered	Rem
B.C.A-	Cloud),		
III	Computing	Module I Introduction to Cloud	Module I Introduction to Cloud Computing		
Sem-	o unit manag	Computing Introduction	1.1Introduction		
V		1.2 Roots of Cloud Computing	1.2 Roots of Cloud Computing		
,		1.3 Layers and Types of Cloud	1.3 Layers and Types of Cloud		
	-	1.4 Desired Features of a Cloud Platform as a	1.4 Desired Features of a Cloud	-	
•		Service Providers 1.6Architecture of cloud	1.5 Platform as a Service Providers		
	+5	computing	1.6Architecture of cloud computing		6
		1.7Challenges in the cloud Types of Cloud:	1.7Challenges in the cloud Types of Cloud: Private,		
		Private, Public, Hybrid	Public, Hybrid		
		Module II	Module II		
	ψ.	Virtualization	Virtualization		
		2.1 Introducing virtualization and its benefits	2.1 Introducing virtualization and its benefits		
		2.2 Implementation Levels of Virtualization	2.2 Implementation Levels of Virtualization		
		2.3 Virtualization at the OS Model	2.3 Virtualization at the OS Model		
		2.4 Virtualization Structure: Hosted Structure,	2.4 Virtualization Structure: Hosted Structure,		
		Bare-Metal	Bare-Metal		
		2.5 Structure Virtualization of CPU, Memory, and	2.5 Structure Virtualization of CPU, Memory, and		
		I/O Devices	I/O Devices		
		2.6 Virtualization in Multicore Processors	2.6 Virtualization in Multicore Processors		
		2.7 Virtual Clusters and Resource management College	2.7 Virtual Clusters and Resource management		a 1474 1414
100 100 100 100	N 100 TO	/S/ ECTO		2. 11 - 112 11 - 21 113	F38 F3

			Module III Cloud Computing Services 3.1 Infrastructure as a Service 3.2 Platform as a service 3.3 Leveraging PaaS for productivity 3.4 Guidelines for selecting PaasPovider 3.5 Concern with PaaS 3.6 Language and PaaS 3.7 Software as a Service 3.8 Database as a Service 3.9 Specialized Cloud Services	Module III Cloud Computing Services 3.1 Infrastructure as a Service 3.2 Platform as a service 3.3 Leveraging PaaS for productivity 3.4 Guidelines for selecting PaasPovider 3.5 Concern with PaaS 3.6 Language and PaaS 3.7 Software as a Service 3.8 Database as a Service 3.9 Specialized Cloud Services	
		35	Module IV Cloud Computing Applications 4.1 Business Applications: MailChimp, Salesforce, Chatter, Paypal 4.2 Education Applications: Google Apps for Education, Chrome books for Education, Tablets with Google Play for Education 4.4 Entertainment Applications: Online games, Video Conferencing Apps, 4.5 Social Applications: Facebook, Twitter, LinkedIn	Module IV Cloud Computing Applications 4.1 Business Applications: Mail Chimp, Salesforce, Chatter, Paypal 4.2 Education Applications: Google Apps for Education, Chrome books for Education, Tablets with Google Play for Education 4.4 Entertainment Applications: Online games, Video Conferencing Apps, 4.5 Social Applications: Facebook, Twitter, LinkedIn	
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	Module III Pointers, Virtual Functions & Polymorphism Pointer, Pointer to Object, this pointer, Pointer to Derived Classes, Polymorphism: Meaning, compile Time and Run time polymorphism, Rules for Operator Overloading, Operator Overloading (Unary & Binary)-with member function and friend function.	Module III Pointers, Virtual Functions &Polymorphism Pointer, Pointer to Object, this pointer, Pointer to Derived Classes, Polymorphism: Meaning, compile Time and Run time polymorphism, Rules for Operator Overloading, Operator Overloading (Unary & Binary)-with member function and friend function.	\(\frac{1}{2}\)	
TO JUNE 1964 Autonomination of the state of	Module IV Working with Files File- Definition, Use, Classes for File Stream Operations, Opening and Closing a File, File Opening Modes, File Pointers, Manipulation of File Pointer(using-seekg,seekp,tellg,tellp), Input Output Operationsget ()Put (), read () Write ()	Module IV Working with Files File- Definition, Use, Classes for File Stream Operations, Opening and Closing a File, File Opening Modes, File Pointers, Manipulation of File Pointer(using- seekg, seekp, tellg, tellp), Input Output Operations- get ()Put (), read () Write ()	3.1.0.3.1.0	
	# II \$ 200 000 000 000 000 000 000000000000	E ENERGES AND DESCRIPTED AND AND AND AND AND AND AND AND AND AN	* 500 500 500 500 500 500 / 505 50 - 105 *	00 100 100 6 101,95 1000

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	B.C.A-	Computer Architectu	Module I	Module I		
1	Sem-	Architectu re	Digital Principles: Definition for Digital signals,	DigitalPrinciples Definition for Digital signals,		
	Jeili-	16	Digital logic, Digital computers, Von Neumann	Digital logic, Digital computers, Von Neumann		
	•		Architecture, Boolean Laws and Theorems, K-Map:	Architecture, Boolean Laws and Theorems, K-Map:		
			Truth Tables to K-Map, 2, 3 and 4 variable K Map,	Truth Tables to K-Map, 2, 3 and 4 variable K Map,		
			K-Map Simplifications, Don't Care Conditions,	K-Map Simplifications, Don't Care Conditions, SOP		
			SOP and POS. Number Systems: Decimal, Binary,	and POS. NumberSystems Decimal, Binary,Octal,		
	*		Octal, Hexadecimal, Number System Conversions,	Hexadecimal, Number System Conversions, Binary	×	
			Binary Arithmetic, Addition and subtraction of	Arithmetic, Addition and subtraction of BCD, Octal		
			BCD, Octal Arithmetic, Hexadecimal Arithmetic,	Arithmetic, Hexadecimal Arithmetic, Binary Codes,		
			Binary Codes, Decimal Codes, Error detecting and	Decimal Codes, Error detecting and correcting codes,		
D CO	LLEGE		correcting codes, ASCII, EBCDIC, Excess- 3 Code,	ASCII, EBCDIC, Excess- 3 Code, The Gray Code.		
ES	E COTS		The Gray Code.	A. A		
JU	NE E	*	5 (8) 35	* E		
19	184	<i>I</i>	Module II	Module II		
	OTTOWN!		Combinational Circuits: Half Adder and Full	Combinational Circuits: Half Adder andFullAdder,		
9780	Autonom		Adder, Subtractor, Decoders, Encoder,	Subtractor, Decoders, Encoder,		
			Multiplexer, Demultiplexer	Multiplexer, Demultiplexer Sequential Circuits: Flip-		
		_	Sequential Circuits: Flip-Flops- SR Flip- Flop, D Flip-Flop, J-K Flip-Flop, T Flip-Flop.	Flops- SR Flip- Flop, D Flip-Flop, J-K Flip-Flop, T Flip-Flop.		
			Register: 4 bit register with parallel load, Shift	Register: 4 bit register with parallel load, Shift		
			Registers- Bidirectional shift register with parallel	Registers- Bidirectional shift register with parallel		
			load	load		
			Binary Counters-4 bit synchronous and	Binary Counters-4 bit synchronous and Asynchronous		
			Asynchronous binary counter.	binary counter.		
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Module III

Basic Computer Organization and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output Interrupt, Complete Computer Description, Design of Basic Computer, Design of Accumulator logic.

Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer(RISC), RISC Vs CISC.

Module IV

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline.
Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input-Output Processor(IOP).

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory, Virtual Memory, Memory Management Hardware.

Module III

Basic Computer Organization and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input- Output Interrupt, Complete Computer Description, Design of Basic Computer, Design of Accumulator logic.

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Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory, Virtual Memory, Memory Management Hardware.

B.C.A- III Sem- VI	Java Programm ing	Module I Java Fundamentals Introduction to Java, History and Features of Java, C++ vs Java, Simple Java Program, Internal path setting, JDK, JRE, and JVM (Java Virtual Machine), JVM Memory Management, data types, Unicode System, Operators, Keywords, and Control Statements, methods, constructor, class, objects, methods, Access modifiers, static keyword, final key word, STRING Manipulation, Array	Module I Java Fundamentals Introduction to Java, History and Features of Java, C++ vs Java, Simple Java Program, Internal path setting, JDK, JRE, and JVM (Java Virtual Machine), JVM Memory Management, data types, Unicode System, Operators, Keywords, and Control Statements, methods, constructor, class, objects, methods, Access modifiers, static keyword, final keyword, String Manipulation, Array	
ESTD ROLLAPUR 1964	19	Module II Inheritance, Polymorphism and Encapsulation Inheritance in Java, Is-A Relationship, Aggregation and Composition(HAS-A), Types of inheritance, this & super keyword Polymorphism in Java, Types of polymorphism, Static and Dynamic Binding, Abstract class and method	Module II Inheritance, Polymorphism and Encapsulation Inheritance in Java, Is-A Relationship, Aggregation and Composition(HAS-A), Types of inheritance, this & super keyword Polymorphism in Java, Types of polymorphism, Static and Dynamic Binding, Abstract class and method	3
		Module III Package, Multithreading and Exception handling Defining & create packages, system packages, Introduction of Exception, Pre - Defined Exceptions, Try-Catch-Finally, Throws, throw, User Defined Exception examples, Multithreading- introduction, Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods	Module III Package, Multithreading and Exception handling Defining & create packages, system packages, Introduction of Exception, Pre -Defined Exceptions, Try-Catch- Finally, Throws, throw, User Defined Exception examples, Multithreading- introduction, Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods	0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0

185		Module IV AWT,SWING (JFC) Introduction and Components of AWT, Event- Delegation Model, Listeners, Layouts, Individual Components Label, Button, Check Box, Radio Button, Introduction Diff B/W AWT and SWING, Components hierarchy, Panes, Individual Swings components J Label, JButton, JText Field, JTextArea	Module IV AWT,SWING (JFC) Introduction and Components of AWT, Event- Delegation Model, Listeners, Layouts, Individual Components Label, Button, Check Box, Radio Button, Introduction Diff B/W AWT and SWING, Components hierarchy, Panes, Individual Swings components J Label, JButton, JText Field, JTextArea	G P	
B.C.A-I Sem-III	Object Oriented Programm ing using Java	Module I Fundamentals of Object Oriented Programming: Basic Concepts of Object Oriented Programming (OOP), Benefits and Applications of OOP. Java Evolution: Java Features, Overview of Java Language: Introduction to Simple Java Program, Use ofComments and Math function, Application of two classes, Java Program Structure, Java Tokens and statements, Implementing Java programAnd JVM, Command Line Arguments.	Module I Fundamentals of Object Oriented Programming: Basic Concepts of Object Oriented Programming (OOP), Benefits and Applications of OOP. Java Evolution: Java Features, Difference between Java, C and C++, Java and Internet, Java Environment. Overview of Java Language: Introduction to Simple Java Program, Use ofComments and Math function, Application of two classes, Java Program Structure, Java Tokens and statements, Implementing Java programAnd JVM, Command Line Arguments.	,	
ed of kar kardan		Module II Constants, Variables and Data Types: Constants, Variables, Data Types, Declaration of Variables, Giving values to Variables, Symbolic Constants, Typecasting. Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, conditional operators, Bitwise operators, Arithmetic Expressions, Evaluation of Expressions, Type Conversions in Expressions, Operator Precedence	Module II Constants, Variables and Data Types: Constants, Variables, Data Types, Declaration of Variables, Giving values to Variables, Symbolic Constants, Typecasting. Operators & Expressions: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators conditional operators, Bitwise operators, Arithmetic Expressions, Evaluation of Expressions, Type Conversions in Expressions, Operator Precedence		

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		& Associativity.	& Associativity.	
		Decision Making, Branching & Looping: Decision	Decision Making, Branching & Looping: Decision	4
	1	Making with ControlStatements, Looping statements,	Making with ControlStatements, Looping statements,	
		Jump in loops, Labelled loops.	Jump in loops, Labelled loops.	
ESTD JUNE 1964	* Shown	Module III Classes, Objects and Methods: Defining Class, Methods Declaration, Constructors, Methods Overloading, Overriding Methods, Inheritance Arrays, Strings and Vectors: 1D arrays, Creating an Array, 2D arrays, Strings, Vectors, Wrapper Classes, Enumerated Types Inheritance: Defining, extending classes, and Implementing Interfaces. Multipleinheritance and polymorphism.	Module III Classes, Objects and Methods: Defining Class, Methods Declaration, Constructors, Methods Overloading, Overriding, Methods, Inheritance Arrays, Strings and Vectors: 1D arrays, Creating an Array, 2D arrays, Strings, Vectors, Wrapper Classes, Enumerated Types Inheritance: Defining, extending classes, and Implementing Interfaces. Multipleinheritance and polymorphism.	
Autonom		Module IV Packages: Basics of packages, System packages, Creating and accessing packages, Creating user defined packages, Adding class to a package. Exception Handling: Using the main keywords of exception handling: try, catch,throw, throws and finally; Nested try, Multiple catch statements, Creating user defined exceptions	Module IV Packages: Basics of packages, System packages, Creating and accessingpackages, Creating user defined packages, Adding class to a package. Exception Handling: Using the main keywords of exception handling: try, catch,throw, throws and finally; Nested try, Multiple catch statements, Creating user defined exceptions	

(Signature of H.O.D)

THE AD

VIVEKANAND COLLEGE, KOLHAPUR

(An Empowered Autonomous Institute)

STATEMENT OF SYLLABUS COVERED

Year- 2024-25

Term-I &II **Department-BCA**

Name of teacher- Miss. Vaishnavi Arun Kotamire

Class	Subject	Syllabus assigned	Syllabus Covered	Syllabus not to Covered	Remark
B.C.A- I Sem- I (AIECT Approved)	Computer Architecture	Module I DigitalPrinciples: Definition for Digital signals, Digital logic, Digital computers, Von Neumann Architecture, Boolean Laws and Theorems, K- Map: Truth Tables to K-Map, 2, 3 and 4 variable K Map, K-Map Simplifications, Don't Care Conditions, SOP and POS. Number Systems: Decimal, Binary, Octal, Hexadecimal, Number System Conversions, Binary Arithmetic, Addition and subtraction of BCD, Octal Arithmetic, Hexadecimal Arithmetic, Binary Codes, Decimal Codes, Error detecting and correcting codes, ASCII, EBCDIC, Excess- 3 Code, The Gray Code.	Module I DigitalPrinciples Definition for Digital signals, Digital logic, Digital computers, Von Neumann Architecture, Boolean Laws and Theorems, K-Map: Truth Tables to K-Map, 2, 3 and 4 variable K Map, K-Map Simplifications, Don't Care Conditions, SOP and POS. NumberSystems Decimal, Binary,Octal, Hexadecimal, Number System Conversions, Binary Arithmetic, Addition and subtraction of BCD, Octal Arithmetic, Hexadecimal Arithmetic, Binary Codes, Decimal Codes, Error detecting and correcting codes, ASCII, EBCDIC, Excess- 3 Code, The Gray Code.		
STREET, ST. ST. ST. ST.		Register: 4 bit register with parallel load. Shift Registers- Bidirectional shift register with parallel load With parallel load Binary Counters-4 bit synchronous and	Module II Combinational Circuits: Half Adder and Full Adder, Subtractor, Decoders, Encoder, Multiplexer, Demultiplexer Sequential Circuits: Flip-Flops- SR Flip-Flop, D Flip-Flop, J-K Flip-Flop, T Flip-Flop. Register: 4 bit register with parallel load, Shift Registers- Bidirectional shift register with parallel load Binary Counters-4 bit synchronous and Asynchronous binary counter.		en e

4 479 K3 K3 K3 K3		Module III Basic Computer Organization and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input- Output Interrupt, Complete Computer Description, Design of Basic Computer, Design of Accumulator logic. Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer(RISC), RISC Vs CISC.	Module III Basic Computer Organization and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input- Output Interrupt, Complete Computer Description, Design of Basic Computer, Design of Accumulator logic. Central Processing Unit: Introduction, General Register Organization, Stack Organization, InstructionFormats, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer(RISC), RISC Vs CISC.		
m	Yar	Module IV Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline. Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input-Output Processor(IOP). Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory, Virtual Memory, Memory Management Hardware.	Module IV Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline. Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input-Output Processor(IOP). Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory, Virtual Memory, Memory Management Hardware.		ν.
B.C.A- II Sem- IV (NEP 1.0)	Data Structure Using C++	Module I Introduction to data structures Introduction to Array, Introduction to Data Structures, Concept of Abstract Data types,Array as ADT, Data structures and its types,Data structures operations	Module I Introduction to data structures Introduction to Array, Introduction to Data Structures, Concept of Abstract Data types, Array as ADT, Data structures and its types, Data structures operations	**************************************	76 X
	Sem- IV	Sem- IV Using C++	Basic Computer Organization and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input- Output Interrupt, Complete Computer Description, Design of Basic Computer, Design of Accumulator logic. Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer(RISC), RISC Vs CISC. Module IV	Basic Computer Organization and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input- Output Interrupt, Complete Computer Description, Design of Basic Computer Design of Accumulator Computer Description, Design of Basic Computer Design of Basic Computer Description, Design of Basic Computer Design of Basic Computer Description, Design of Basic Computer Description, Design of Basic Computer Description, Design of Basic Computer De	Basic Computer Organization and Design:

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	FOR FOR FIRE FOR FOR FOR FOR SOCI	Module II	Module II		o w ki k
		Searching and Sorting and Methods	Searching and Sorting and Methods		
		Introduction to Searching and Sorting,	Introduction to Searching and Sorting		
		Searching: Linear search, Binary search and	,Searching: Linear search, Binary search and		
		hashing,	hashing,		
		Sorting: Bubble Sort, Insertion sort, Selection	Sorting: Bubble Sort, Insertion sort, Selection		
		sort, Merge sort.	sort, Merge sort.		
		Module III	Module III		
		Stacks and Queues	Stacks and Queues		
		Introduction to stack, Primitive Stack	Introduction to stack, Primitive Stack operations:		
		operations: Push & Pop, Array and Linked	Push & Pop, Array and Linked Implementation		
		Implementation of Stack in C++, Application of	of Stack in C++, Application of stack:		
		stack:Prefix and Postfix Expressions	Prefix and Postfix Expressions Evaluation,		
1 20	,	Evaluation, Definition of queue, Operations on	Definition of queue, Operations on queue,	= #	
		queue, Types of queue-Linear, Circular,	Types of queue-Linear, Circular, Applications of		İ
		Applications of queue.	queue.		
		Module IV	Module IV		
		Linked Lists and Trees	Linked Lists and Trees		
		Introduction to Pointer, Introduction to linked	Introduction to Pointer,Introduction to linked		
		lists,Implementation of Linked list,Types of	lists,Implementation of Linked list,Types of		
		Linked List:Singly, Doubly and Circular,	Linked List:Singly, Doubly and Circular,	*****	
		Operations on linear linked list: Traversal,	Operations on linear linked list: Traversal,		
		Insertion, Deletion, SearchingTrees: definition,	Insertion, Deletion, SearchingTrees: definition,		
		terminologies, representation, types, Tree	terminologies, representation, types, Tree		
		Traversal- (Preorder, Inorder, Postorder)	Traversal- (Preorder, Inorder, Postorder)		
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		Service Control of the Control of th	10/8		
D.C. A. I	D + G'		NA. July Y	-	

B.C.A-I Sem-II (AIECT Approved) **Data Structure** Using C

Module I

IntroductionandOverview:Definition,Classificat IntroductionandOverview:Definition,Classificati ion and Operations of Data Structures.

Module I

ion and Operations of Data Structures.

Algorithms: Complexity, Time-Space Tradeoff.

Algorithms: Complexity, Time-Space Tradeoff. on and Operations of Data Structures.

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es es es [®] es es es		o see see see see the the see	Arrays: Definition and Classification of Arrays, Representation of Linear Arrays in Memory, Operations on Linear Arrays: Traversing, Inserting, Deleting, Searching, Sorting and Merging. Searching: Linear Search and Binary Search, Comparison of Methods. Sorting: Bubble Sort, SelectionSort, and Insertion Sort. Two-DimensionalArrays, Representation of Two DimensionalArrays in Memory, Matrices and Sparse Matrices, Multi-Dimensional Arrays.	Arrays: Definition and Classification of Arrays, Representation of Linear Arrays in Memory, Operations on Linear Arrays: Traversing, Inserting, Deleting, Searching, Sorting and Merging. Searching: Linear Search and Binary Search, Comparison of Methods. Sorting: Bubble Sort, SelectionSort, and Insertion Sort. Two-DimensionalArrays, Representation of Two DimensionalArrays in Memory, Matrices and Sparse Matrices, Multi-Dimensional Arrays.	ans and and a	. 112 102 102	*** **
	D	5	Module II Linked Lists: Definition, Comparison with Arrays, Representation, Types of Linked lists, Traversing, Inserting, Deleting and Searching in Singly Linked List, Doubly Linked List and Circular Linked List. Applications of Linked Lists: Addition of Polynomials. Hashing and Collision: Hashing, Hash Tables, Types of Hash Functions, Collision, Collision Resolution with Open Addressing and Chaining.	Module II Linked Lists: Definition, Comparison with Arrays, Representation, Types of Linked lists, Traversing, Inserting, Deleting and Searching in Singly Linked List, Doubly Linked List and Circular Linked List. Applications of Linked Lists: Addition of Polynomials. Hashing and Collision: Hashing, Hash Tables, Types of Hash Functions, Collision, Collision Resolution with Open Addressing and Chaining.			
		COS SENSE SE	Array and Linked List, Types of Queue: Simple Queue, Circular Queue, Double-Ended queue, Priority Queue, Operations on Simple Queues and Circular Queues using Array and Linked List, Applications of Queues.	Module III Stacks: Definition, Representation of Stacks using Arrays and Linked List, Operations on Stacks using Arrays and Linked List, Application of Stacks: Arithmetic Expressions, Polish Notation, Conversion of Infix Expression to Postfix Expression, Evaluation of Postfix Expression. Recursion: Definition, Recursive Notation, Runtime Stack, Applications of Recursion: Factorial of Number, GCD, Fibonacci Series and Towers of Hanoi. Queues: Definition, Representation of Queues using Array and Linked List, Types of Queue: Simple Queue, Circular Queue, Double-Ended queue, Priority Queue, Operations on Simple Queues and Circular Queues using Array and Linked List, Applications of Queues.	•••••	a statement and a second	

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			Module IV	Module IV			
	DESCRIPTION AND DATE OF		Graphs: Definition, Terminology,	Graphs: Definition, Terminology,	abs ba va v a	rises re re	22
٩			Representation, Traversal. Trees: Definition,	Representation, Traversal. Trees: Definition,			
			Terminology, Binary Trees, Traversal of Binary	Terminology, Binary Trees, Traversal of Binary			
ı			Tree, Binary Search Tree, Inserting, Deleting	Tree, Binary Search Tree, Inserting, Deleting	******		
			and Searching in Binary Search Tree, Height	and Searching in Binary Search Tree, Height			
			Balanced Trees: AVL Trees, Insertion and	Balanced Trees: AVL Trees, Insertion and			i
	į į		Deletion in AVL Tree.	Deletion in AVL Tree.			
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(Signature of the Head of Department)

DEPARTMENT OF S. C. A.
VIVEKAMAND COLLEGE, KOLHAPUP
(EMPOWERED AUTONOMOUS)

VIVEKANAND COLLEGE, KOLHAPUR (An Empowered Autonomous Institute)

STATEMENT OF SYLLABUS COVERED

Year- 2024-25 Name of teacher- Miss. Aradhana S.Dalavi Term- I & II Department- BCA

	Class	Subject	Syllabus assigned	Syllabus Covered	Syllabus not to Covered	Rema rk	
	S.C.AI em- I	Problem Solving Techniques	Module I Problems And Problem Instances, Generalization and Special Cases, Types of Computational Problems, Classification of Problems, Analysis of Problems, Solution Approaches, Algorithm Development, Analysis of Algorithm, Efficiency, Correctness, Role of Data Structures in Problem Solving, Problem-Solving Steps (Understand the Problem, Plan, Execute, And	Module I Problems And Problem Instances, Generalization and Special Cases, Types of Computational Problems, Classification of Problems, Analysis of Problems, Solution Approaches, Algorithm Development, Analysis of Algorithm, Efficiency, Correctness, Role of Data Structures in Problem Solving, Problem-Solving Steps (Understand the Problem, Plan, Execute, And	*****		а
			Review), Breaking the Problem into Subproblems, Input/Output Specification, Input Validation, Pre and Post Conditions.	Review), Breaking the Problem into Subproblems, Input/Output Specification, Input Validation, Pre and Post Conditions.	DAG.		
OK 10 1 10 000	04 4034 40 4 90 9 16 Vendendende	on their their tree the three of the list their their	Module II Structured Programming Concepts: Sequence (Input/Output/Assignment), Selection (If, If-Else) And Repetition (For, While, Do-While) Statements, Control Structure Stacking and Nesting.Different Kinds of Repetitions: Entry Controlled, Exit Controlled, Counter Controlled, Definite,Indefinite and Sentinel-Controlled Repetitions. Pseudocode and Flowcharts. Definition And Characteristics of Algorithms, Standard Algorithm Format. Problems Involving Iteration and Nesting: Displaying Different Patterns and Shapes Using Symbols and	Module II Structured Programming Concepts: Sequence (Input/Output/Assignment), Selection (If, If-Else) And Repetition (For, While, Do-While) Statements, Control Structure Stacking and Nesting.Different Kinds of Repetitions: Entry Controlled, Exit Controlled, Counter Controlled, Definite,Indefinite and Sentinel-Controlled Repetitions. Pseudocode and Flowcharts. Definition And Characteristics of Algorithms, Standard Algorithm Format. Problems Involving Iteration and Nesting: Displaying Different Patterns and Shapes Using Symbols and Numbers, Generating Arithmetic and Geometric	****** ************** *******		

Numbers, Gene 'ing Arithmetic and Geometric Progression, Fibonacci and Other Sequences, Approximate Values For π , Sin(x), Cos(x), Etc. Using Taylor Series. Different Kinds of Data in The Real World and How They are Represented in The Computer Memory. Representation of Integers: Signed Magnitude Form, 1's Complement And 2's Complement. Representation of Real Numbers: IEEE 754 Floating Point Representation. Representation of Characters: ASCII, UNICODE. C Language: Introduction To Programming Languages, Different Generations of Programming Languages. Typed Vs Typeless Programming Languages, History of C Language, An Empty C Program. C Language Counterparts For Input (scanf()), Output (printf()) Statements, Assignment, Arithmetic, Relational and Logical Operators. If, If-Else Statements, For, While, Do-While Statements. Data Types. Translating Pseudocode/Algorithm to C Program. Incremental Compilation and Testing of The C Program. Simple Problems Involving Input, Output, Assignment Statement, Selection and Repetition. Good Coding Practices.

Progression jbonacci and Other Sequences, Approximate Values For π , Sin(x), Cos(x), Etc. Using Taylor Series. Different Kinds of Data in The Real World and How They are Represented in The Computer Memory. Representation of Integers: Signed Magnitude Form, 1's Complement And 2's Complement. Representation of Real Numbers: IEEE 754 Floating Point Representation. Representation of Characters: ASCII, UNICODE. C Language: Introduction To Programming Languages, Different Generations of Programming Languages. Typed Vs Typeless Programming Languages, History of C Language, An Empty C Program. C Language Counterparts For Input (scanf()), Output (printf()) Statements, Assignment, Arithmetic, Relational and Logical Operators. If, If-Else Statements, For, While, Do-While Statements. Data Types. Translating Pseudocode/Algorithm to C Program. Incremental Compilation and Testing of The C Program. Simple Problems Involving Input, Output, Assignment Statement, Selection and Repetition. Good Coding Practices.

Module III

Problems on Numbers: Extracting Digits of a Number (Left to Right and Right to Left), Palindrome, Prime Number, Prime Factors, Amicable Number, Perfect Number, Armstrong Number, Factorial, Converting Number from One Base to Another. Statistics (Maximum, Minimum, Sum and Average) on a Sequence of Numbers which are Read using Sentinel-

Module III

Problems on Numbers: Extracting Digits of a Number (Left to Right and Right to Left), Palindrome, Prime Number, Prime Factors, Amicable Number, Perfect Number, Armstrong Number, Factorial, Converting Number from One Base to Another. Statistics (Maximum, Minimum, Sum and Average) on a Sequence of Numbers which are Read using Sentinel-Controlled Repetition using only a few Variables. C Language: else-if Ladder, switch Case, Increment/Decrement Operators, break and

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*				continue Strainents.		
	EX XX 13 1 1 2		C Language: else-if Ladder, switch Case,		20 510 510 510 510	505 505 505 50
*			Increment/Decrement Operators, break and	1		
			continue Statement			
			Module IV	Module IV		
		j	Modular Programming, Top-Down and Bottom-	Modular Programming, Top-Down and Bottom-Up		
		1)	Up Approaches to Problem Solving. Recursion.	Approaches to Problem Solving. Recursion.		
		1	Problems on Arrays: Reading and Writing of	Problems on Arrays: Reading and Writing of Array		
		J.	Array Elements, Maximum, Minimum, Sum,	Elements, Maximum, Minimum, Sum,		
-		J	Average, Median and Mode. Sequential And	Average, Median and Mode. Sequential And	7.	
			Binary Search. Any one Sorting Algorithm.	Binary Search. Any one Sorting Algorithm. Matrix		
			Matrix Operations. C Language: Function	Operations. C Language: Function Definition and		
		1	Definition and Declaration (Prototype), Role of	Declaration (Prototype), Role of Return Statement,		
		J	Return Statement, One Dimensional and Two-	One Dimensional and Two-Dimensional Arrays.		
		J	Dimensional Arrays. String Functions. Other	String Functions. Other Operators, Operator		
~	**	J	Operators, Operator Precedence and	Precedence and Associativity. Debugging.	9.	
		a J	Associativity. Debugging.			
			Module I	Module I		
		l	Data Warehousing: Introduction to data	Data Warehousing: Introduction to data		
	~~.	L .	warehousing, Data warehousing	warehousing, Data warehousing		
1	B.C.A- III	Data Warehousing	components, Building a data warehouse,	components, Building a data warehouse, Difference		
	Sem- VI	Warehousing and Data	Difference between database system and data	between database system and data warehouse, Data		
		Mining	warehouse, Data warehouse architecture	warehouse architecture		
			Module II	Module II		
		1	Data Mining: Introduction of data mining -	Data Mining: Introduction of data mining -		
		1	Definition and functionalities	Definition and functionalities		
		1	Issues in DM, Applications of data mining, KDD process. Data Pre-processing:	Issues in DM, Applications of data mining, KDD process. Data Pre-processing:		
		1	Data Pre-processing, Data cleaning, Data	Data Pre-processing, Data cleaning, Data		
		1	integration and transformation, Data	integration and transformation, Data		
		<i>i</i>	reduction, Discretization and concept hierarchy			
28 102 203 203 E00 E00 E00 E00 E	50 0 70 70 70	eamenene earari	generation, Data mining Tasks	generation, Data mining Tasks	* ** ** ** ** ** *	- C - C - C - C - C - C - C - C - C - C
				STD. \\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \		
		1	Module III Data Mining techniques: Frequent item	Module III		
			Data Mining techniques: Frequent item - set and association rule mining:	Pata Mining techniques: Frequent item - set and association rule mining:		
	. 1	i y			12	
		1	apriori algorithm, use of sampling for frequent	tangiorial gorithm use of sampling for frequent	I .	1

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		Module IV Cluster Analysis: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods – K-Means and K-Medoid	Module IV Cluster Analysis: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods – K-Means and K-Medoids		
B.C.A III Sem-VI	Android Programmin	Module I Introduction to Mobile Operating System: Mobile operating system, Operating system structure, Constraints and Restrictions, Features: Multitasking Scheduling, Memory Allocation, File System Interface, Keypad Interface, I/O Interface, Protection and Security, Multimedia features. Brief history of Android, Different types	Module I Introduction to Mobile Operating System: Mobile operating system, Operating system structure, Constraints and Restrictions, Features: Multitasking Scheduling, Memory Allocation, File System Interface, Keypad Interface, I/O Interface, Protection and Security, Multimedia features. Brief history of Android, Different types of mobile applications	YES.	
		of mobile applications Module II Android Development Environment: Introduction to Mobile development IDE's, Setting up development environment, Android Software Development, Working with the AndroidManifest.xml, Dalvik Virtual Machine & .apk file extension, Android Architecture, Building a sample Android application using Android Studio. Android Project Structure. Working with emulator	Module II Android Development Environment: Introduction to Mobile development IDE's, Setting up development environment, Android Software Development, Working with the AndroidManifest.xml, Dalvik Virtual Machine & .apk file extension, Android Architecture, Building a sample Android application using Android Studio. Android Project Structure, Working with emulator,		

		Module III Android Application Framework: Layouts &	Module III Android Application Framework: Layouts &			
SEE ESE ESE ESE	V 823 F. 7 624 634 125 125 F.	Drawable Resources, Basic Building blocks - Activities and Activity lifecycle, UI Components - Views & Notifications, Components for communication -Intents & type of Intents, Android API levels(versions & version names), Developing sample Application	Drawable Resources, Basic Building blocks - Activities and Activity lifecycle, UI Components - Views & Notifications, Components for communication -Intents & type of Intents, Android API levels(versions & version names), Developing sample Application		10 STOR STORE STORE S	ne ene en
		Module IV Basic UI design: Form widgets, Text Fields, Layouts, Option menu, Context menu, Sub menu, Time and Date, Images and media, Composite, Alert Dialogs & Toast, Popup, Introduction to SQLite Programming, SQLite Database.	Module IV Basic UI design: Form widgets, Text Fields, Layouts, Option menu, Context menu, Sub menu, Time and Date, Images and media, Composite, Alert Dialogs & Toast, Popup, Introduction to SQLite Programming, SQLite Database.			
B.C.A- I	Data	Module I	Module I			
Sem-II	Structures	Introduction and Overview: Definition,	Introduction and Overview: Definition,			
	using C	Classification and Operations of Data	Classification and Operations of Data			25
		Structures. Algorithms: Complexity,	Structures. Algorithms: Complexity, Time-		i.	
		Time-Space Trade off.Arrays: Definition	Space Trade off.Arrays: Definition and			
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		and the second s				
A MONTH FOR EACH A	12 17 17 17 27 27 27 17 17 17 17 17 17 17 17 17 17 17 17 17	Matrices, Multi-Dimensional Arrays.				
		Sem-II Structures	Android Application Framework: Layouts & Drawable Resources, Basic Building blocks - Activities and Activity lifecycle, UI Components - Views & Notifications, Components for communication -Intents & type of Intents, Android API levels(versions & version names), Developing sample Application Module IV	Android Application Framework: Layouts & Drawable Resources, Basic Building blocks - Activities and Activity fifecycle, UI Components - Views & Notifications, Components for communication -Intents & type of Intents, Android API levels(versions & version names), Developing sample Application Module IV	Android Application Framework: Layouts & Drawable Resources, Basic Building blocks - Activities and Activity lifecycle, Ul Components - Views & Notifications, Components for communication -Intents & type of Intents, Android API levels(versions & version names), Developing sample Application Module IV	Android Application Framework: Layouts & Drawable Resources, Basic Building blocks - Activities and Activity lifecycle, U! Components - Views & Notifications, Components for communication -Intents & type of Intents, Android API levels(versions & version names), Developing sample Application Module IV

			Module II	Module II		
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(2)			Arrays, Representation, Types of Linked lists,	Representation, Types of Linked lists,	esar rar for for 72	TAT THE 250 A
			Traversing, Inserting, Deleting and Searching in	Traversing, Inserting, Deleting and Searching in		
			Singly Linked List, Doubly Linked List and	Singly Linked List, Doubly Linked List and		
			Circular Linked List. Applications of Linked	Circular Linked List. Applications of		
	9		Lists: Addition of Polynomials.Hashing and	Linked Lists: Addition of		
			Collision: Hashing, Hash Tables, Types of Hash	Polynomials.Hashing and Collision:		
			Functions, Collision, Collision Resolution with	Hashing, Hash Tables, Types of Hash		
			Open Addressing and Chaining.	Functions, Collision, Collision Resolution		
	â			with Open Addressing and Chaining.		
				Module III		
			Module III	Stacks: Definition, Representation of Stacks using		
			Stacks: Definition, Representation of Stacks	Arrays and Linked List, Operations on		
			using Arrays and Linked List, Operations on	Stacks using Arrays and Linked List, Application		
	25		Stacks using Arrays and Linked List, Application	of Stacks: Arithmetic Expressions, Polish		11 12
	11		of Stacks: Arithmetic Expressions, Polish	Notation, Conversion of Infix Expression to Postfix		
			Notation, Conversion of Infix Expression to	Expression, Evaluation of Postfix		
			Postfix Expression, Evaluation of Postfix	Expression.Recursion: Definition,		
			Expression.Recursion: Definition, Recursive	Recursive Notation, Runtime Stack,		
			Notation, Runtime Stack, Applications of	Applications of Recursion:Factorial of		
			Recursion:Factorial of Number, GCD, Fibonacci	Number, GCD, Fibonacci Series and		
			Series and Towers of Hanoi.Queues: Definition,	Towers of Hanoi.Queues: Definition,		
			Representation of Queues using Array and	Representation of Queues using Array and		
			Linked List, Types of Queue:Simple	Linked List, Types of Queue:Simple		
			Queue, Circular Queue, Double-Ended queue,	Queue, Circular Queue, Double-Ended		
			Priority Queue, Operations on Simple Queues and	queue, Priority Queue, Operations on		
			Circular Queues using Array and Linked List,	Simple Queues and Circular Queues using		
			Applications of Queues.	Array and Linked List, Applications of		
			COL	Queues.		
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		M. J. L. TXZ	N4. 1. 1. 157			
ED DE EN ME	3 03 03 03 00 00000	Module IV Graphs: Definition, Terminology, Representation,	Module IV Graphs: Definition, Terminology, Representation,	OR NO OR NO OR NO OR NO OR		650
		Traversal. Trees: Definition, Terminology, Binary	Traversal. Trees: Definition, Terminology, Binary			
		Trees, Traversal of Binary Tree, Binary Search	Trees, Traversal of Binary Tree, Binary Search			
		Tree, Inserting, Deleting and Searching in Binary	Tree, Inserting, Deleting and Searching in Binary			
		Search Tree, Height Balanced Trees: AVL Trees,	Scarch Tree, Height Balanced Trees: AVL Trees,			
		Insertion and Deletion in AVL Tree.	Insertion and Deletion in AVL Tree.			
BCA-I	Operating	Module I	Module I			
Sem-II	Systems	Operating Systems Overview: Definition,	Operating Systems Overview: Definition,			
		Evaluation of O.S, Components &	Evaluation of O.S, Components & Services			
		Services of OS,Structure, Architecture,	of OS,Structure, Architecture, types of			
		types of Operating Systems, Batch	Operating Systems, Batch Systems,			
		Systems, Concepts of Multiprogramming	Concepts of Multiprogramming and Time			
		and Time Sharing, Parallel, Distributed	Sharing, Parallel, Distributed and real time			
		and real time Systems. Operating Systems	Systems. Operating Systems Structures:			
	1	Structures: Operating system services	Operating system services and systems	2		
	2	and systems calls, system programs,	calls, system programs, operating system			50
		operating system structure, operating	structure, operating systems generations.			
		systems generations.	, , , , ,			
		Module II	Module II			
		Process Management: Process Definition,	Process Management: Process Definition,			
		Process states, Process State transitions,	Process states, Process State transitions,			
		Process Scheduling, Process Control	Process Scheduling, Process Control			
		Block, Threads, Concept of multithreads,	Block, Threads, Concept of multithreads,			
		Benefits of threads, Types of threads.	Benefits of threads, Types of threads.			
		Process Scheduling: Definition,	Process Scheduling: Definition, Scheduling			
		Scheduling objectives, Scheduling	objectives, Scheduling algorithms, CPU			
		algorithms, CPU scheduling Preemptive	scheduling Preemptive and Non-			
		and Non-preemptive Scheduling	preemptive Scheduling algorithms (FCFS,			
41904 104 104 1	*D* *D* *C* *C* *C* *C*	algorithms (FCFS, SJF and RR),	S.F and RR), Performance evaluation of	12 *10 2 *10 2 *10 (1) & (2)		1752 (7)
NO PATE AND THE	A4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Performance evaluation of the scheduling ES	the scheduling Algorithms	500 00 KG KG	r. y r.e.	630
		Algorithms	E E			
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Module III

Process Synchronization: Introduction, Inter-process Communication, Race Conditions, Critical Section Problem, Mutual Exclusion, Semaphores, Monitors. Deadlocks: System model, deadlock characterization, deadlock prevention, avoidance, Banker's algorithm, Deadlock detection, and recovery from deadlocks.

Module III

Process Synchronization: Introduction,
Inter-process Communication, Race
Conditions, Critical Section Problem,
Mutual Exclusion, Semaphores, Monitors.
Deadlocks: System model, deadlock
characterization, deadlock prevention,
avoidance, Banker's algorithm, Deadlock
detection, and recovery from deadlocks

Module IV

Memory Management: Logical and Physical address map, Swapping, Memory allocation, MFT, MVT, Internal and External fragmentation and Compaction, Paging, Segmentation. Virtual Memory: Demand paging, Page Replacement algorithms, Allocation of frames, thrashing. I/O Management: Principles of I/O Hardware: Disk structure, Disk scheduling algorithms.

Module IV

Memory Management: Logical and Physical address map, Swapping, Memory allocation, MFT, MVT, Internal and External fragmentation and Compaction, Paging, Segmentation. Virtual Memory: Demand paging, Page Replacement algorithms, Allocation of frames, thrashing. I/O Management: Principles of I/O Hardware: Disk structure, Disk scheduling algorithms.

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DEPARTMENT OF B. C. A.
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(Signature of the Head of Department)

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VIVEKANAND COLLEGE (AN EMPOWERED AUTONOMOUS INSTITUTE), KOLHAPUR STATEMENT OF SYLLABUS COVERED

Year: 2024-2025

Term-I

Name of Teacher: Mrs. Megha Bipin Alman

Department: BCA

Class	Subject	Syllabus Assigned	Syllabus Covered	Syllabus not to Covered	Remark
BCA-III	Computer Network	Module 1:Basics of Data communication Data Communication concept, Components- sender, receiver, message, transmission media- Data Flow- simplex, half-duplex, or full-duplex, Networks, Definition, Advantages and disadvantages, Categories of Networks- LAN, WAN,MAN Network Architecture-Client-Server and Peer to peer, Multiplexing and switchin, Frequency-Division Multiplexing, Wavelength-Division Multiplexing, Time-Division Multiplexing, Circuit switching, Packet Switching, Message Switching	Module 1:Basics of Data communication Data Communication concept, Components- sender, receiver, message, transmission media- Data Flow- simplex, half-duplex, or full-duplex , Networks, Definition, Advantages and disadvantages, Categories of Networks- LAN, WAN,MAN Network Architecture-Client-Server and Peer to peer, Multiplexing and switchin, Frequency-Division Multiplexing, Wavelength-Division Multiplexing, Time-Division Multiplexing, Circuit switching, Packet Switching, Message Switching	*	
# 606 BOX 606 BOX 7 707 5 503	CONTRACTOR STATES	Module 2:Transmission media and Reference Models Transmission Media, Guided Media - Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable Unguided Media: Radio Waves, Microwaves, Infrared, satellite communication, Transmission Modes- Parallel and Serial - (Asynchronous, Synchronous), Reference Models-OSI reference model, TCP/IP reference model Comparison of OSI and TCP/IP reference model Protocol Standards, IP address scheme and characteristics of IP address	Module 2:Transmission media and Reference Models Transmission Media, Guided Media - Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable Unguided Media: Radio Waves, Microwaves, Infrared, satellite communication, Transmission Modes-Parallel and Serial - (Asynchronous, Synchronous), Reference Models-OSI reference model, TCP/IP reference model Comparison of OSI and TCP/IP reference model, Protocol Standards, IP address scheme and characteristics of IP address		

196

e see see sou de		Module 3:Data link, Network and Transport layer Data link Layer-Design issues, Framing, error detection and correction, Network layer, design issues of network layer, Routing algorithm (shortest path, Flooding, distance vector,) Congestion control, Transport laye, Transport Layer Primitives: listen, connect, send, receive, disconnect, Protocols: TCP, UDP	Module 3:Data link, Network and Transport layer Data link Layer-Design issues, Framing, error detection and correction, Network layer, design issues of network layer, Routing algorithm (shortest path, Flooding, distance vector,) Congestion control, Transport laye, Transport Layer Primitives: listen, connect send, receive, disconnect, Protocols: TCP, UDP		
	***	Module 4: Session, Presentation and Application layer Session layer-Services: dialog management, synchronization, activity management, exception handling, Remote procedure calls 4.2 Presentation layer: Services: Translation, compression, encryption, Cryptography: concept, symmetric key & asymmetric key cryptography, Application layer- Function, Domain name system (DNS), Hypertext Transfer Protocol (HTTP), Simple Mail Transfer Protocol (SMTP), Telnet, File Transfer Protocol (FTP)	Module 4: Session, Presentation and Application layer Session layer-Services: dialog management, synchronization, activity management, exception handling, Remote procedure calls 4.2 Presentation layer: Services: Translation, compression, encryption, Cryptography: concept, symmetric key & asymmetric key cryptography, Application layer-Function, Domain name system (DNS), Hypertext Transfer Protocol (HTTP), Simple Mail Transfer Protocol (SMTP) , Telnet, File Transfer Protocol (FTP)	2	(1000000

(Signature of the Head of Department)

HEAD

DEPARTMENT OF B. C. A.

VIVEKANAND COLLEGE, KOLHAPUR

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mbalman (Signature of the Teacher)

B.C.A-	Object	Module I	Module I	
II Sem-III	Oriented Programm ing using C++	Principles of Objective Oriented Programming History of OOP, Introduction to Object Oriented Programming, Basic Concepts of Object Oriented Programming, Benefits of Object Oriented Programming, Object Oriented Languages, Difference between C and C++.Beginning with C++Tokens, Keywords, Identifiers and Constants, Data Types, Type Compatibility, Variables, Operators in C++, Operator Precedence, Control Structures (Conditional, Unconditional and Looping).	Principles of Objective Oriented Programming History of OOP, Introduction to Object Oriented Programming, Basic Concepts of Object Oriented Programming, Benefits of Object Oriented Programming, Object Oriented Languages, Difference between C and C++.Beginning with C++ Tokens, Keywords, Identifiers and Constants, Data Types, Type Compatibility, Variables, Operators in C++, Operator Precedence, Control Structures (Conditional, Unconditional and Looping).	
ESTD \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				
Avered Autonomous		Module II Functions in C++, Classes & Objects Concept of Function, main() Function, Inline Functions, Function Overloading, Specifying a Class, Data members and Member Functions, Access Specifiers, Friend Function, Static data Member, Object declaration and Initialization, Arrays of Objects Constructors & Destructors, Inheritance Constructors-Definition, Use of Constructors, Types of Constructors (Default, Parameterized, Copy, Dynamic), Destructors- Definition, Use, Inheritance Definition, Types of Inheritance (Single, Multiple, Multilevel, Hierarchical, Hybrid)	Module II Functions in C++, Classes & Objects Concept of Function, main() Function, Inline Functions, Function Overloading, Specifying a Class, Data members and Member Functions, Access Specifiers, Friend Function, Static data Member, Object declaration and Initialization, Arrays of Objects Constructors & Destructors, Inheritance Constructors-Definition, Use of Constructors, Types of Constructors (Default, Parameterized, Copy, Dynamic), Destructors-Definition, Use, Inheritance- Definition, Types of Inheritance (Single, Multiple, Multilevel,	

VIVEKANAND COLLEGE (AN EMPOWERED AUTONOMOUS INSTITUTE), KOLHAPUR STATEMENT OF SYLLABUS COVERED

Year: 2024-2025

Term-I

Name of Teacher: Mrs. Megha Bipin Alman

Department: BCA

Class	Subject	Syllabus Assigned	Syllabus Covered	Syllabus not to Covered	Remark
BCA-II	Object Oriented Programming with C++	Module 1: Principles of Objective Oriented Programming History of OOP, Introduction to Object Oriented Programming, Basic Concepts of Object Oriented Programming, Benefits of Object Oriented Programming, Object Oriented Languages, Difference between C and C++. Beginning with C++ Tokens, Keywords, Identifiers and Constants, Data Types, Type Compatibility, Variables, Operators in C++, Operator Precedence, Control Structures (Conditional, Unconditional and Looping).	Module 1: Principles of Objective Oriented Programming History of OOP, Introduction to Object Oriented Programming, Basic Concepts of Object Oriented Programming, Benefits of Object Oriented Programming, Object Oriented Languages, Difference between C and C++. Beginning with C++ Tokens, Keywords, Identifiers and Constants, Data Types, Type Compatibility, Variables, Operators in C++, Operator Precedence, Control Structures (Conditional, Unconditional and Looping).		
2002 2002 2003 2003 23 33 8000 30 3		Module 2: Functions in C++, Classes & Objects Concept of Function, main() Function, Inline Functions, Function Overloading, Specifying a Class, Data members and Member Functions, Access Specifiers, Friend Function, Static data Member, Object declaration and Initialization, Arrays of Objects Constructors & Destructors, Inheritance Constructors-Definition, Use of Constructors, Types of Constructors (Default, Parameterized, Copy, Dynamic), Destructors-Definition, Use, Inheritance-Definition, Types of Inheritance (Single, Multiple, Multilevel, Hierarchical, Hybrid)	Module 2: Functions in C++, Classes & Objects Concept of Function, main() Function, Inline Functions, Function Overloading, Specifying a Class, Data members and Member Functions, Access Specifiers, Friend Function, Static data Member, Object declaration and Initialization, Arrays of Objects Constructors & Destructors, Inheritance Constructors-Definition, Use of Constructors, Types of Constructors (Default, Parameterized, Copy, Dynamic), Destructors-Definition, Use, Inheritance-Definition, Types of Inheritance (Single, Multiple, Multilevel, Hierarchical, Hybrid)	**************************************	

Module 3: Pointers, Virtual Functions & Polymorphism Pointer, Pointer to Object, this pointer, Pointer to Derived Classes, Polymorphism: Meaning,	Module 3: Pointers, Virtual Functions & Polymorphism Pointer, Pointer to Object, this pointer, Pointer to Derived Classes, Polymorphism: Meaning,	. 575 53 53 53 5	n die we see was e
compile Time and Run time polymorphism, Rules for Operator Overloading, Operator Overloading (Unary & Binary)-with member function and friend function.	compile Time and Run time polymorphism, Rules for Operator Overloading, Operator Overloading (Unary & Binary)-with member function and friend function.		and and designed.
Module 4: Working with Files File-Definition, Use, Classes for File Stream Operations, Opening and Closing a File, File Opening Modes, File Pointers, Manipulation of File Pointer(using-seekg,seekp,tellg,tellp), Input Output Operations-get () Put (), read () Write ().	Module 4: Working with Files File-Definition, Use, Classes for File Stream Operations, Opening and Closing a File, File Opening Modes, File Pointers, Manipulation of File Pointer(using-seekg,seekp,tellg,tellp), Input Output Operations-get () Put (), read () Write ()		

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(EMPOWERLD AUTONOMOUS)



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VIVEKANAND COLLEGE (AN EMPOWERED AUTONOMOUS INSTITUTE), KOLHAPUR STATEMENT OF SYLLABUS COVERED

Year: 2024-2025

Term-II

Name of Teacher: Mrs. Megha Bipin Alman

Department: BCA

Class	Subject	Syllabus Assigned	Syllabus Covered	Syllabus not to Covered	Remark
BCA-I	Object	Module 1: Fundamentals of Object	Module 1: Fundamentals of Object Oriented		3
	Oriented	Oriented Programming: Basic Concepts of	Programming: Basic Concepts of Object		
	Programming	Object Oriented Programming (OOP), Benefits	Oriented Programming (OOP), Benefits and		
	using Java	and Applications of OOP.	Applications of OOP.		
		Java Evolution: Java Features, Difference	Java Evolution: Java Features, Difference		
		between Java, C and C++, Java and Internet,	between Java, C and C++, Java and Internet,		
	×	Java Environment.	Java Environment.	¹ **********	
	a	Overview of Java Language: Introduction to	Overview of Java Language: Introduction to		2:
		Simple Java Program, Use of Comments and	Simple Java Program, Use of Comments and		
		Math function, Application of two classes,	Math function, Application of two classes, Java		
		Java Program Structure, Java Tokens and	Program Structure, Java Tokens and		
		statements,Implementing Java program And	statements,Implementing Java program And		
		JVM, Command Line Arguments.	JVM, Command Line Arguments.		
		Module 2: Constants, Variables and Data	Module 2: Constants, Variables and Data		10
	· ·	Types: Constants, Variables, Data Types,	Types: Constants, Variables, Data Types,		
		Declaration of Variables, Giving values to	Declaration of Variables, Giving values to		
		Variables, Symbolic Constants, Type casting.	Variables, Symbolic Constants, Type casting.		
		Operators & Expressions: Arithmetic	Operators & Expressions: Arithmetic		
		operators, Relational operators, Logical	operators, Relational operators, Logical		
		operators, Assignment operators, Increment &	operators, Assignment operators, Increment &		
		Decrement operators, conditional operators,	Decrement operators, conditional operators,		
		Bitwise operators, Arithmetic Expressions,	Bitwise operators, Arithmetic Expressions,		
		Evaluation of Expressions, Type Conversions	Evaluation of Expressions, Type Conversions in		
		in Expressions, Operator Precedence & COULT	Expressions, Operator Precedence &		04 802 803 02 802 803
		Associativity.	Associativity.		
		Decision Making, Branching & Looping:	Decision Making, Branching & Looping:		
		Decision Making with Control Statements,	Decision Making with Control Statements,		
		Loopingstatements, Jump in loops, Labelled	Loopingstatements, Jump in loops, Labelled		
		loops.	100		

	Module 3: Classes, Objects and Methods:	Module 3: Classes, Objects and Methods:		
	Defining Class, Methods Declaration,	Defining Class, Methods Declaration,		
13 A3 A4 A3	Constructors, Methods	Constructors, Methods	202 202 202 202 203	503 703 503 503 50
	Overloading, Overriding Methods, Inheritance	Overloading, Overriding Methods, Inheritance		
	Arrays, Strings and Vectors: 1D arrays,	Arrays, Strings and Vectors: 1D arrays,		Į.
_	Creating an Array, 2D arrays, Strings, Vectors,	Creating an Array, 2D arrays, Strings, Vectors,		
	Wrapper Classes, Enumerated Types	Wrapper Classes, Enumerated Types		
	Inheritance: Defining, extending classes, and	Inheritance: Defining, extending classes, and		
	Implementing Interfaces. Multiple inheritance	Implementing Interfaces. Multiple inheritance		
	and polymorphism.	and polymorphism.		
	Module 4: Packages: Basics of packages,	Module 4:Packages: Basics of packages,		
	System packages, Creating and accessing	System packages, Creating and accessing		
	packages, Creating user defined packages,	packages, Creating user defined packages,		
	Adding class to a package.	Adding class to a package.		
	Exception Handling: Using the main	Exception Handling: Using the main		********
	keywords of exception handling: try, catch,	keywords of exception handling: try, catch,		
	throw, throws and finally; Nested try, Multiple	throw, throws and finally; Nested try, Multiple		
	catch statements, Creating user defined	catch statements, Creating user defined		
	exceptions	exceptions		\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \

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VIVEKANAND COLLEGE (AN EMPOWERED AUTONOMOUS INSTITUTE), KOLHAPUR STATEMENT OF SYLLABUS COVERED

Year: 2024-2025 Term-II

Name of Teacher: Mrs. Megha Bipin Alman

Department: BCA

Class	Subject	Syllabus Assigneā	Syllabus Covered	Syllabus not to Covered	Remark
BCA-III	Android Programming	Module 1:Introduction to Mobile Operating System Mobile operating system, Operating system structure, Constraints and Restrictions, Features: Multitasking Scheduling, Memory Allocation, File System Interface, Keypad Interface, I/O Interface, Protection and Security, Multimedia features. Brief history of Android, Different types of mobile applications).	Module 1:Introduction to Mobile Operating System Mobile operating system, Operating system structure, Constraints and Restrictions, Features: Multitasking Scheduling, Memory Allocation, File System Interface, Keypad Interface, I/O Interface, Protection and Security, Multimedia features. Brief history of Android, Different types of mobile applications).	34	
		Module 2:Android Development Environment Introduction to Mobile development IDE's, Setting up development environment, Android Software Development, Working with the AndroidManifest.xml, Dalvik Virtual Machine & .apk file extension, Android Architecture, Building a sample Android application using Android Studio. Android Project Structure, Working with emulator	Module 2:Android Development Environment Introduction to Mobile development IDE's, Setting up development environment, Android Software Development, Working with the AndroidManifest.xml, Dalvik Virtual Machine & .apk file extension, Android Architecture, Building a sample Android application using Android Studio. Android Project Structure, Working with emulator		
		Module 3: Android Application Framework Layouts & Drawable Resources, Basic Building blocks - Activities and Activity lifecycle, UI Components - Views & Notifications, Components for communication -Intents & type of Intents, Android API levels (versions & version names), Developing sample Application	Module 3: Android Application Framework Layouts & Drawable Resources, Basic Building blocks - Activities and Activity lifecycle, UI Components - Views & Notifications, Components for communication - Intents & type of Intents, Android API levels (versions & version names), Developing sample Application	* 801 801 801 801 80 301 - 1 801 80 80	KO KO KO KO K

	Module 4: Basic UI design	Module 4: Basic UI design	
	Form widgets, Text Fields, Layouts, Option	Form widgets, Text Fields, Layouts, Option	
10. 10. 10. 10.	 menu, Context menu, Sub menu, Time and Date,	menu, Context menu, Sub menu, Time and Date,	 tor tor tor ker ker
	Images and media, Composite, Alert Dialogs &	Images and media, Composite, Alert Dialogs &	 3 555555
	Toast, Popup, Introduction to SQLite	Toast, Popup, Introduction to SQLite	-
	Programming, SQLite Database.	Programming, SQLite Database.	

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VIVEKANAND COLLEGE, KOLHAPUR (An Empowered Autonomous Institute) STATEMENT OF SYLLABUS COVERED

Year- 2024 - 025

Term - Ist

Name of teacher- Mr.K.D.Morabale

Department-BCA

Name of teacher-wit.K.D.wiorabate		icited lylling liviolabate	Department-BCA		
Class	Subject	Syllabus assigned	Syllabus Covered	Syllabus not to Covered	Remark
B.C.A I Sem-I (AICTE)	Mathematics Foundation to Computer Science - I (DSC39MAT 11)	Unit-1 Set, Relation And Function Set, Set Operations, Properties of Set operations, Subset, Venn Diagrams, Cartesian Products. Relations on a Set, Properties of Relations, Representing Relations using matrices and digraphs, Types of Relations, Equivalence Relation, Equivalence relation and partition on set, Closures of Relations. Functions, properties of functions (domain, range), composition of functions, surjective (onto), injective (one-to-one) and bijective functions, inverse of functions.	Unit 1 Set, Relation And Function Set, Set Operations, Properties of Set operations, Subset, Venn Diagrams, Cartesian Products. Relations on a Set, Properties of Relations, Representing Relations using matrices and digraphs, Types of Relations, Equivalence Relation, Equivalence relation and partition on set, Closures of Relations. Functions, properties of functions (domain, range), composition of functions, surjective (onto), injective (one-to-one) and bijective functions, inverse of functions.		
		Unit- 2 Counting and Recurrence Relation Basics of counting, Pigeonhole principle, permutation, combination, Binomial coefficients, Binomial theorem.	Unit- 2 Counting and Recurrence Relation Basics of counting, Pigeonhole principle, permutation, combination, Binomial coefficients, Binomial theorem.		
	1 518 5 518 5 60 60 60 60 60 60 60 60 60 60 60 60 60	Unit-3 Elementary Graph Theory Basic terminologies of graphs, connected and disconnected graphs, subgraph, paths and cycles, complete graphs, digraphs, weighted graphs, Euler and Hamiltonian graphs. Trees, properties of trees,	disconnected graphs,	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	and one one of

	concept of spanning tree.	concept of spanning tree.	
	Planar graphs.	Planar graphs.	
	Definitions and basic results	Definitions and basic results	
100 NO	on the topics mentioned	on the topics mentioned	200 500 500 500 500 500 500 500 400 5
	Unit-4 Graph Theory	Unit-4 Graph Theory	
	Types of matrices, algebra of matrices—addition,	Types of matrices, algebra of matrices-addition,	
	subtraction, and multiplication of matrices,	subtraction, and multiplication of matrices,	
	determinant of a matrix,	determinant of a matrix,	
	symmetric and skew-symmetric matrices,	symmetric and skew-symmetric matrices,	
	inverse of a matrix,	inverse of a matrix,	
	applications of matrices to solve system of linear	applications of matrices to solve system of linear	
	equations,	equations,	
	Eigen values and Eigen vectors, Caley-Hamilton	Eigen values and Eigen vectors, Caley-Hamilton	
	theorem.	theorem.	

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VIVEKANAND COLLEGE, KOLHAPUR (An Empowered Autonomous Institute) STATEMENT OF SYLLABUS COVERED

Year- 2024 - 025

Term - IInd

Name of teacher- Mr.K.D.Morabale

Department- BCA

Class	Subject	Syllabus assigned	Syllabus Covered	Syllabus not to Covered	Remark
B.C.A I Sem-II (AICTE)	Mathematics Foundation to Computer Science - II (DSC39MAT 21)	Unit 1 Logic and Methods of Proofs Propositions, logical operations (basic connectives), compound statements, construction of truth table, quantifiers, conditional statements, tautology, contradiction, contingency, logical equivalence. Methods of proofs	Unit 1 Logic and Methods of Proofs Propositions, logical operations (basic connectives), compound statements, construction of truth table, quantifiers, conditional statements, tautology, contradiction, contingency, logical equivalence. Methods of proofs	·····	
		Unit- 2 Algebraic Structures Semi-group, Monoid, Group, Subgroup, Cyclic group.	Unit- 2 Algebraic Structures Semi-group, Monoid, Group, Subgroup, Cyclic group.		
		Unit-3 Numerical Methods Concept and importance of errors in numerical methods. Solution of algebraic and transcendental equations: Bisection method and Newton-Raphson methods. Numerical Interpolation: Newton's Forward and Newton's Backward interpolation formula and Lagrange's formula. Numerical Integration: Trapezoidal rule and Simpson's 1/3 rule	Simpson's 1/3 rule	******	
		Unit- 4 Optimization Techniques Linear programming: Introduction, LP formulation, Graphical method for solving LPs	Unit- 4 Optimization Techniques Linear programming: Introduction, LP formulation, Graphical method for solving LPs		ia .

	with two	with two		ne 8 m
	variables, Special cases in graphical methods	variables, Special cases in graphical methods		
 	Transportation problem: Definition, Linear	Transportation problem: Definition, Linear form,	212 212 212 212 212	70 70 70 TO TO
 The real services and the real	form, North-west corner method, Least cost	North-west corner method, Least cost method,		por ser ser ser se
	method,	Vogel's approximation method for finding		
	Vogel's approximation method for finding	feasible solution.		
	feasible solution.			

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DEPARTMENT OF B. C. A.
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VIVEKANAND COLLEGE, KOLHAPUR (An EMPOWERED AUTONOMOUS Institute)

STATEMENT OF SYLLABUS COVERED

Year- 2024-25

Term- IInd

Name of teacher- Miss. Vaishnavi Rajendra Swami

Department-BCA

	Maine of teac	ner- Miss. vaisiinavi Kajenura Swann	Department Den		
Class	Subject	Syllabus assigned	Syllabus Cevered	Syllab us not to Cover ed	Remark
B.C.A I Sem-II (AICTE Approved)	Data Structures using C	Module I: Introduction and Overview: Definition, Classification and Operations of Data Structures. Algorithms: Complexity, Time-Space Tradeoff. Arrays: Definition and Classification of Arrays, Representation of Linear Arrays in Memory, Operations on Linear Arrays: Traversing, Inserting, Deleting, Searching, Sorting and Merging. Searching: Linear Search and Binary Search, Comparison of Methods. Sorting: Bubble Sort, Selection Sort, and Insertion Sort. Two- Dimensional Arrays, Representation of Two- Dimensional Arrays in Memory, Matrices and Sparse Matrices, Multi-Dimensional Arrays	Module I: Introduction and Overview: Definition, Classification and Operations of Data Structures. Algorithms: Complexity, Time-Space Tradeoff. Arrays: Definition and Classification of Arrays, Representation of Linear Arrays in Memory, Operations on Linear Arrays: Traversing, Inserting, Deleting, Searching, Sorting and Merging. Searching: Linear Search and Binary Search, Comparison of Methods. Sorting: Bubble Sort, Selection Sort, and Insertion Sort. Two- Dimensional Arrays, Representation of Two- Dimensional Arrays in Memory, Matrices and Sparse Matrices, Multi-Dimensional Arrays	******** *	w 30
o process and and and	08 NOW	Module II: Linked Lists: Definition, Comparison with Arrays, Representation, Types of Linked lists, Traversing, Inserting, Deleting and Searching in Singly Linked List, Doubly Linked List and Circular Linked List. Applications of Linked Lists: Addition of Polynomials. Hashing and Collision: Hashing, Hash Tables, Types of Hash Functions, Collision, Collision Resolution with Open Addressing and Chaining. Module III: Stacks: Definition, Representation of Stacks using Arrays and Linked List, Operations on	Module II: Linked Lists: Definition, Comparison with Arrays, Representation, Types of Linked lists, Traversing, Inserting, Deleting and Searching in Singly Linked List, Doubly Linked List and Circular Linked List. Applications of Linked Lists: Addition of Polynomials. Hashing and Collision: Hashing, Hash Tables, Types of Hash Functions, Collision, Collision Resolution with Open Addressing and Chaining. loops, Labelled loops Module III: Stacks: Definition, Representation of Stacks using Arrays and Linked List, Operations on		

			A 1' ' COt 1 A A A To Francosions	Application of Stacks: Arithmetic Expressions,		1	
			Application of Stacks: Arithmetic Expressions, Polish	Polish			
			Notation, Conversion of Infix Expression to	Notation, Conversion of Infix Expression to		e est est est tit	
	25 25 25 25 35	AND SOME OF SOME	Postfix Expression, Evaluation of Postfix	Postfix Expression, Evaluation of Postfix	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
			Expression.	Expression.			
			Recursion: Definition, Recursive Notation,	Recursion: Definition, Recursive Notation,			
			Runtime Stack, Applications of Recursion:	Runtime Stack, Applications of Recursion:			
			Factorial of Number, GCD, Fibonacci Series	Factorial of Number, GCD, Fibonacci Series and	1		
			and Towers of Hanoi.	Towers of Hanoi.			
			Queues: Definition, Representation of Queues	Queues: Definition, Representation of Queues			
			using Array and Linked List, Types of Queue:	using Array and Linked List, Types of Queue:			
			Simple Queue, Circular Queue, Double-Ended	Simple Queue, Circular Queue, Double-Ended			
			queue, Priority Queue, Operations on Simple	queue, Priority Queue, Operations on Simple			
			Queues and Circular Queues using Array and	Queues and Circular Queues using Array and			
			Linked List, Applications of Queues.	Linked List, Applications of Queues.			
			Module IV:	Module IV:			
			Graphs: Definition, Terminology,	Graphs: Definition, Terminology,			
			Representation, Traversal.	Representation, Traversal.			
17		¥ .	Trees: Definition, Terminology, Binary Trees,	Trees: Definition, Terminology, Binary Trees,			
	-		Traversal of Binary Tree, Binary Search Tree,	Traversal of Binary Tree, Binary Search Tree,			
- 1			Inserting, Deleting and Searching in Binary	Inserting, Deleting and Searching in Binary			
			Search Tree, Height Balanced Trees: AVL	Search Tree, Height Balanced Trees: AVL			
			Trees,	Trees,			
			Insertion and Deletion in AVL Tree.	Insertion and Deletion in AVL Tree.			
	D G 1 T		76 1 1 Y	Do I I I			
	B.C.A I	Operating	Module I:	Module I:			
	Sem-II	Systems	Operating Systems Overview: Definition,	Operating Systems Overview: Definition,			
	(AICTE		Evaluation of O.S, Components & Services of	Evaluation of O.S, Components & Services of OS,			
I F	Approved)		OS,	Structure, Architecture, types of Operating			
			Structure, Architecture, types of Operating	Systems, Batch Systems, Concepts of			
			Systems, Batch Systems, Concepts of	Multiprogramming and Time Sharing, Parallel,			
			Multiprogramming and Time Sharing, Parallel, Distributed and real time Systems.	Distributed and real time Systems.			
			Operating Systems Structures: Operating	Operating Systems Structures: Operating			
		:	system services and systems calls, system out see	system services and systems calls, system			
	XX XX XX XX XX	ACRES DE RESERVA DE LE CONTROL DE LA CONTROL	programs, operating system structure, operating	programs, operating system structure, operating	1 905 905 905 1	A 9/8 9/8 9/8 9/8	592030
12:0	FEED DAY	1 506 105 507 (5.5) 15.5	systems generations.	systems generations.	an sa a s	101 10 0	
			Module II:	Module II:			1
			Process Management: Process Definition, Sold	Process Management: Process Definition,			
			Process states, Process State transitions, Process	Process states, Process State transitions, Process			
			Scheduling, Process Control Block, Threads, Aug	Scheduling, Process Control Block, Threads,			
			Concept of multithreads, Benefits of threads,	Concept of multithreads, Benefits of threads,			
			Concept of multimeaus, benefits of infeaus,	Concept of manufilleaus, benefits of uneaus,			1

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		Types of threads.	Types of threads.			
1		Process Scheduling: Definition, Scheduling	Process Scheduling: Definition, Scheduling		1	
	901 S.N. TON STREET, S	objectives, Scheduling algorithms, CPU	objectives, Scheduling algorithms, CPU	**********		
		scheduling Preemptive and Non-preemptive	scheduling Preemptive and Non-preemptive			
		Scheduling algorithms (FCFS, SJF and RR),	Scheduling algorithms (FCFS, SJF and RR),		l i	
		Performance evaluation of the scheduling	Performance evaluation of the scheduling			
		Algorithms	Algorithms			
		Module III:	Module III:			
		Process Synchronization: Introduction, Inter-	Process Synchronization: Introduction, Inter-		e 1	
		process Communication, Race Conditions,	process Communication, Race Conditions,		1	
		Critical Section Problem, Mutual Exclusion,	Critical Section Problem, Mutual Exclusion,			
		Semaphores, Monitors.	Semaphores, Monitors.		1	
		Deadlocks: System model, deadlock	Deadlocks: System model, deadlock	*****		
		characterization, deadlock prevention,	characterization, deadlock prevention,			
		avoidance,	avoidance,		1	
		Banker's algorithm, Deadlock detection, and	Banker's algorithm, Deadlock detection, and			
		recovery from deadlocks	recovery from deadlocks.			
		Module IV:	Module IV:			
10		Memory Management: Logical and Physical	Memory Management: Logical and Physical	*		
		address map, Swapping, Memory allocation,	address map, Swapping, Memory allocation,			
	983	MFT, MVT, Internal and External	MFT, MVT, Internal and External fragmentation			
		fragmentation and Compaction, Paging,	and Compaction, Paging, Segmentation.			
		Segmentation.	Virtual Memory: Demand paging, Page	*****		
		Virtual Memory: Demand paging, Page	Replacement algorithms, Allocation of frames,			
		Replacement algorithms, Allocation of frames,	thrashing.			
		thrashing.	I/O Management: Principles of I/O Hardware:			
		I/O Management: Principles of I/O Hardware:	Disk structure, Disk scheduling algorithms.			
		Disk structure, Disk scheduling algorithms.	Distribution, Distribution and annual and annual and annual annua			
		Disk su detaile, Disk selleddinig digoriumis.		1,		

	B.C.A I	Data Structure	Module I :	Module I:	
	Sem-IV	Using C++	Introduction to data structures	Introduction to data structures	
	(NEP 1.0)			Introduction to Array, Introduction to Data	
	,			Structures, Concept of Abstract Data types,	
			Array as ADT, Data structures and its types, Data	Array as ADT, Data structures and its types, Data	
			structures operations	structures operations	
0 808 (808) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		0.5% 102.50 0.50 -5	Module II:	Module II:	# 1000 W
			Searching and Sorting and Methods	Searching and Sorting and Methods	
			Introduction to Searching and Sorting,	Introduction to Searching and Sorting,	
			Searching: Linear search, Binary search and	Searching: Linear search, Binary search and	
			hashing, Sorting: Bubble Sort, Insertion sort,	hashing, Sorting: Bubble Sort, Insertion sort,	
			Selection sort, Merge sort, .	Selection sort, Merge sort, .	

			Module III: Stacks and Queues	Module III: Stacks and Queues			
	com mile flor flor file fo		Introduction to stack, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C++, Application of stack: Prefix and Postfix Expressions Evaluation, Definition of queue, Operations on queue, Types of queue-Linear, Circular, Applications of queue	Introduction to stack, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C++, Application of stack: Prefix and Postfix Expressions Evaluation, Definition of queue, Operations on queue, Types of queue-Linear, Circular, Applications of queue	•••••		90,404
		0	Module IV: Linked Lists and Trees Introduction to Pointer, Introduction to linked lists, Implementation of Linked list, Types of Linked List: Singly, Doubly and Circular, Operations on linear linked list: Traversal, Insertion, Deletion, Searching Trees: definition, terminologies, representation, types, Tree Traversal- (Preorder, Inorder, Postorder)	Module IV: Linked Lists and Trees Introduction to Pointer, Introduction to linked lists, Implementation of Linked list, Types of Linked List: Singly, Doubly and Circular, Operations on linear linked list: Traversal, Insertion, Deletion, Searching Trees: definition, terminologies, representation, types, Tree Traversal- (Preorder, Inorder, Postorder)	•••••		
	B.C.A III Sem-VI (NEP 1.0)	Data Warehousing and Data Mining	Module I: Data Warehousing: Introduction to data warehousing, Data warehousing components, Building a data warehouse, Difference between database system and data warehouse, Data warehouse architecture	Module I: Data Warehousing: Introduction to data warehousing, Data warehousing components, Building a data warehouse, Difference between database system and data warehouse, Data warehouse architecture			
* P. *			Module II: Data Mining: Introduction of data mining - Definition and functionalities Issues in DM, Applications of data mining, KDD process. Data Pre-processing: Data Pre-processing, Data cleaning, Data integration and transformation. Data reduction, Discretization and concept hierarchy generation, Data mining Tasks	Module II: Data Mining: Introduction of data mining - Definition and functionalities Issues in DM, Applications of data mining, KDD process. Data Pre-processing: Data Pre-processing, Data cleaning, Data integration and transformation, Data reduction, Discretization and concept hierarchy generation, Data mining Tasks	**************************************	81 81 81 81 3 3 3 3 3 3	
	-		Module III: Data Mining techniques: Frequent item - set and association rule mining: apriori algorithm, use of sampling for frequent item- set tree algorithm, Graph sampling: frequent sub graph	Module III: Data Mining techniques: Frequent item - set and association rule mining: apriori algorithm, use of sampling for frequent item- set tree algorithm, Graph sampling: frequent sub graph			

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13 62 52 52 52 52 52	mining, tree mining, sequence mining Classification and Prediction - Issues Regarding Classification and Prediction - Classification by Decision Tree Introduction - Bayesian Classification - Rule Based Classification - Prediction - Accuracy and Error Measures.	mining, tree mining, sequence mining Classification and Prediction - Issues Regarding Classification and Prediction - Classification by Decision Tree Introduction - Bayesian Classification - Rule Based Classification - Prediction - Accuracy and Error Measures.	+540,40,40 a. (6) a.	
	Module IV: Cluster Analysis: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods – K-Means and K-Medoids	Module IV: Cluster Analysis: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods – K-Means and K-Medoids	•••••	

(Signature of the Teacher)

