Annual Teaching Plan

Academic Year :2024-25 **Semester – III** **Department :BCA**

Course Title: Software Engineering (BCA-II Sem -III)

Name of the teachers : Mr. S.M. Gaikwad, Miss.S.S. Kagale.

Month : July			**Module 1/Unit 1**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
2	4	6	Introduction	Software Engineering approach, Need of engineering aspect for Software Design, SDLC, Software Crisis, Software Process, Process models (Classical Waterfall Model, Build-n-Fix Model, Iterative Waterfall Model, Prototyping Model, Evolutionary Model and Spiral Model)
Month : August			**Module 2/ Unit 2**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
2	4	6	Software Requirement Analysis and Specifications:	Software Requirement Specifications, Need of SRS, Steps for constructing good SRS, Behavioral and Non-Behavioral requirements, Analysis Model
Month : September			**Module 3/ Unit 3**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
2	4	6	Software Design:	Design Concepts & Principle, problem partitioning, abstraction, and top down and bottom up-design, Cohesion & Coupling, How to measure degree of Cohesion and Coupling, Function Oriented Design, DFDs, Structure Chart, Object Oriented Design.
Month : October			**Module 4/ Unit 4**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
2	4	6	Software Testing:	Validation and Verification, Black Box testing approach, White Box testing approach, Levels of testing: Unit Testing, Integration Testing, Validation testing, System testing and debugging. Software Maintenance: Software Maintenance Process and its types.

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Annual Teaching Plan

Academic year: 2024-2025 Semester:V (NEP)

Department:BCA

Course Title: Computer Network

Name of the teacher: S.M.Gaikwad , S.B.Rajhans , M.B.Alman

<table>
<tr><td colspan="3">Month : June</td><td>Module/Unit 1</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td><td rowspan="2">Basics of Data communication</td><td rowspan="2">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 switching , Frequency-Division Multiplexing, Wavelength Division Multiplexing, Time-Division Multiplexing Circuit switching, Packet Switching, Message Switching</td></tr>
<tr><td>15</td><td>----</td><td>15</td></tr>
<tr><td colspan="3">Month : July</td><td>Module/Unit 2</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td><td rowspan="2">Transmission media and Reference Models</td><td rowspan="2">Transmission Media , Guided Media - Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable , Unguided Media: Radio Waves, Microwaves, Infrared, satellite , 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</td></tr>
<tr><td>15</td><td>----</td><td>15</td></tr>
<tr><td colspan="3">Month : August</td><td>Module/Unit 3</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td><td rowspan="2">Data link, Network and Transport layer 12</td><td rowspan="2">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 layer , Transport Layer Primitives: listen, connect, send, receive, disconnect , Protocols: TCP, UDP</td></tr>
<tr><td>15</td><td>----</td><td>15</td></tr>
<tr><td colspan="3">Month : September</td><td>Module/Unit 4</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td><td rowspan="2">Session, Presentation and Application layer 12</td><td rowspan="2">Session layer: Services: dialog management, synchronization, activity management, exception handling, Remote procedure calls Presentation layer,</td></tr>
<tr><td>15</td><td>----</td><td>15</td></tr>
</table>

				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)

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<table>
<tr><th colspan="5">Annual Teaching plan</th></tr>
<tr><td colspan="5">Academic Year :2024-25 Sem III Department:BCA</td></tr>
<tr><td colspan="5">Course Title: Database Management Systems (BCA II,Sem III)</td></tr>
<tr><td colspan="5">Name of the teacher: Mr.S.M.Gaikwad,Miss.S.S.Kagale</td></tr>
<tr><td colspan="2">Month :June-July</td><td></td><td rowspan="2">Module 1</td><td rowspan="2">Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td></tr>
<tr><td>8</td><td>32</td><td>40</td><td>Introduction to Databases</td><td>Introduction to Databases: Definition of Data, Database, and DBMS, Overview of Database Applications, Advantages and Disadvantages of DBMS, Roles of Database Users and Administrators Data Models: Introduction to Data Models, Types of Data Models (Hierarchical, Network, Relational, Object-oriented), Importance of Data Models in DBMS Database Design: Keys: Primary Key, Candidate Key, Super Key, Foreign Key, Composite Key, Alternate Key, Unique Key, Surrogate Key ,Constraints in a table: Primary Key, Foreign Key, Unique Key, NOT NULL, CHECK, Entity-Relationship (ER) Model,Entities and Entity Sets, Attributes and Relationships,ER Diagrams,Key Constraints and Weak Entity Sets, Extended ER Features,Introduction to the Relational Model and Relational Schema</td></tr>
<tr><td colspan="2">Month :July-August</td><td></td><td rowspan="2">Module 2</td><td rowspan="2">Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td></tr>
<tr><td>8</td><td>32</td><td>40</td><td>Relational Algebra and Calculus</td><td>Relational Algebra and Calculus: Introduction to Relational algebra, Operations: Selectio Structured Query Language (SQL): SQL Basics: DDL and DML,Aggregate Functions (Min(), Max(), Sum(), Avg(), Count()), Logical operators (AND, OR, NOT), Predicates (Like, Between, Alias, Distinct), Clauses(Group By, Having, Order by, top/limit), Inner Join, Natural Join, Full Outer Join, Left Outer Join, Right outer Join, Equi Join Advanced SQL: Analytical queries, Hierarchical queries, Recursive queries, Views, Cursors, Stored Procedures and Functions, Packages, Triggers, Dynamic SQL Normalization and Database Design: Functional Dependencies: Armstrong's Axioms, Definition, Properties (Reflexivity, Augmentation, Transitivity), Types (Trivial, Non-Trivial, Partial and Full Functional Dependency), Closure of Functional Dependencies, Normal Forms (1NF, 2NF, 3NF, BCNF), Denormalization</td></tr>
<tr><td colspan="3">Month : August-September</td><td>Module 3</td><td rowspan="2">Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td><td></td></tr>
<tr><td>8</td><td>32</td><td>40</td><td>Transaction Management:</td><td>Transaction Management:ACID Properties, Transactions and Schedules, Concurrent Execution of Transactions, Lock-Based Concurrency Control, Performance of Locking, Transaction Support in SQL,Introduction to Crash Recovery, 2PL, Serializability, and Recoverability, Introduction to Lock Management, Dealing with Deadlocks 15 Database Storage and Indexing: Data on External Storage, File Organizations and Indexing, Index Data Structures, Comparison of File Organizations, Indexes and Performance Tuning, Guidelines</td></tr>
</table>

				for Index Selection, Basic Examples of Index Selection
Month : September-October			**Module 4**	Sub-Units Planned
Lecture	**Practical**	**Total**		
8	32	40	**NoSQL Databases and Big Data**	NoSQL Databases and Big Data: Introduction to NoSQL, Data Models: Document, Key value, Column family, Graph. Uses and Features of NO/SQL document databases. CAP theorem, BASE vs ACID, CRUD operations, MongoDB operators, Overview of Big Data Technologies: Hadoop, MongoDB, Cassandra. Database Security and Advanced Topics: Introduction to Database Security, Access Control, Discretionary Access Control, Introduction to Data Warehousing, OLAP, Data Mining

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Annual Teaching Plan

Academic year:2024-2025

Course Title: Data Warehousing and Data Mining (BCA-III Sem-VI)

Name of the teacher: Miss. V.R Swami, Miss. A.S Dalavi

<table>
<tr><td colspan="3">Month : December</td><td>Module 1</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td><td rowspan="2">Data Warehousing</td><td rowspan="2">Data Warehousing: Introduction to data warehousing, Data warehousing components, Building a data warehouse, Difference between database system and data warehouse, Data warehouse architecture</td></tr>
<tr><td>15</td><td>0</td><td>15</td></tr>
<tr><td colspan="3">Month : January</td><td>Module 2</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td><td rowspan="2">Data Mining and Data Pre-processing</td><td rowspan="2">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.</td></tr>
<tr><td>15</td><td>0</td><td>15</td></tr>
<tr><td colspan="3">Month : February</td><td>Module 3</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td><td rowspan="2">Data Mining techniques and sampling</td><td rowspan="2">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 mining, tree mining, sequence mining
Classification and Prediction - Issues Regarding Classification and Prediction Classification by Decision Tree Introduction- Bayesian Classification-Rule</td></tr>
<tr><td>15</td><td>0</td><td>15</td></tr>
</table>

				Based Classification- Prediction - Accuracy and Error Measures
Month : March			**Module 4**	**Sub-Units Planned**
Lecture	**Practical**	**Total**	**Cluster Analysis**	**Cluster Analysis**: Types of Data in Cluster Analysis A Categorization of Mojor Clustering Methods, Partitioning Methods K-Means and K-Medoid
15	0	15		

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Annual Teaching plan

Academic Year :2024-25 **Sem:VI Department:BCA**

Course Title: Android (BCA-III Sem-VI)

Name of the teacher: Mrs. M. B. Alman,Mr. S.M. Gaikwad, Mr.M.A.Jadhav

Month :July			**Module 1**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	16	31	**UNIT 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
Month :August			**Module 2**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	18	33	**UNIT 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
Month : September			**Module 3**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	16	31	**UNIT III**	**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
Month :October			**Module 4**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		

15	18	33	**UNIT 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.

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Annual Teaching plan

Academic Year :2024-25 **Sem:II Department: BCA**

Course Title: Object Oriented Programming using Java (BCA-I Sem-II)

Name of the teacher: Ms. P. P. Deshmukh, Ms. S. S. Kgale, Mrs. M. B. Alman

Month :February			**Module 1**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	18	33	**Fundamentals of Object Oriented Programming & Java Evolution & Overview of Java Language**	**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 of Comments and Math function, Application of two classes, Java Program Structure, Java Tokens and statements, Implementing Java program And JVM, Command Line Arguments.
Month :March			**Module 2**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	16	31	**Constants, Variables and Data Types, Operators & Expressions, Decision Making, Branching & Looping**	**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.
Month : April			**Module 3**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	18	33	**Classes, Objects and Methods, Arrays, Strings and Vectors & Inheritance**	**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.

Month :May			Module 4	Sub-Units Planned
Lecture	**Practical**	**Total**		
15	16	31	**Packages & Exception Handling**	**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

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Annual Teaching plan

Academic Year :2024-25 **Sem: II Department:BCA**

Course Title: Operating Systems (BCA-I Sem-II)

Name of the teacher: Ms. A. S. Dalavi , Ms. V. R. Swmai

Month : February			**Module 1**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	0	15	**Operating Systems Overview & Operating Systems Structures**	**Operating Systems Overview:** Definition, Evaluation of O.S, Components & Services of OS, Structure, Architecture, types of Operating Systems, Batch Systems, Concepts of Multiprogramming and Time Sharing, Parallel, Distributed and real time Systems. **Operating Systems Structures:** Operating system services and systems calls, system programs, operating system structure, operating systems generations.
Month : March			**Module 2**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	0	15	**Process Management & Process Scheduling**	**Process Management:** Process Definition, Process states, Process State transitions, Process Scheduling, Process Control Block, Threads, Concept of multithreads, Benefits of threads, Types of threads. **Process Scheduling:** Definition, Scheduling objectives, Scheduling algorithms, CPU scheduling Preemptive and Non-preemptive Scheduling algorithms (FCFS, SJF and RR), Performance evaluation of the scheduling Algorithms
Month : April			**Module 3**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	0	15	**Process Synchronization & Deadlocks**	**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.

Month : May			Module 4	Sub-Units Planned
Lecture	**Practical**	**Total**		
15	0	15	**Memory Management , Virtual Memory & I/O Management**	**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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Annual Teaching plan

Academic Year :2024-25 **Sem: II Department: BCA**

Course Title: Data Structures (BCA-I Sem-II)

Name of the teacher: Ms. V. A. Kotamire , Ms. A. S. Dalavi, Ms. V. R. Swami

Month :February			**Module 1**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	18	33	**Introduction and Overview & Arrays**	**Introduction and Overview:** Definition, Classification and Operations of Data Structures. Algorithms: Complexity, Time-Space Trade off. **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.
Month : March			**Module 2**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	16	31	**Linked Lists & Hashing and Collision**	**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.
Month : April			**Module 3**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	18	33	**Stacks & Recursion & Queues**	**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, Run time 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.
Month : May			**Module 4**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	16	31	**Graphs & Trees**	**Graphs:** Definition, Terminology, Representation, Traversal. **Trees:** Definition, Terminology, Binary Trees, Traversal of Binary Tree, Binary Search Tree, Inserting, Deleting and Searching in Binary Search Tree, Height Balanced Trees: AVL Trees, Insertion and Deletion in AVL Tree.

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<tr><th colspan="5">Annual Teaching plan</th></tr>
<tr><td colspan="5">Academic Year: 2024-25 Term:I Department:BCA</td></tr>
<tr><td colspan="5">Course Title: Computer Architecture (BCA-I Sem-I)</td></tr>
<tr><td colspan="5">Name of the teacher: Ms. V.A.Kotamire , Ms.P.P.Deshmukh, Mrs.A.S.Jadhav</td></tr>
<tr><td colspan="3">Month : November</td><td rowspan="2">Module 1</td><td rowspan="2">Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td></tr>
<tr><td>15</td><td>16</td><td>31</td><td>Digital Principles & Number Systems:</td><td>Digital Principles: 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, Excess3 Code, The Gray Code.</td></tr>
<tr><td colspan="3">Month : December</td><td rowspan="2">Module 2</td><td rowspan="2">Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td></tr>
<tr><td>15</td><td>18</td><td>33</td><td>Combinational Circuits ,Sequential Circuits & Register:</td><td>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</td></tr>
<tr><td colspan="3">Month : January</td><td rowspan="2">Module 3</td><td rowspan="2">Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td></tr>
<tr><td>15</td><td>16</td><td>31</td><td>Basic Computer Organization and Design & Central Processing Unit:</td><td>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</td></tr>
</table>

				Manipulation, Program Control, Reduced Instruction Set Computer(RISC), RISC Vs CISC.
Month : February			**Module 4**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	18	33	**Pipeline and Vector Processing & Memory Organization:**	**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.

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<tr><td colspan="5">Annual Teaching plan</td></tr>
<tr><td colspan="5">Academic Year :2024-25 Term:IV Department:BCA</td></tr>
<tr><td colspan="5">Course Title: Data Structure Using C++ (BCA-II Sem-IV)</td></tr>
<tr><td colspan="5">Name of the teacher: Ms. V.A.Kotamire , Ms.P.P.Misal, Mrs.A.S.Jadhav , Ms.V.R.Sawami</td></tr>
<tr><td colspan="3">Month : December</td><td rowspan="2">Module 1</td><td rowspan="2">Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td></tr>
<tr><td>8</td><td>32</td><td>40</td><td>Introduction to data structures</td><td>Introduction to data structures:
Introduction to Array, Introduction to Data Structures, Concept of Abstract Datatypes, Array as ADT,Data strutures and its types,Data structures operations.</td></tr>
<tr><td colspan="3">Month : January</td><td rowspan="2">Module 2</td><td rowspan="2">Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td></tr>
<tr><td>8</td><td>32</td><td>40</td><td>Searching and Sorting and Methods</td><td>Searching and Sorting and Methods:
Introduction to Searching and Sorting, Searching: Linear search, Binary searchand hashing, Sorting: Bubble Sort,Insertion sort, Selection sort, Merge
sort.</td></tr>
<tr><td colspan="3">Month : February</td><td rowspan="2">Module 3</td><td rowspan="2">Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical</td><td>Total</td></tr>
<tr><td>8</td><td>32</td><td>40</td><td>Stacks and Queues</td><td>Stacks and Queues :
Introduction to stack, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C++, Application of stack: Prefix and PostfixExpressions Evaluation, Definition of queue,</td></tr>
</table>

				Operations on queue, Types of queue- Linear, Circular,Applications of queue
Month : March			**Module 4**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
8	32	40	**Linked Lists and Trees**	**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)

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Annual Teaching Plan

Academic Year :2024-25 **Semester – IV** **Department :BCA**

Course Title: RDBMS (BCA-II Sem - IV)

Name of the teachers : Miss. S.S.Kagale, Miss. S.B.Rajhans , S.M. Gaikwad

Month : December			**Module 1/Unit 1**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
8	32	40	Relational Database Management System:	1.1 Concept of RDBMS, Difference between DBMS and RDBMS, Features of RDBMS. 1.2 Introduction of Oracle, Role and responsibilities of DBA. 1.3 RDBMS Terminology- Relation, Tuple, Cardinality, Attribute, Degree, Primary Key, Domain, Codd's Rules 1.4 Relational Model, Functional Dependencies, Normalization and its types.
Month : January			**Module 2/ Unit 2**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
8	32	40	INTRODUCTION TO SQL:	2.1 Features of SQL, Data types, 2.2 Classification of SQL Commands – DDL (create, alter, drop), DML (insert, Update, delete), DCL (grant, revoke), TCL (rollback, commit). 2.3 SQL Integrity Constraints-(Primary key, Foreign key, unique key, not null, default, check) 2.4 Select statement with group by and order by clause 2.5 SQL Operators-arithmetic, relational, Logical, Like, Between, IN operator 2.6 SQL Functions- Arithmetic functions, Conversion Functions, Date function, Aggregate functions, String functions.
Month : February			**Module 3/ Unit 3**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
8	32	40	JOIN AND SUB QUERIES:	3.1 Join types - Inner Join, Outer Join, Cross Join and self Join 3.2 Sub-queries, Multiple sub queries, nesting of sub queries, sub queries in DML commands.
Month : March			**Module 4/ Unit 4**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
8	32	40	INTRODUCTION TO PL/SQL:	4.1 Introduction to PL/SQL, Block Structure 4.2 Data types in PL-SQL 4.3 Control Structures-Branching statements, Iterative Control statements. 4.4 Cursors –Concept, Types- Implicit, Explicit, Procedure to create explicit cursors, Cursor Attributes. 4.5 TRIGGERS: Concept and types

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Annual Teaching Plan

Academic Year :**2024-25** **Semester – V** **Department :BCA**

Course Title: ASP.Net with C# (BCA-III Sem -V)

Name of the teachers : Mr. V.B.Pujari, Miss. A. S.Jadhav , Mr. M.A. Jadhav

Month : July			**Module 1/Unit 1**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	18	33	Introduction	1. 1 overview, Architecture, Features of .NET , 1.2 Meta data, CLR, Managed and unmanaged code 1.3 CTS, CLS, .NET base classes 1.4 Introduction to Visual Studio .NET IDE 1.5 Types of JIT compiler
Month : August			**Module 2/ Unit 2**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	16	31	Introduction To C#	2 .1 Introduction to C#, Entry point method, command line arguments 2.2 Compiling and building projects, Compiling a C# program using command line utility, CSC.EXE, Different valid forms of main. 2.3 Global stack and heap memory, reference type and data type, casting implicit and explicit 2.4 Boxing and un-boxing, pass by value and pass by reference and out parameters 2.5 Partial class, DLL, Difference between DLL and EXE
Month : September			**Module 3/ Unit 3**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	18	33	Introduction to Web Programming	1.1 Understanding role of WEB server and WEB browser, HTTP request and response structure. 3.2 Introduction to ASP, Types of path, FORM tag 3.3 Types of server controls 3.4 Validation controls-Base validator, compare validator, range validator, grouping control validator 3.5 Web forms life cycle 3.6 Event handling in WEB forms, response.redirect, server.response, cross page post back property of button 3.7 ASP.NET state management 3.8 web.config, globalization and localization, AppDomain
Month : October			**Module 4/ Unit 4**	**Sub-Units Planned**
Lecture	**Practical**	**Total**		
15	16	31	ASP .NET	1.1 Introduction to ADO.Net 4.2 ADO.NET Architecture- Conncetion, command, dat reader, data adapter, data set 4.3 Understanding connected layaer of ADO.NET and disconnected layer of ADO.NET

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Annual Teaching plan

Academic Year :**2024-25** **Sem VI Department**:**BCA**

Course Title: **Java Programming (BCA III,Sem VI)**

Name of the teacher: Mr. V.B.Pujari,Miss.P.P.Deshmukh,Miss.P.P.Misal

Month :June-July			**Module 1**	Sub-Units Planned
Lecture	**Practical**	**Total**		
16	18	34	**Java Fundamentals**	**Java Fundamentals** :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,statickeyword,finalkeyword,STRING Manipulation,Array
Month :July-August			**Module 2**	Sub-Units Planned
Lecture	**Practical**	**Total**		
16	16	32	**Inheritance, Polymorphism and Encapsulation**	**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
Month : August-September			**Module 3**	Sub-Units Planned
Lecture	**Practical**	**Total**		
16	18	34	**Package, Multithreading and Exception handling**	**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

Month : September-October			**Module 4**	Sub-Units Planned
Lecture	**Practical**	**Total**		
16	16	32	**AWT,SWING (JFC)**	**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

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Academic Year :**2024-25** **Sem V Department**:**BCA**

Course Title: **Cloud Computing(BCA III,Sem V)**

Name of the teacher:Miss.P.P.Deshmukh,Mrs.A.S.Jadhav,Mr.M.A.Jadhav

Month :June			**Module 1**	Sub-Units Planned
Lecture	**Practical**	**Total**		
15	……..	15	**Introduction to Cloud Computing**	**Introduction to Cloud Computing** :1.1 Introduction 1.2 Roots of Cloud Computing 1.3 Layers and Types of Cloud 1.4 Desired Features of a Cloud 1.5 Platform as a Service Providers 1.6Architecture of cloud computing 1.7Challenges in the cloud 1.8 Types of Cloud : Private, Public, Hybrid
Month :July			**Module 2**	Sub-Units Planned
Lecture	**Practical**	**Total**		
15	……	15	**Virtualization**	**Virtualization:** 2.1 Introducing virtualization and its benefits 2.2 Implementation Levels of Virtualization 2.3 Virtualization at the OS Model 2.4 Virtualization Structure: Hosted Structure, Bare-Metal 2.5 Structure Virtualization of CPU,Memory, and I/O Devices 2.6 Virtualization in Multicore Processors 2.7 Virtual Clusters and Resource management
Month : August			**Module 3**	Sub-Units Planned
Lecture	**Practical**	**Total**		
15	……	15	**Cloud Computing Services**	**Cloud Computing Services** 3.1 Infrastructure as a Service 3.2 Platform as a servive 3.3 Leveraging PaaS for productivity 3.4 Guidelines for selecting PaasPovider 3.5 Concern with PaaS 15 3.6 Language and PaaS 3.7 Software as a Servive 3.8 Database as a Service 3.9 Specialized Cloud Services

Month : September			Module 4	Sub-Units Planned
Lecture	**Practical**	**Total**		
15	……	15	**Cloud Computing Applications**	**Cloud Computing Applications** 4 4.1 Business Applications: MailChimp, Salesforce, Chatter,Paypal 4.2 Education Applications:Google Apps for 4.3 Education,Chromebooks 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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Annual Teaching Plan

Semester: III(NEP)

Academic Year : 2024-25 **Department: BCA**

Course Title: Object Oriented Programming with C++

Name of the teacher: P.P.Deshmukh , P.P.Misal, Amruta Jadhav

<table>
<tr><td colspan="3">Month : July</td><td>Module/Unit:1</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical’s</td><td>Total</td><td rowspan="2">Principles of Objective Oriented Programming</td><td rowspan="2">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).</td></tr>
<tr><td>8</td><td>16</td><td>24</td></tr>
<tr><td colspan="3">Month : August</td><td>Module/Unit:2</td><td>Sub-Units Planned</td></tr>
<tr><td>8</td><td>16</td><td>24</td><td>Functions in C++, Classes & Objects</td><td>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)</td></tr>
<tr><td colspan="3">Month : September</td><td>Module/Unit:3</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical’s</td><td>Total</td><td rowspan="2">Pointers, Virtual Functions &Polymorphism</td><td rowspan="2">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.</td></tr>
<tr><td>8</td><td>16</td><td>24</td></tr>
<tr><td colspan="3">Month : October</td><td>Module/Unit:4</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical’s</td><td>Total</td><td rowspan="2">Working with Files</td><td rowspan="2">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 ( ).</td></tr>
<tr><td>8</td><td>16</td><td>24</td></tr>
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Annual Teaching Plan

Semester: III(NEP)

Academic Year : 2024-25 **Department: BCA**

Course Title: Entrepreneurship development

Name of the teacher: V.D Patil, Vaishanvi Khot

<table>
<tr><td colspan="3">Month : July</td><td>Module/Unit:1</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical's</td><td>Total</td><td rowspan="2">Entrepreneur</td><td rowspan="2">Entrepreneur:
Concept, Classification, Functions of entrepreneur</td></tr>
<tr><td>8</td><td>0</td><td>8</td></tr>
<tr><td colspan="3">Month : August</td><td>Module/Unit:1</td><td>Sub-Units Planned</td></tr>
<tr><td>7</td><td>0</td><td>7</td><td>Entrepreneur</td><td>Qualities of successful Entrepreneur, Types of Entrepreneur.</td></tr>
<tr><td colspan="3">Month : September</td><td>Module/Unit:2</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical's</td><td>Total</td><td rowspan="2">Entrepreneurship</td><td rowspan="2">Concept, objectives, process, Importance of Entrepreneurship.
Entrepreneurship development and recent trends: Start up, Stand up, Skill India, Make in India.</td></tr>
<tr><td>8</td><td>0</td><td>8</td></tr>
<tr><td colspan="3">Month : October</td><td>Module/Unit:2</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical's</td><td>Total</td><td rowspan="2">Entrepreneurship</td><td rowspan="2">Institute support for Entrepreneurship Development-National Institute for Entrepreneurship and Small Business Development (NIESBUD), Small Industry Development Bank</td></tr>
<tr><td>7</td><td>0</td><td>7</td></tr>
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Annual Teaching Plan

Semester: V(NEP)

Academic Year : 2024-25 **Department: BCA**

Course Title: MIS(Management Information System)

Name of the teacher: V.D Patil, Vaishanvi Khot

<table>
<tr><td colspan="3">Month : July</td><td>Module/Unit:1</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical's</td><td>Total</td><td rowspan="2">Introduction to Information System</td><td rowspan="2">Introduction to system a- definition, need, types, characteristic Definition of Information Classification of Information Need and importance of information system Definition and Characteristics of information system Role of information system in business</td></tr>
<tr><td>15</td><td>0</td><td>15</td></tr>
<tr><td colspan="3">Month : August</td><td>Module/Unit:2</td><td>Sub-Units Planned</td></tr>
<tr><td>15</td><td>0</td><td>15</td><td>Decision Making</td><td>Decision Making Concepts, and Process, Types of Decisions Behavioural Concepts in Decision Making Organizational Decision-Making MIS and Decision Making</td></tr>
<tr><td colspan="3">Month : September</td><td>Module/Unit:3</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical's</td><td>Total</td><td rowspan="2">Types of Information System Introduction</td><td rowspan="2">Operational and Knowledge Level-TPS (Transaction
Processing System), OAS (Office Automation System), KWS (Knowledge Work System) Management and Strategic Level-
MIS (Management Information System-need characteristics, DSS (Decision Support System)-need, characteristics, components, ESS (Executive Support System)-need, characteristics</td></tr>
<tr><td>15</td><td>0</td><td>15</td></tr>
<tr><td colspan="3">Month : October</td><td>Module/Unit:4</td><td>Sub-Units Planned</td></tr>
<tr><td>Lecture</td><td>Practical's</td><td>Total</td><td rowspan="2">Applications of MIS</td><td rowspan="2">Financial Information System</td></tr>
<tr><td>15</td><td>0</td><td>15</td></tr>
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