Lesson Plan Structure

Month Wise/Day wise Lesson Plan

Effective Session 2023-2024

Course:B.com. 1st Sem.

Course: M.A. 1st Sem.

Computer fundamental

Course: BCA5th LAB

Practical software Lab –Based on paper BCA- 304 i.e. Visual Basic

By Vikram Singh

Lesson Plan

Course: M.A.1st Sem.

UNIT-1 (DAY WISE)

Computer Basics: Introduction, Characteristics of a Computer, Classification of Computers, Applications of Computer, Basic Components of PC, Hardware and Software: Introduction, Computer Memory, Secondary Memory, Computer Peripherals, Output Devices, Internet basics, Surfing the Internet, Sending Email

UNIT-2 (DAY WISE)

Word processing: Introduction and working with MS-Word in MS-Office; Word basic commands; Formatting-text and documents; Sorting and tables; Working with graphics; Introduction to mail merge.

UNIT-3 (DAY WISE)

Spread Sheets: Working with EXCEL-formatting, functions and formulae, chart features; Working with graphics in Excel; Using worksheets as database.

UNIT-4 (DAY WISE)

Presentation with Power-Point: Power-point basics, creating presentations the easy way, working with graphics in Power-Point; show time, sound effects and animation effects.

Course:B.com. 1st Sem.

Bcom.1.06

UNIT-1

Introduction to Computers: Definition of Computer; Components of Computer; Characteristics of Computers; History evolution of Computers; Generation of computers; Classification of Computers- According to Purpose, According to Technology , According to Size and Storage Capacity ; Human being VS Computer; Difference between Computer and Calculator.

Unit-2

Input Devices: Mouse, Keyboard, Light pen, Track Ball, Joystick, MICR, Optical Mark reader and Optical Character Reader Scanners, Voice system, Web Camera.

Output Devices: Hard Copy Output Devices; Line Printers, Character Printers, Chain Printers, Dot-matrix Printers, Daisy Wheel Printer, Laser Printers, Ink Jet Printers; Plotters, Soft Copy device – Monitor, Sound Cards and speakers.

Unit-3

Memory and Mass Storage Devices: Characteristics of Memory Systems; Memory Hierarchy; Types of Primary Memory; RAM and ROM; Secondary and Back-up; Magnetic Disks, Characteristics and classification of Magnetic Disks; Optical Disks; Magnetic Taps.

Unit-4

MS- Word: Fundamentals of MS-Word, Features of MS-Word, Menus, Formatting and Standard Toolbars, Ruler, Scroll Bar, Creating, Editing, Saving, export and import files, inserting and copying the files, Working with frames, Paragraph formatting, Columns, Pictures, Tables, Macros and Mail Merge.

Course: BCA5th LAB

Practical software Lab –Based on paper BCA- 304 i.e. Visual Basic

Lesson Plan Structure

Month Wise/Day wise Lesson Plan

Effective Session 2023-2024

Course: Sem.

M.SC.-24051: SOFT COMPUTING

Course: M.Sc. 4TH Sem.

Subject: **M.SC. - 2406** Software Lab-7 Python Lab

Course: M.Sc. 4TH Sem.

Subject: **M.SC. – 2407- PROJECT**

Vikram Singh

By Vikram Singh

Lesson Plan

M.SC.-24051: SOFT COMPUTING

UNIT-1 (DAY WISE)

Introduction: soft computing; biological and artificial neural network; fuzzy sets and fuzzy logic systems. Introduction to Genetic Algorithm, Genetic Operators and Parameters, Genetic Algorithms in Problem Solving, Advantages, Limitations and applications of Genetic algorithms.

UNIT-2 (DAY WISE)

Artificial neural networks and applications: Different artificial neural network models; learning in artificial neural networks- Supervised, Unsupervised and Reinforcement learning; Models of ANN-Feed forward and feed backward, Applications of Neural Network.

UNIT-3 (DAY WISE)

Fuzzy systems and applications: fuzzy sets; Membership function and its features and its Operations, fuzzy reasoning; fuzzy inference systems; fuzzy control; fuzzy clustering; applications of fuzzy systems. Neuro-fuzzy systems: neuro-fuzzy control.

UNIT-4 (DAY WISE)

Applications: Pattern Recognitions, Image Processing, Biological Sequence Alignment and Drug Design, Robotics and Sensors, Information Retrieval Systems, Share Market Analysis, Natural Language Processing.

Test and Revision

Course: ***M.Sc. 4TH Sem.***

Subject: **M.SC. - 2406** Software Lab-7 Python Lab

Course: ***M.Sc. 4TH Sem.***

Subject: **M.SC. – 2407- PROJECT**

LESSON

PLAN

SUBMITTED BY:

DR. SHVETA CHHABRA

ASSISTANT PROFESSOR

DEPTT. OF COMPUTER SCIENCE

LESSON PLAN

SUBMITTED BY:

DR. SHVETA CHHABRA

ASSISTANT PROFESSOR

DEPTT. OF COMPUTER SCIENCE

BCA-109 : Structured Systems Analysis and Design

January 2024:

Introduction to system, Definition and characteristics of a system, Elements of system, Types of system, System development life cycle, Role of system analyst, Analyst/user interface, System planning and initial investigation: Introduction, Bases for planning in system analysis, Sources of project requests, Initial investigation, Fact finding, Information gathering, information gathering tools, Fact analysis, Determination of feasibility.

February 2024:

Structured analysis, Tools of structured analysis: DFD, Data dictionary, Flow charts, Gantt charts, decision tree, decision table, structured English, Pros and cons of each tool, Feasibility study: Introduction, Objective, Types, Steps in feasibility analysis, Feasibility report, Oral presentation, Cost and benefit analysis: Identification of costs and benefits, classification of costs and benefits, Methods of determining costs and benefits, Interpret results of analysis and take final action.

March 2024:

System Design: System design objective, Logical and physical design, Design Methodologies, structured design, Form-Driven methodology(IPO charts), structured walkthrough, Input/Output and form design: Input design, Objectives of input design, Output design, Objectives of output design, Form design, Classification of forms, requirements of form design, Types of forms, Layout considerations, Form control.

April 2024:

System testing: Introduction, Objectives of testing, Test plan, testing techniques/Types of system tests, Quality assurance goals in system life cycle, System implementation, Process of implementation, System evaluation, System maintenance and its types, System documentation, Forms of documentation.

MAY 2024:

Revision Work, Group Discussions and tests

BCA – 306: E-Commerce

January 2024:

E-commerce and Types of E-commerce: Introduction, Definition, Evolution of E-Commerce, Major areas, Major Issues in Implementing, Comparison between Traditional Commerce and E-Commerce, Economic Potential, Driving Forces behind E-Commerce, Advantages and Disadvantages to Customers, Businesses and Society, Reasons for the E- Commerce Not Being Very Successful, Types of E-Commerce- B2B, B2C,C2B,C2C,B2G, Architectural Framework for E Commerce, Impact on Business, Importance and Uses of E- Commerce, Applications of E-Commerce Business Models: Introduction, Definitions, Key Components of Business Models, Types of Business Models, e-Shops- General Procedure, e-Procurement-Introduction, Definition, e-Auctions-Basic Operating Rules for e-Auction, Participants, Advantages of e-Auction Advantages to Sellers, Buyers, Auctioneers, Value Chain, Value Chain Integrators, Information Brokerage, Telecommunications, Telecommunication Methods in Business Communication, Collaboration Platforms

February 2024:

Electronic Payment Systems: Introduction, Limitations of Traditional Payment, Comparison of Conventional and Electronic Payment System, Usage of E-Payment Systems, Critical Success Factors, Types of Electronic Payment Systems, Credit Card, Electronic Cheque System, Electronic Cash System, Smart Card, their comparison, Other Electronic Payments systems-P2P payment, Electronic wallets , E-Banking , Online Fund Transfer, ATM card, Security in Electronic Payments-Encryption, Electronic Certificates, Payment protocols Advertisements: Introduction, Web Based Advertising, Types of Web-Based Advertising, Search Engine Advertisements, SEO, SEO Techniques, Advantages, Online share market operations, Online Marketing-Introduction, Definition, Importance, types

March 2024:

Email Marketing- Introduction, Use of Email, , social networking-marketing tool, Social Media, Social Media Marketing- objectives, risks, Viral Marketing-Introduction, The Viral Effect, working, E-Retailing: Introduction, Components, Meaning, Customer Relationship Management (CRM)-Introduction, Purpose, Levels, Features, Importance, Goals, relation with IT, e-CRM, difference from CRM, Tools for Online Research-Introduction, Secondary Market Research, Factors, Primary Research-Types, Surveys, Focus Groups, Interviews, Observation, Experiments/Field Trials, Primary vs. Secondary Research, Web survey-Design Guidelines, Online Focus Groups-When Appropriate, Limitations, Data Mining, Social Media-Types of Social Networking Sites, Data Mining from Social Networking Sites,

April 2024:

Cloud Computing: Introduction, Characteristics, Models, Deployment Strategies, Benefits, Challenges, use by Businesses, Applications, Enterprise Resource Planning (ERP): Introduction, Characteristics, Features, Need, Implementation, Risk and Governance Issues, Relation with E-Commerce, E-Commerce Security and Privacy: Introduction, Why an Issue, Security Issues, Types of Breaches, Security Measures, Online Fraud-Types, Privacy- Privacy Issues, Cyber Laws: Introduction, Need, IT Act of India 2000, Two Sides of Indian Cyber Law, classification of crimes under the IT Act, 2000

MAY 2024:

Revision Work, Group Discussions and tests

BCA-307 : Object Technologies & Programming using Java

January 2024:

Object Oriented Methodology-1: Paradigms of Programming Languages, Evolution of OO Methodology, Basic Concepts of OO Approach, Comparison of Object Oriented and Procedure Oriented Approaches, Benefits of OOPs, Introduction to Common OO Language, Applications of OOPs . Object Oriented Methodology-2: Classes and Objects, Abstraction and Encapsulation, Inheritance, Method Overriding and Polymorphism.

February 2024:

Java Language Basics: Introduction To Java, Basic Features, Java Virtual Machine Concepts, Primitive Data Type And Variables, Java Operators, Expressions, Statements and Arrays. Object Oriented Concepts: Class and Objects-- Class Fundamentals, Creating objects , Assigning object reference variables; Introducing Methods, Static methods, Constructors , Overloading constructors; This Keyword; Using Objects as Parameters, Argument passing, Returning objects , Method overloading, Garbage Collection, The Finalize ( ) Method. Inheritance and Polymorphism: Inheritance Basics, Access Control, Multilevel Inheritance, Method Overriding, Abstract Classes, Polymorphism, Final Keyword.

March 2024:

Packages : Defining Package, CLASSPATH, Package naming, Accessibility of Packages , using Package Members. Interfaces: Implementing Interfaces, Interface and Abstract Classes, Extends and Implements together . Exceptions Handling : Exception , Handling of Exception, Using try-catch , Catching Multiple Exceptions , Using finally clause , Types of Exceptions, Throwing Exceptions, Writing Exception

April 2024:

Multithreading : Introduction , The Main Thread, Java Thread Model, Thread Priorities, Synchronization in Java, Inter thread Communication. I/O in Java : I/O Basics, Streams and Stream Classes ,The Predefined Streams, Reading from, and Writing to, Console, Reading and Writing Files , The Transient and Volatile Modifiers , Using Instance of Native Methods. Strings and Characters : Fundamentals of Characters and Strings, The String Class , String Operations , Data Conversion using Value Of ( ) Methods , String Buffer Class and Methods.

MAY 2024:

Revision Work, Group Discussions and tests

LESSON PLAN

2023-24 (EVEN SEMESTER)

TEACHER'S NAME: DR. NARENDER SINGH

COURSE	SUBJECT
BCA-II SEM	BCA-106: 'C' PROGRAMMING
	Software Lab
BCA-IV SEM	BCA-209 : Software Engineering
MSc-II SEM	Blockchain Technology & Quantum Computing
MSc-IV SEM	Software Engineering & Testing

LESSON – PLAN

SUBJECT: BCA-106: 'C' PROGRAMMING TEACHER'S NAME: DR. NARENDER SINGH

JAN - 2024	**WEEK-1**
	Overview of C: History of C, Importance of C, Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant
	WEEK-2
	Structure of a C Program, printf (), scanf() Functions, Operators & Expression: Arithmetic, relational, logical
	WEEK-3
	Bitwise, unary, assignment, shorthand assignment operators, conditional operators and increment and decrement operators, Arithmetic expressions, evaluation of arithmetic expression,
	WEEK-4
	Type casting and conversion, operator hierarchy & associativity. REVISION
FEB - 2024	**WEEK-1**
	Decision making & branching: Decision making with IF statement, IF-ELSE statement,
	WEEK-2
	Nested IF statement, ELSE-IF ladder, switch statement, goto statement
	WEEK-3
	Decision making & looping: For, while, and do-while loop,
	WEEK-4
	jumps in loops, break, continue statement, Nested loops.
MARCH - 2024	**WEEK-1**
	Functions: Standard Mathematical functions, Input/output: Unformatted & formatted I/O function in C,
	WEEK-2
	Input functions viz. getch(), getche(), getchar(), gets(), output functions viz., putch(), putchar(), puts(),
	WEEK-3
	string manipulation functions. User defined functions: Introduction/Definition, prototype,
	WEEK-4
	Local and global variables, passing parameters, recursion.
APRIL - 2024	**WEEK-1**
	Arrays, strings and pointers: Definition, types, initialization, processing an array, passing arrays to functions, Array of Strings. String constant and variables,
	WEEK-2
	Declaration and initialization of string, Input/output of string data, Introduction to pointers.
	WEEK-3
	Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime.
	WEEK-4
	Algorithm development, Flowcharting and Development of efficient program in C.

LESSON – PLAN

SUBJECT: BCA-209 : Software Engineering TEACHER'S NAME: DR. NARENDER SINGH

JAN - 2024	**WEEK-1**
	Software Crisis, Software Processes & Characteristics, Software life cycle models
	WEEK-2
	Waterfall, Prototype, Evolutionary and Spiral Models
	WEEK-3
	Software Requirements Analysis & Specifications: Requirement engineering, requirement elicitation techniques like FAST, QFD, requirements analysis using DFD
	WEEK-4
	Data dictionaries & ER Diagrams, Requirements documentation, Nature of SRS, Characteristics & organization of SRS
FEB - 2024	**WEEK-1**
	Software Project Management Concepts: The Management spectrum,
	WEEK-2
	The People The Problem, The Process, The Project.
	WEEK-3
	Software Project Planning: Size Estimation like lines of Code
	WEEK-4
	Function Count, Cost Estimation Models, COCOMO, Risk Management
MARCH - 2024	**WEEK-1**
	Software Design: Cohesion & Coupling, Classification of Cohesiveness & Coupling, Function Oriented Design, Object Oriented Design
	WEEK-2
	Software Metrics: Software measurements: What & Why, Token Count, Halstead Software Science Measures, Design Metrics, Data Structure Metrics
	WEEK-3
	Software Implementation: Relationship between design and implementation, Implementation issues and programming support environment,
	WEEK-4
	Coding the procedural design, Good coding style.
APRIL - 2024	**WEEK-1**
	Software Testing: Testing Process, Design of Test Cases, Types of Testing, Functional Testing, Structural Testing, Test Activities,
	WEEK-2
	Unit Testing, Integration Testing and System Testing, Debugging Activities.
	WEEK-3
	Software Maintenance: Management of Maintenance, Maintenance Process,
	WEEK-4
	Reverse Engineering, Software Re-engineering, Configuration Management, Documentation.

LESSON – PLAN

SUBJECT: Blockchain Technology & Quantum Computing

TEACHER'S NAME: DR. NARENDER SINGH

JAN - 2024	**WEEK-1**
	Introduction: History of Blockchain, Overview, Characteristics, Benefits, Limitations Transactions and Blocks,
	WEEK-2
	Distributed Systems, Peer to Peer Network, Public key Cryptography, Hashing.
	WEEK-3
	Types of Blockchain: Public Blockchain, Private Blockchain, Consortium Blockchain,
	WEEK-4
	Application Areas, Digital Signature, Digital Wallet.
FEB - 2024	**WEEK-1**
	Blockchain Protocol, Currency, Mining,
	WEEK-2
	Consensus: Proof of Work, Proof of Stake, Byzantine Generals' Computing Problems,
	WEEK-3
	51% attack, Double Spending Problem.
	WEEK-4
	Tiers of Blockchain Technology: Blockchain 1.0, Blockchain 2.0, Blockchain 3.0, Blockchain 4.0.
MARCH - 2024	**WEEK-1**
	Bitcoin Blockchain: Structure, Operations, Features, Consensus Model,
	WEEK-2
	Incentive Model, Token, ERC20, ERC721
	WEEK-3
	Ethereum: Introduction, Structure, Operations, Smart Contracts, Blockchain Development on Ethereum,
	WEEK-4
	creating a Block, Adding the Hash Function to the Block, Ethereum Virtual Machine Creating Smart Contracts, Bitcoin vs Ethereum.
APRIL - 2024	**WEEK-1**
	Introduction to Quantum Computation: Historical background of Quantum Computing,
	WEEK-2
	Qbits, and Bloch sphere representation of a qubit, multiple qubits. Basic mathematics for Quantum Computing.
	WEEK-3
	Quantum Circuits: single qubit gates, multiple qubit gates, design of quantum circuits. Quantum Information and Cryptography: Comparison between classical and quantum information theory,
	WEEK-4
	Grover & Shor Algorithm, Bell states.

LESSON – PLAN

SUBJECT: Software Engineering & Testing TEACHER'S NAME: DR. NARENDER SINGH

JAN - 2024	**WEEK-1**
	Software Engineering Paradigms: Software Characteristics, Software myths, Software Application,
	WEEK-2
	Software Process Models, Process iteration, Process activities, CASE Tools. Software Project management: Management activities,
	WEEK-3
	Project planning, Project scheduling, Risk management and activities. Software Requirements engineering: Requirements Engineering Process, Phase,
	WEEK-4
	Type of software Requirements, Software Requirements specification Document, Specification languages
FEB - 2024	**WEEK-1**
	Software Metrics and Measures: Process Metrics, Project metrics, Software Project Estimation Models: Empirical, Putnam, COCOMO models. Software Design Process,
	WEEK-2
	Principles of software design, Design Strategies, Levels of Software Design, Interface Design, Coding and Software Reuse.
	WEEK-3
	Software Testing, Testability and features of Test cases, Software Reliability, Software Safety, Defect testing, Debugging Tools, Software Testing techniques;
	WEEK-4
	WBT, BBT, Ticking Box testing; static analysis, symbolic testing, program mutation testing, input space , partitioning, functional program testing, data flow guided testing.
MARCH - 2024	**WEEK-1**
	Software Testing Strategies: Approach, Issues; integration, incremental, System, alpha, Beta testing etc;
	WEEK-2
	Comparative evaluation of techniques: Testing tools; Dynamic analysis tools, test data generators, Debuggers, test drivers etc.
	WEEK-3
	Technical Metrics for Software: Quality Factors, framework; Metrics for analysis, design, testing source code etc.
	WEEK-4
	Object Oriented Testing: OOT strategies and issues, Test Case design, interface testing.
APRIL - 2024	**WEEK-1**
	Software Maintenance and its types, S/w Configuration Management, S/w Reuse, Software Evolution, Software Quality Assurance: – plans & activities, concept, importance and essence;
	WEEK-2
	FTR, structured walk through technique etc., Software Documentation. Software Reliability, validation, Software Safety and Hazards Analysis;
	WEEK-3
	Features affecting software quality, SQA Plan. Using project management software tools, Quality management, issue, standards and methods.
	WEEK-4
	ISO Quality models: ISO 9000 and SEI-CMM and their relevance.

LESSON PLAN

SUBMITTED BY:

DR. POOJA SHARMA

EXTENSION LECTURER

DEPTT. OF COMPUTER SCIENCE

M.SC.-2201: OBJECT ORIENTED PROGRAMMING WITH JAVA

January 2024:

Introduction: Object-Oriented Languages, History of Java, Creation of Java, Java for the Internet, Byte-code, Features, Object Oriented Programming in Java. Java Program Structure and Java Class Library, Data Types, Variables, and Operators, Operator Precedence. Selection Statements, Scope of Variable, Iterative Statement. Defining Classes & Methods, Constructors, Creating Objects of a Class, Assigning Object Reference Variables, Variable this, Definingand Using a Class, Automatic Garbage Collection. Arrays and Strings: Arrays, Arrays of Characters, String Handling Using String Class, Operations on String Handling Using, String Buffer Class.

February 2024:

Extending Classes and Inheritance: Using Existing Classes, Inheritance, Choosing Base Class, Access Attributes, Polymorphism, Abstraction through Abstract Classes, Final Modifier, Universal Super class-Object Class Packages & Interfaces:. Define Package, type of package, class path, standard packages, Access Protection in Packages, Concept of Interface Exception Handling: Concept of Exceptions, Types of Exceptions, Dealing with Exceptions, Exception Objects, Defining your own Exceptions.

March 2024:

Multithreading Programming: Java Thread Model, Define Threads, Main Thread, Creating a new Thread, Creating Multiple Threads, Thread Priorities, Synchronization, Deadlocks Inter- thread communication, Deadlocks Input/output in Java: I/O Basic, Byte and Character Structures, I/O Classes, Reading Console Input Writing Console Output, Reading and Writing on Files, Random Access Files, Storing and Retrieving Objects from File, Stream Benefits. Creating Applets in Java: Applet Basics, Architecture, Life Cycle, Display Methods, Requesting Repainting, Status Window, The HTML APPLET Tag Passing Parameters to Applets.

April 2024:

Working with Windows: AWT Classes, Window Fundamentals, Working with Frame, Creating Frame Window in an Applet, Displaying Information within a Window. Working with Graphics and Texts: Working with Graphics, Color and Font, Paint Mode Setting, Managing Text Output using Font Metrics, Exploring Text and Graphics. Working with AWT Controls, Layout Managers and Menus.

MAY 2024:

Revision Work, Group Discussions and tests

M.Sc. – 2202 THEORY OF COMPUTATION

January 2024:

Finite State Systems, Non-Deterministic finite automata (NDFA), Deterministic finite automata **(DFA), Equivalence of DFA and NDFA, Conversion of NFA to DFA , minimization of finite automata, Finite** automata with ϵ- moves, Acceptability of a string by a finite Automata. Introduction to Machines: Properties and limitations of Finite Automata, Mealy and Moore Machines, Conversion of Mealy to Moore machines and vice versa.

February 2024:

Regular Expression: State and prove Arden"s Method, Regular Expressions, Recursive definition of regular expression, Regular expression conversion to Finite Automata and vice versa. Kleene Closure. Properties of regular languages: Regular language, pumping lemma for regular sets/languages, Application of regular languages.

march2024:

Grammars: Chomsky hierarchy of languages, Relation between different types of grammars, Context-free grammar, Derivation tree / Parse tree, Ambiguity in regular grammar and their removal, Reduced Forms: Removal of useless symbols, null and unit productions, Normal Form: Chomsky Normal form(CNF) and Greibach Normal Form(GNF). Push Down Automata: Introduction to PDA, Deterministic and Non-Deterministic PDA, Design of PDA: Transition table, Transition diagram and acceptability of strings by designed PDA, Pushdown automata (PDA) and equivalence with CFG.

April2024:

Turing machines: The basic model for Turing machines (TM), Deterministic and Non- Deterministic Turing machines and their equivalence, Design of Turing Machines: Transition table, Transition diagram and acceptability of strings by designed Turing machine. Variants of TM, Halting problem of TM, PCP Problem of Turing Machine, Linear Bounded Automata, TMs as enumerators. Universal Turing machine, reduction between languages, undecidable problems about languages. Primitive Recursive Functions, Total Recursive Functions.

MAY 2024:

Revision Work, Group Discussions and tests

BCA-107: LOGICAL ORGANIZATION OF COMPUTER-II

JANUARY 2024:

Sequential Logic: Characteristics, Flip-Flops, Clocked RS, D type, JK, T type and Master- Slave flip-flops. State table, state diagram and state equations. Flip-flop excitation tables

FEBRUARY 2024:

Sequential Circuits: Designing registers – Serial Input Serial Output (SISO), Serial Input Parallel Output (SIPO), Parallel Input Serial Output (PISO), Parallel Input Parallel Output (PIPO) and shift registers. Designing counters – Asynchronous and Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters

MARCH 2024:

Memory & I/O Devices: Memory Parameters, Semiconductor RAM, ROM, Magnetic and Optical Storage devices, Flash memory, I/O Devices and their controllers.

APRIL 2024:

Instruction Design & I/O Organization: Machine instruction, Instruction set selection, Instruction cycle, Instruction Format and Addressing Modes. I/O Interface, Interrupt structure, Program-controlled, Interrupt-controlled & DMA transfer, I/O Channels, IOP.

MAY 2024:

Revision Work, Group Discussions and tests

BCA – 207: DATA STRUCTURE – II

January 2024:

Tree: Header nodes, Threads, Binary search trees, Searching, Insertion and deletion in a Binary search tree, AVL search trees, Insertion and deletion in AVL search tree, m-way search tree, Searching, Insertion and deletion in an m-way search tree, B-trees, Searching, Insertion and deletion in a B-tree, B+tree, Huffman's algorithm, General trees.

February 2024:

Graphs: Warshall's algorithm for shortest path, Dijkstra algorithm for shortest path, Operations on graphs, Traversal of graph, Topological sorting.

March 2024:

Sorting: Internal & external sorting, Radix sort, Quick sort, Heap sort, Merge sort, Tournament sort, Searching: Liner search, binary search, merging, Comparison of various sorting and searching algorithms on the basis of their complexity.

April 2024:

Files: Physical storage devices and their characteristics, Attributes of a file viz fields, records, Fixed and variable length records, Primiry and secondary keys, Classification of files, File operations, Comparison of various types of files, File organization: Serial, Sequential, Indexed-sequential, Random-access/Direct, Inverted, Multilist file organization. Hashing: Introduction, Hashing functions and Collision resolution methods .

MAY 2024:

Revision Work, Group Discussions and tests

M.SC.-2401: MACHINE LEARNING AND DATA ANALYSIS USING PYTHON

January 2024:

Introduction to Python: History of Python, An interpreted high level language, Need of Python Programming, Applications, Importance in Data Science. Introduction to Machine Learning: Definition of Machine Learning; Machine learning and AI, Use/Role of Python in AI, Importance of Python in AI and Machine learning. Applications of Machine Learning, Supervised vs. Unsupervised Learning, Python libraries suitable for Machine Learning; Overview of Python Libraries and Packages: Pillow, Matplotlib, Numpy, NLTK (Natural Language Toolkit), FlashText, Scipy, sklearn, Bokeh, Pandas, Mahotas.Pros & Cons of Machine Learning.

February 2024:

Machine Learning Algorithms in Python: Advantages/Applications of machine learning Algorithms, Regression: Linear Regression, Non-linear Regression; Classification: K-Nearest Neighbour, Naive Bayes, Decision Trees, Logistic Regression, Support Vector Machines, Clustering: K-Means Clustering, Hierarchical Clustering, Density-Based Clustering, Recommender Systems: Content-based recommender systems, Collaborative Filtering; Role of Model evaluation.

March 2024:

Installing and working with Python: Data Types, Operators and Operands in Python, Operator precedence; Expressions and Statements (Assignment statement); Input / Output and Comments in Python; Data Structures: Mutable or immutable objects in python; Lists, Tuples, Sets, Dictionaries; Control structures: Conditional Branching, Looping, Exception Handling; User-defined functions: Defining, invoking functions, passing parameters (default parameter values, keyword arguments), Scope of variables- Global and Local Variables, Void functions and Fruitful Functions. File Handling: File handling functions, Object Oriented concepts in Python: Classes in python: Creating a Class, The Self Variable, Constructor, Types of Variables, Namespaces; Inheritance: Types of Inheritance.

April2024:

Data Science Using Python: Downloading and reading data files in Python, Data Frame (Creating Data Frame from an Excel Spreadsheet, Creating Data Frame from .csv Files, Creating Data from Python List of Tuples, Operations on Data Frames);Data Exploration: head(), tail(), describe(),value_counts(), GroupBy(); Data Wrangling: Check missing values in the dataset, Fill missing values, Binning in Python; Data Visualization: Bar Graph, Histogram, Creating a Pie Chart, Creating Line Graph.

MAY 2024:

Revision Work, Group Discussions and tests