



Lesson Plan

Name : Mrs. Neha Sharma

Department: Computer Science



SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER

BCA Part-I

Subject: Data Structure and Algorithms - I

| Month | No. of Lecturers | Topics Covered |
|-----------|------------------|---|
| July | 12 | Fundamental Notations: Data Structures and its Types: Primitive and Composite Data Types , Arrays:- Concept of Arrays. Single dimensional array, Two dimensional array storage |
| August | 11 | Strategy of multidimensional arrays, Index Formula for single and multidimensional Array. Operations on Arrays with Algorithms (Insertion, deletion), Advantages and disadvantages. Sorting and Searching :-Introduction. Search algorithm (Linear and Binary). |
| September | 08 | Concept of sorting, Sorting algorithms (Bubble Sort, Insertion Sort, Quick Sort, Selection Sort, Merge Sort, Heap Sort, Radix Sort). |
| October | 09 | Linked Lists:- Introduction to linked list and double linked list, Representation of linked lists in Memory, Traversing a linked list, Searching linked list, Insertion and deletion into linked list. |
| November | 03 | Doubly linked lists, Traversing a doubly linked lists, Insertion and deletion into doubly linked lists |

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SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER

BCA Part-II Subject: Discrete Mathematics

| Month | No. of Lecturers | Topics Covered |
|-----------|------------------|--|
| July | 12 | Sets: Elements of a set, methods of describing a set, types of sets, Operations on sets-- union, intersection and difference of sets, Associative Laws, Distributive laws, DeMorgan's laws, Venn Diagrams, Multi Sets : Operations on multi sets, ordered pairs, Cartesian product of two sets. |
| August | 11 | Relation: Basic definition of relation and types of relations, graphs of relations, Binary relations, (domain, range, inverse and composite, Path in relations & composition of paths, Matrix representation of a relation, properties of relations (reflexive, irreflexive, symmetric, A-symmetric, transitive, anti symmetric.) |
| September | 08 | Algebra of logic: Propositions and Logic operations, truth tables, arguments and validity of arguments, propositions generated by a set, equivalence and implication laws of logic, mathematical system and propositions over a universe, Logical Connectives – Disjunction, Conjunction, Negation, Conditional Connectives, Quantifiers. |
| October | 09 | Matrix Operations: Addition, Subtraction, Multiplication and Inverse. Graph Theory: Definition, Basic terminology, Types of graph (Simple, Multi, Pseudo, Finite & Infinite, Null, Complete, Regular, Bipartite, Cyclic & Acyclic, Weighted & Unweighted graph), Binary Operation (Union, Intersection), Join, Product |
| November | 03 | Composite & Compliment of two graph. Shortest path in weighted graph: Dijkstra's Algorithm, Matrix representation of graph: Adjacency matrix, Incidence Matrix Recurrence Relations: Order of the recurrence relations, Degree of the difference equations, linear recurrence relation with constant coefficient, linear homogeneous recurrence relation with constant coefficient. |

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SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER

BCA Part-II Subject: Computer Graphics-I

| Month | No. of Lecturers | Topics Covered |
|-----------|------------------|--|
| July | 12 | Graphics hardware Input devices: Keyboard, touch panel, light pens, graphic tablets, joysticks, track ball, data glove, digitizer, image scanner, mouse, voice systems. |
| August | 11 | Hard copy devices: Input and non-impact printers such as line printer, dot matrix, laser, inkjet, electrostatic, flat bed and drum plotters. Video Display Devices: Refresh cathode ray tube, raster scan displays, random scan displays, colour CRT monitors |
| September | 08 | direct view storage tube, flat panel displays, 3-D view devices, virtual reality, raster scan systems, random scan systems, graphics monitors and work stations. |
| October | 09 | Scan conversion algorithms for Line : function, increment / decrement, equation, algorithm (Digital Differential, Bresenham's) Circle: function, equation (Polynomial & Trigonometry), |
| November | | algorithm (Bresenham's & Mid-Point) Ellipse: function, equation (Polynomial & Trigonometry) Bresenham's algorithm, Area filling techniques: Scan Line Boundary Fill, Flood Fill Algorithm, Character generation. |

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SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER

BCA Part-III

Subject: Internet tools and Website Development

| Month | No. of Lecturers | Topics Covered |
|-----------|------------------|---|
| July | 12 | Internet and www: Introduction to internet and its application, email, Telnet, File transfer protocol (FTP), Internet Service Provider (ISP), Domain Name Server (DNS). Internet address, www and its evolution |
| August | 11 | Uniform Resource Locator (URL) and its types. Browsers: Internet Explorer, Chrome, Mozilla firrefox, Opera, Search Engine, Web Server, Apache, IIS, Proxy, HTTP Protocol Java Script : Introduction, Keywords, variables, Data type(Numbers, Booleans, Strings, Objects, Null, Undefined), Operators : Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment/Decrement Operator, Bitwise Operator, Conditional operator |
| September | 08 | Comma operator, delete, new, this, Expression, Comment, Input-output Control Structure : if-else, switch, Loop: while, do-while, for, for-in, break, continue, return, import, export |
| October | 09 | Array : create, access, methods (length, sort) Function : Built-in-Function : (eval(),infinite(), isNaN(), parseFloat(), parseInt()), User-defined-Function : (create, calling, return) Boolean : toString, valueOf() Date : getYear(), setYear(), getMonth(), setMonth(), getDate(), setDate(), getDay(), getTime(), setTime(), getHours(), setHours().getMinutes(), setMinutes(), getSeconds(), setSeconds() |
| November | 03 | Math : abs(), min(), max(), pow(), round(), sqrt() String : Length, indexOf, lastIndexOf(), search(), slice(), substring(), replace(), toUpperCase(), toLowerCase(), concat(), String.trim(), charAt, charCodeAt Events and Event Handlers : General Information about Events, Defining Event Handlers, events: onClick, onDbIClick, onKeyPress, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove |

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BCA Part-III

Subject: Internet tools and Website Development

| Month | No. of Lecturers | Topics Covered |
|----------|------------------|---|
| December | 12 | PHP – Introduction, Common Uses of PHP, Characteristics of PHP, PHP – Environment Setup Installation on Windows, PHP – Syntax, Running PHP Script from Command Prompt PHP |
| January | 18 | Variable. Local Variables, Global Variables, Static Variables. Constants, Operator Types, Precedence of Operators PHP: Decision Making: If...Else Statement, Elself Statement, Switch Statement. Loop Types:, while , do...while, for, for each, break, continue . |
| February | 15 | Arrays : Numeric Array, Associative Arrays, Multidimensional Arrays, Strings function, Web Concepts, GET and POST, File Inclusion, File & I/O PHP : Functions, Cookies, Sessions, Sending, File Uploading, Error and Exception Handling, PHP PHP and MySQL |
| March | 15 | Connecting to MySQL Database, Create MySQL Database Using PHP, Insert MySQL Database Using PHP, Delete Data to MySQL Database, Retrieving Data from MySQL Database |

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M.Sc. Computer Science (Previous)
Subject: Computer Communication and Networks

| Month | No. Of Lectures | Areas covered |
|-----------|-----------------|---|
| July | 06 | Introduction to Data communications and networking, protocols, standards and architecture, topology, transmission mode, OSI model, analog and digital signals, periodic and aperiodic signals, time and frequency domain, Fourier analysis concept |
| August | 20 | Encoding digital to digital conversion, analog to digital conversion, digital to analog conversion, analog to analog conversion, transmission of digital data, DTE-DCE interface, EIA-232, X.21, modem, cable modem, guided and unguided, transmission media |
| September | 14 | Multiplexing, TDM, FDM, WDM, DSL, HDLC, error classification, types of errors, error detection, error correction, virtual redundancy check, longitudinal redundancy check, cyclic redundancy check |
| October | 20 | Asynchronous transfer mode, protocol architecture, ATM cells, ATM layers, switches, circuit switching network and concepts, routing, packet switching, X.25, virtual circuit approach, point-to-point layers, link control protocol, network control protocol |

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SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER

BCA Part-I

subject: Data Structure and Algorithms - II

| Month | No. of Lecturers | Topics Covered |
|----------|------------------|--|
| December | 12 | Stacks and Queues :- Introduction to stacks, Representation of stacks, Implementation of stacks using Array & Link List, |
| January | 18 | Uses of stacks, Introduction to queues, Implementation of queues (with algorithm), Circular Queues, De-queues. Trees: - Concept of Trees, Concept of representation of Binary tree, Binary search trees Traversing Binary Trees |
| February | 15 | (Pre order, Post order and Inorder), Searching, inserting and deleting binary search trees, AVL Tree. Graph and Table: - Introduction to graphs, types of graphs, Breadth first search, Depth first search, adjacent matrix |
| March | 15 | Searching Sequential table, Hash tables Applications: - Recursion, Fibonacci, Tower of Hanoi, Divide & Conquer |

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SOPHIA GIRLS' COLLEGE(AUTONOMOUS), AJMER

BCA Part-II Subject: Computer Graphics-II

| Month | No. of Lecturers | Topics Covered |
|----------|------------------|---|
| December | 12 | Geometric transformations (translation, scaling rotation, reflection, shearing), 2-dimensional graphics: Cartesian and Homogeneous co-ordinate system, |
| January | 18 | Window to Viewport transformation, Composite transformation, Affine Transformation. Clipping Techniques: Clipping in Raster, point clipping, Line clipping, Cohen-Sutherland Line clipping Algorithm, Cyrus-Beck Line clipping Algorithm |
| February | 15 | 3-D viewing Mathematics of Projections: Types of Projection: Parallel (Oblique, Orthographic) & Perspective (One Point, Two Point, Three Point). Introduction to 3-dimensional Graphics: Geometric Transformations Translation, Scaling, Rotation, Visible line identification, |
| March | 15 | Visible Surface Detection (Back-face, Painter's Algorithm), Polygon (surface, table, equation, meshes), Spline Representation, Cubic Spline (Interpolation, Approximation). |

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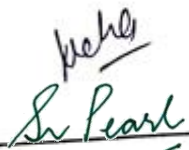
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M.Sc. Computer Science (Final)

Subject: XML Technology

| Month | No. Of Lectures | Areas covered |
|----------|-----------------|--|
| December | 04 | Role Of XML - XML and The Web - XML Language Basics - SOAP - Web Services - Revolutions Of XML - Service Oriented Architecture (SOA). XML TECHNOLOGY - XML - Name Spaces - Structuring With Schemas and DTD - Presentation Techniques - Transformation - XML Infrastructure. |
| January | 16 | SOAP, Overview Of SOAP - HTTP - XML-RPC - SOAP: Protocol - Message Structure - Intermediaries - Actors - Design Patterns And Faults - SOAP With Attachments |
| February | 16 | WEB SERVICES: Overview - Architecture - Key Technologies - UDDI - WSDL - ebXML - SOAP And Web Services In E-Com - Overview Of .NET And J2EE |
| March | 06 | XML SECURITY: Security Overview - Canonicalization - XML Security Framework - XML Encryption - XML Digital Signature - XKMS Structure - Guidelines For Signing XML Documents - XML In Practice |


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