



SOPHIA GIRLS' COLLEGE (AUTONOMOUS), AJMER

**Sophia Girls' College (Autonomous),
Ajmer**



Department of Computer Science

Course Plan

Dr. Neha Sharma



SOPHIA GIRL'S COLLEGE, AJMER (AUTONOMOUS)

SESSION 2022-23

COURSE PLAN

| S. No. | Class | Semester | Paper |
|--------|-------|----------|-----------------------------------|
| 1 | BCA | III | Computer graphics |
| 2 | BCA | V | Computer communication & networks |
| 3 | M.Sc. | III | Computer Networks |



SOPHIA GIRL'S COLLEGE, AJMER (AUTONOMOUS)

● BCA-II Computer Science 2022-23 ●

SEMESTER III (BCA-II)

BCA-304 Computer Graphics

MAX MARKS: 100(70EXT; 30 INT)

MIN. MARKS: 40(28 EXT:12 INT)

COURSE PLAN

| SEM III Month | UNIT/TOPIC | Concepts/facts | Teaching Pedagogy | Learning Outcomes | Questions | Marks Weightage (%) |
|------------------|---|--|--|---|--|---|
| July | Unit I Introduction: Elements of graphics workstation. Video Display Devices. Color model, Raster Scan Systems. Random Scan systems. Input devices. Graphics Software Coordinate Representations, Fundamental Problems in Geometry | Concept of Computer graphics and its terminologies | PPT, Lecture method , Live Examples, practice exercise | Understand the structure of modern computer graphics systems and Input output Device and implement various algorithms to scan, convert the basic geometrical primitives | <u>Knowledge Based</u> Define Interactive graphic What is Emmissive display? | Knowledge—25 Understanding-45 Higher Order-30 |
| | Algorithms: Line drawing algorithms- DDA Algorithm. Bresenham's Line Algorithm. Frame buffers. Circle and Eclipse generating algorithms. | Learning of scan line, circle and ellipse generating algorithm | | | <u>Understanding Based</u> How DDA algorithm is faster than Bresenham's Line algorithm? Justify your answer by using the line attributes. | |
| August | Shape fill Algorithm. Character generation. Attributes of lines, curves, filling, characters. | Concept of curves & algorithms | PPT, practice Exercise, assignments | Represent knowledge in various ways | Give the application areas of CG. | |
| | Unit II Graphics Primitives: Primitive | Concept of file structure & | PPT, practice Exercise, | To define the polygons | | |



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|-----------|---|---|---|--|---|--|
| | Operations, The display file interpreter- Normalized Device Coordinates. Display- File structure. Display – file algorithm. Display control and Polygons, polygon representation. Text attributes | polygons ● | assignments, group discussions | representation ● | <i>Higher Order Thinking Skills Based</i> | |
| September | Geometric Transformations: Matrices. Scaling Transformations. Sin and Cos Rotation. Homogeneous Coordinates and Translation. Co-ordinate Translations. Rotation about an arbitrary point. Inverse | Concept of transformation and advance concept of transformation | PPT, group discussion, assignments, E-content | Understand clipping | Briefly give comparison between different type of transformation. Explain projection with the help of suitable cube diagram. | |
| | Transformations, Transformations Routines. 2-D Viewing- The viewing pipeline. Viewing co-ordinate, Reference Frame. Windows to view ports. Co-ordinate transformation | Importance of 2D projection | PPT, practice Exercise, E content, group discussion | | | |
| | UNIT-III Clipping Techniques: Clipping in Raster, point clipping, Line clipping, Cohen-Sutherland Line clipping Algorithm, Cyrus-Beck Line clipping Algorithm | Different forms of clipping | PPT, group discussion, problem solving activities | To learn the basic principles of 2-dimensional transformation along with surface identification and Curves | | |
| October | Computer Animation: Design of Animation Sequences. General Computer Animation Functions-Raster Animations. | Concept of animations | PPT, assignments, Econtent | | | |



Key Frame Systems.
Morphing Simulating
Accelerations. Motion
Specifications. Kinematics
and Dynamics

Accelerations

PPT, assignments


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SOPHIA GIRL'S COLLEGE, AJMER (AUTONOMOUS)

BCA-III 2022-23

SEMESTER V (BCA-III)


BCA-501 Computer Communications and Networks


MAX MARKS: 100(70EXT: 30 INT)


MIN. MARKS: 40(28 EXT:12 INT)


COURSE PLAN

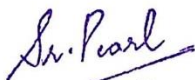
| SEM V Month | UNIT/TOPIC | Concepts/facts | Teaching Pedagogy | Learning Outcomes | Questions | Marks Weightage (%) |
|----------------|--|--|--|---|---|---------------------------------------|
| JULY | UNIT I Networking Basics: Introduction to digital communications, Types of network: LAN, WAN, MAN, Types of network terminal: Client (Thin, Fat, Hybrid), Server (File, Mail, Application, Communication, Database, Print), Client Server Model, | Concept of communication with network terminal | PPT, Lecture , Diagrams, group discussions, E content | Study the basic taxonomy and terminology of the computer networking and enumerate the layers of OSI model and TCP/IP model. | <u>Knowledge Based</u> Define Protocol What is OSI Model? <u>Understanding Based</u> | Knowledge--25 Understanding-45 |
| | Topology: Bus, Ring, Star, Tree/Snowflake, Mesh, Combined/ Hybrid | Understand Topologies | | | What is the need of encoding? Explain analog to analog conversion. | Higher Order-30 |

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|  | | Terminology: Amplitude, Frequency, Phase, Bit rate, Baud rate, Bandwidth Signal types: Analog signals, Digital signals, Periodic, Aperiodic | Signal conversion | | | <u>Higher Order Thinking Skills Based</u> Explain HDLC protocol? | |
| | AUGUST | Modulation: Amplitude, Frequency, Phase, Demodulation | Terminologies in signal encoding | Practice exercise, problem solving activities | | | |
| | | UNIT II Transmission Media: Guided (Twisted pair cable, Coaxial cable, Fiber Optic Cable), Unguided (Radio waves, Microwaves, Infrared), Transmission Mode: Parallel, Serial Networking Devices: Repeater, Router, Hub, Switch, Bridge, Gateway | Concept of transmission media and network devices, | Practice Exercise, assignments and Practical Implementation, PPT | Acquire knowledge of Transmission Media and Error checking and correction method | | |
| | SEPTEMBER | Switching: Introduction, Types (circuit, packet, message) Multiplexing: Frequency division, Wavelength division, Time Division, Demultiplexing | Utility of switching | Practice Exercise, PPT, and Practical Implementation | | | |
| | | Unit III Protocol: Standards, Architecture, OSI Model, TCP/IP Model, HDLC Asynchronous transfer mode: Introduction, Protocol architecture, ATM cells, ATM layers, | Importance of OSI, ATM | Assignments, practice Exercise and Practical Implementation, PPT | Gain core knowledge of Asynchronous transmission Mode | | |

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|  | OCTOBER | Point to Point Protocol: point-to-point layers, link control protocol, network control protocol. Error classification. Types of errors (Single Bit Error, Burst Error). | Concept of various protocol | Practical Implementation, PPT, assignments | | | |
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SOPHIA GIRL'S COLLEGE, AJMER (AUTONOMOUS)

M.Sc Computer Science (Previous) 2022-23

SEMESTER I (M.Sc. C. Previous)


MCS – 102 : Computer Networks

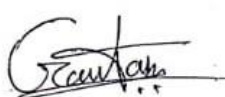
Max. Marks : 75 (50Ext; 25 Int)

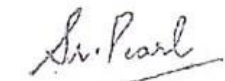
Min. Marks: 30(20 Ext;10 Int)

COURSE PLAN

| SEM I Month | UNIT/TOPIC | Concepts/facts | Teaching Pedagogy | Learning Outcomes | Questions | Marks Weightage (%) |
|----------------|---|--|---|---|---|---|
| SEPTEMBER | Unit – I Introduction to Data communication and networking, protocols, standards and architecture, topology, transmission mode-half duplex and full duplex OSI model, | Overview of Data Communication and Networking | Blended learning, ppt, assignments | To recognize the technological trends of Computer Networking. | <u>Knowledge Based</u> Define topology. | Knowledge—25 Understanding-45 Higher Order-30 |
| | Introduction to Ethernet, token ring, routers, switch, hub, bridge, gateways, private and public networks, analog and digital signals, periodic and aperiodic signals: time and frequency domain, Encoding digital to digital conversion, analog to analog conversion, digital to analog conversion, analog to analog conversion, transmission of digital data. | | | | <u>Understanding Based</u> What is Transmission Mode? Discuss the differences between Hub and Switch. | |
| OCTOBER | Unit – II Subnetting, Introduction to IP addressing- Class A/B/C/D/E, private IP address-First OCTET range Etc. | Features of metrics, how to design reusable components | PPT, Practical Implementation, problem solving activities | To Explain methods of capturing, specifying, | <u>Higher Order</u> | |

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|--|----------|---|---|--|--|---|--|
|  | | subnetting Default Subnet Mask, Class C subnetting, class B subnetting, Class A subnetting. WAN Technologies- Leased line, P to P communication, HDLC & PPP protocol-features, PPP link, PPP layer & its explanation/ role, PAP/CHAP role. Internet working: Tunneling, Fragmentation, IPV4, IPV6 Basics. | and their inter relationships | | visualizing and analyzing software requirements. | <u>Thinking Skills Based</u> Contrast between Class A, B and C IP address. Give Importance of software NS2 Simulation and the architecture. | |
| | NOVEMBER | Unit – III VPN benefits, components, frame relay, packet switch network, virtual circuit Switching: Switching operations, functions, redundant paths and its problems, mode of operation of switch, Basics of NS2-About NS2 and NAM, purpose and installation, Background and architecture, protocol Support for NS2,simulation object, links, setting link parameters, Routing Protocol support, scenario. | Effective testing leads to easily acceptance for the software | PPT, QUIZ, team building exercise, E content, projects | To explore the different Testing methods | | |
| | DECEMBER | Basic syntax, node creation, Finish procedure, Running NS2 and NAM, Nodes & Agents, Working of NS2 commands Wired Networks- Creating links, sending traffic through NS2 | Basic syntax and Features of NS2 | Practical Exercise, Project | To learn the simulation of Network | | |


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Session 2022-23
EVEN SEMESTER

| S.No. | Class | Semester | Paper |
|-------|-----------|----------|--|
| 1 | BCA | II | BCA – 204 – Data Structures and Algorithm |
| 2 | BCA | VI | BCA- 604 (A) Website Development using PHP & MySQL |
| 3 | M.Sc. CS. | II | MCS – 202 Computer Graphics |



SOPHIA GIRL'S COLLEGE, AJMER (AUTONOMOUS)
B.C.A – I (SEMESTER II) 2022-23

BCA – 204 Data Structure and Algorithms

Max. Marks :75 (50Ext; 25 Int)

Min. Marks: 30(20 Ext;10 Int)

LESSON PLAN

| SEM II Month | UNIT/TOPIC | Concepts/facts | Teaching Pedagogy | Learning Outcomes | Questions | Marks Weightage (%) |
|-----------------|--|--|--|---|---|--|
| DECEMBER | <ul style="list-style-type: none">• Introduction to algorithms• Introduction to data types• Arrays, two and three dimensional and their storage policy• Characteristics of an algorithm | <ul style="list-style-type: none">• Understanding the need and importance of an algorithm.• Understand the different data types and their importance.• Understanding the concept of arrays | PPT, Practical Implementation, Practice questions, worksheet | Write meaningful algorithms with best characteristics. Understanding the storage mechanism of arrays. | <u>Knowledge Based</u> What is algorithm? What are primitive data types and composite data types? <u>Understanding Based</u> | Knowledge--45 Understanding-15 Higher Order-15 |



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| JANUARY | <ul style="list-style-type: none"> • Sorting and Searching. • Binary and Linear Search algorithm • Sorting – External and Internal Sorting algorithms. • Merge Sort, Selection Sort | <ul style="list-style-type: none"> • Understanding the need and importance of searching and sorting. • Understanding different algorithms used for searching and sorting | PPT, Practical Implementation MCQ's | Able to code the searching and sorting algorithms. Implement different searching and sorting techniques | Explain a good algorithm. WAP to implement Binary Search algorithm in C++. | |
| FEBRUARY | <ul style="list-style-type: none"> • Linked List : Introduction • Representation of linked list in memory • Traversing a linked list • Searching a linked list • Sorting a linked list • Types of linked list | Understanding the need and importance of a linked list. Understanding different types of linked list. Using programming techniques to search, traverse and sort a linked list | PPT, Quiz | Understand the linked list data structure and implement it through coding. | <u>Higher Order Thinking Skills Based</u> Write a program to implement a stack in c++ using class. | |
| MARCH | <ul style="list-style-type: none"> • Introduction to various data structures like Stacks , Queues, Graph, Tree • Traversing a tree – Pre order, post order, in order | Understanding data structures like stacks, queue and tree. Understanding their working mechanism. | PPT, Practical, Live Examples | Understand the basic concept of data structure. Understand the need, importance and meaning of various data structures. | What is the difference between Stack and Queue working methodology? | |



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| APRIL | <ul style="list-style-type: none">Breadth First SearchDepth First Search | Understanding the traversing and searching mechanism in these data structures | PPT, Practical, Live Examples | Understanding the different traversing mechanisms used in different data structures. | What is the difference between Stack and Queue working methodology? | |
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SOPHIA GIRL'S COLLEGE, AJMER (AUTONOMOUS)
BCA III (SEMESTER VI) 2022-23
 BCA – 604 (A) Website Development using PHP & MySQL

Max. Marks :75 (50Ext; 25 Int)

Min. Marks: 30(20 Ext;10 Int)

COURSE PLAN

| SEM VI Month | UNIT/TOPIC | Concepts/facts | Teaching Pedagogy | Learning Outcomes | Questions | Marks Weightage (%) |
|-----------------|--|---|----------------------|---|--|---|
| DECEMBER | UNIT I PHP – Introduction, Common Uses of PHP, Characteristics of PHP, PHP – Environment Setup Installation on Windows, PHP – Syntax, Running PHP Script from Command Prompt PHP – Variable, Local Variables, Global Variables, Static Variables, Constants, Operator Types, Precedence of Operators | Server side Programming and dynamic WebPages | PPT, Programs | To impart knowledge server side programming using PHP | <u>Knowledge Based</u> What is dynamic webpage? What is precedence of operator? | Knowledge—40 Understanding-40 Higher Order-20 |
| JANUARY | Unit – II PHP: Decision Making: If...Else Statement, ElseIf Statement, Switch Statement, Loop Types:, while , do...while, for, for each, break, continue , | Understanding different sections of Webpage and website development | PPT, Programs | To Develop the decision making statement logic under different concepts using XAMP server | <u>Understanding Based</u> What is nested list? Explain by an example. Write an HTML code | |



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| FEBRUARY | Unit III Arrays : Numeric Array, Associative Arrays, Multidimensional Arrays, Strings function, Web Concepts, GET and POST, File Inclusion, File & I/O | How JavaScript can be incorporated in HTML document. How to take and process input form then user | PPT, Practical Implementation | Design website using both the scripting languages | to divide the webpage into four vertical sections. <u>Higher Order Thinking Skills Based</u> | |
| MARCH | PHP : Functions, Cookies, Sessions, Sending, File Uploading, Error and Exception Handling, PHP PHP and MySQL: Connecting to MySQL Database, | Use of functions and various objects variable in PHP Comparison of code without array and with arrays. | PPT, Practical Implementation | Implement the functions of Date, Math and String objects | Write a code to create a function to take input from user and find its factorial. | |
| APRIL | Create MySQL Database Using PHP, Insert MySQL Database Using PHP, Delete Data to MySQL Database, Retrieving Data from MySQL Database | | | | Write a code to show use of different math methods. | |

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SOPHIA GIRL'S COLLEGE, AJMER (AUTONOMOUS)
M.SC Computer Science (Previous) 2022-23
SEMESTER II(M.Sc. C. Previous)
MCS – 202 Computer Graphics

MAX MARKS: 100(70EXT; 30 INT)

MIN. MARKS: 40(28 EXT;12 INT)

COURSE PLAN

| SEM II Month | UNIT/TOPIC | Concepts/facts | Teaching Pedagogy | Learning Outcomes | Questions | Marks Weightage (%) |
|------------------------|--|--|-------------------------------------|---|---|--|
| SEM II DECEMBER | Unit I Interactive graphics, passive graphics, advantage of interactive graphics, application, Hardware (Video Display Devices: CRT, DVST, Emmisive & Non Emmisive) & software requirement of computer graphics. Raster and Random scan system. | Concept of Computer graphics and its terminologies | PPT, Lecture method , Live Examples | Understand the structure of modern computer graphics systems and Input output Device and implement various algorithms to scan, convert the basic geometrical primitives | <u>Knowledge Based</u> Define Interactive graphic What is Emmisive display? | Knowledge—25 Understanding-45 Higher Order-30 |
| | Algorithm: - Line (DDA algorithm, Bresenham's line algorithm), Circle(Midpoint circle algorithm, Bresenham's line algorithm), Ellipse (Midpoint ellipse algorithm), Area Filling Algorithm (Scan-Line fill, Boundary fill, Flood fill). | Learning of scan line, circle and ellipse generating algorithm | | | <u>Understanding Based</u> How DDA algorithm is faster than Bresenham's Line algorithm? Justify your answer by using the line attributes. Give the application areas of CG. | |



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|----------|--|---|------------------------|---|---|
| JANUARY | UNIT II 2D Transformation and their matrix representation (translation, rotation, scaling, reflection, shearing, General pivot-point rotation, general fix scaling, composite transformation, affine transformations, window-to-view port transformation of 2D. | Logical reasoning and its storage | PPT, Hands on Exercise | Represent knowledge in various ways | <u>Higher Order Thinking Skills Based</u> Briefly give comparison between different type of transormation. Explain Marquee Tool the help of suitable example. |
| | Photoshop: Introduction, terms: layer, intensity, resolution, opacity, its features, Opening and Importing images, Creating Documents with different sizes (default, international, custom), Editing images Marquee: Rectangular Marquee Tool & Elliptical marquee tool & single row marquee tool, single column marquee tool. | Concept of transformation and advance concept of transformation | PPT, Hands on Exercise | To define the fundamentals of 2D transformations | |
| FEBRUARY | Move tool, Selection Tools: magic wand tool, quick selection tool, lasso tool: polygonal lasso tool, magnetic lasso tool, Crop tool, slice tool, slice select tool, eyedropper tool, color sampler tool, ruler tool: guidelines | Different forms of clipping | PPT | To describe the importance of Clipping, viewing and projections | |
| | | Importance of 3D projection | PPT, Hands on Exercise | | |



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| | | Concept of curves | PPT | | | |
| MARCH | Brush tool: Spot healing brush tool, healing brush tool, patch tool, red eye tool, brush tool, working | | | | | |
| | with layers & layer styles, Free Transform, Scale, Rotate, Distort, Skew, Scale, Perspective, Eraser tool, background eraser tool magic eraser, gradient tool paint bucket tool. | | PPT | | | |
| APRIL | | | PPT | | | |
| | | | | To learn the basic principles of 3-dimensional transformation along with surface identification and Curves | | |

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