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	*Knowledge Based* Define Interactive graphic What is Emmisive display? *Understanding Based* How DDA algorithm is faster than Bresenham's Line algorithm? Justify your answer by using the line attributes. Give the application areas of CG.	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				
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		
	Unit II Graphics Primitives: Primitive	Concept of file structure &	PPT, practice Exercise,	To define the polygons		

	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	*Higher Order Thinking Skills Based* Briefly give comparison between different type of transformation. Explain projection with the help of suitable cube diagram.	
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		
	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.	*Knowledge Based* Define Protocol What is OSI Model? *Understanding Based* What is the need of encoding? Explain analog to analog conversion.	Knowledge--25 Understanding-45 Higher Order-30
	Topology: Bus, Ring, Star, Tree/Snowflake, Mesh, Combined/ Hybrid	Understand Topologies				

	Terminology: Amplitude, Frequency, Phase, Bit rate, Baud rate, Bandwidth Signal types: Analog signals, Digital signals, Periodic, Aperiodic	Signal conversion			*Higher Order Thinking Skills Based* Explain HDLC protocol?	
	Modulation: Amplitude, Frequency, Phase, Demodulation	Terminologies in signal encoding	Practice exercise, problem solving activities			
AUGUST	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		
	Switching: Introduction, Types (circuit, packet, message) Multiplexing: Frequency division, Wavelength division, Time Division, Demultiplexing	Utility of switching	Practice Exercise, PPT, and Practical Implementation			
SEPTEMBER	**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		

	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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M.SC Computer Science (Previous) 202[redacted]3

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.	*Knowledge Based* Define topology. What is Transmission Mode? *Understanding Based* Discuss the differences between Hub and Switch. *Higher Order*	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.					
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,		

	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.	*Thinking Skills Based* 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	• Introduction to algorithms • Introduction to data types • Arrays, two and three dimensional and their storage policy • Characteristics of an algorithm	• 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.	*Knowledge Based* What is algorithm? What are primitive data types and composite data types? *Understanding Based*	Knowledge--45 Understanding-15 Higher Order-15

JANUARY	• Sorting and Searching. • Binary and Linear Search algorithm • Sorting – External and Internal Sorting algorithms. • Merge Sort, Selection Sort	• Understanding the need and importance of searching and sorting. • Understating 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	• 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.	*Higher Order Thinking Skills Based* Write a program to implement a stack in c++ using class.	
MARCH	• 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?	

APRIL	• Breadth First Search • Depth 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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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	*Knowledge Based* What is dynamic webpage? What is precedence of operator? *Understanding Based* What is nested list? Explain by an example. Write an HTML code	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		

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. *Higher Order Thinking Skills Based*	
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	*Knowledge Based* Define Interactive graphic What is Emmisive display? *Understanding Based* How DDA algorithm is faster than Bresenham's Line algorithm? Justify your answer by using the line attributes. Give the application areas of CG.	**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				

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	*Higher Order Thinking Skills Based* 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			

		Concept of curves	PPT	To learn the basic principles of 3-dimensional transformation along with surface identification and Curves		
MARCH	Brush tool: Spot healing brush tool, healing brush tool, patch tool, red eye tool, brush tool, working					
APRIL	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 PPT			

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