

LECTURE PLAN
(2024-25)
BCA
SEMESTER – IV

LECTURE PLAN

Course Name: Computer Graphics & Multimedia Applications

Course Code: BCA-S206

Faculty Name: Ms. Anita Shah

Lecture Plan				
Month	UNIT	Week	No. of Planned Lecture	Topic
M A R C H		2 nd	4	The Advantages of Interactive Graphics Representative Uses of Computer Graphics
		3 rd	3	Classification of Application Development of Hardware and software for Computer Graphics
		4 th	4	Conceptual Framework for Interactive Graphics Overview, Scan: Converting Lines, Scan Converting Circles, Scan Converting Ellipses
		5 th	4	Hardcopy Technologies, Display Technologies, Raster-Scan Display System
A P R I L	III & IV	1 st	3	Geometrical Transformation 2D Transformation, Homogeneous Coordinates and Matrix Representation of 2D Transformation, Video Controller, Random-Scan Display processor
		2 nd	3	Input Devices for Operator Interaction Image Scanners and Working exposure on graphics tools like Dream Weaver, 3D Effects etc. Introduction Of Clipping Cohen-Sutherland Algorithm, Cyrus-Beck Algorithm Midpoint Subdivision Algorithm
	3 rd	3	composition of 2D Transformations The Window-to-Viewport Transformations Introduction to 3D Transformations Matrix	
	4 th	4	Representing Curves & Surfaces Polygon meshes parametric, Cubic Curves, Quadric Surface	
	5 th	3	Solid Modeling: Representing Solids, Regularized Boolean Set Operation Primitive Instancing Sweep Representations, Boundary Representations, Spatial Partitioning, Representation	
	M A Y	IV & V	1 st	1
2 nd			4	Introductory Concepts: Multimedia Definition, CD-ROM and the multimedia highway
3 RD			3	Computer Animation (Design, types of animation, using different functions), Uses of Multimedia
4 th			4	Introduction to making multimedia – The stage of Project, hardware & software
Total Classes		Planned: 43		

Reference Books:

1. Foley, Van Dam, Feiner, Hughes, Computer Graphics Principles& practice,2000.
2. D.J. Gibbs & D.C. Tsichritzs: Multimedia programming Object Environment& Frame work , 2000
3. Ralf Skinmeiz and Klana Naharstedt, Multimedia: computing, Communication and Applications, Pearson, 2001
4. Hearn & Baker. Computer Graphics Prentice Hall of India, 1986 5, Procedural Elements of Computer Graphics : Rogers , TMH Publishing Company 6. Mathematical Elements of Computer Graphics: Rogers, TMH Publishing Company

LECTURE PLAN (2024-25)
BCA-IV Sem.

Course Name: Operating System

Course Code: BCA-S207

Teacher Name: Suman Mishra Tiwari

Lecture Plan				
Month	UNIT	Week	No. of Planned Lecture	Topic
March	I	1 st	4	UNIT-I Introduction, what is an operating system, Simple Batch Systems, Multi-programmed Batch systems, Time-Sharing Systems, Personal – Computer Systems, Parallel systems, Distributed systems, Real-Time Systems.
		2 nd	3	Memory Management: Background, Logical versus physical Address space, swapping, Contiguous allocation, Paging, Segmentation
		3 rd	4	Virtual Memory: Demand Paging, Page Replacement, Page-replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing, Other Considerations
		4 th	4	UNIT-II Processes: Process Concept, Process Scheduling, Operation on Processes, CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple – Processor Scheduling
		5 th	--	
April	II	1 st	3	Process Synchronization: Background, The Critical – Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization
		2 nd	3	UNIT-III Deadlocks: System Model, Deadlock Characterization,
		3 rd	3	Methods for Handling Deadlocks, Deadlock prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock Problem <i>solving related to deadlock</i>
		4 th	4	UNIT-IV Device Management: Techniques for Device Management, Dedicated Devices, Shared Devices, Virtual Devices; Input or Output Devices, Storage Devices, Buffering
		5 th	3	Secondary Storage Structure: Disk Structure, Disk Scheduling,
May	III & IV	1 st	1	Disk Management, Swap- Space Management, Disk Reliability
		2 nd	4	UNIT-V Information Management: Introduction, A Simple File system, General Model of a File System, Symbolic File System, Basic File System, Access Control
		3 rd	3	Verification, Logical File System, Physical File system File – System Interface File Concept, Access Methods, Directory Structure, Protection, Consistency Semantics
		4 th	4	File – System Implementation: File – System Structure, Allocation Methods, Free- Space Management
		5 th		
Total Planned Lectures:			43	

Reference Books:

1. Silberschatz and Galvin, "Operating System Concepts", Person, 5th Ed. 2001
2. Madnick E., Donovan J., "Operating Systems: Tata McGraw Hill, 2001
3. Tanenbaum, "Operating Systems", PHI, 4th Edition, 2000
4. Dietel, "Operating Systems", TMH

LECTURE PLAN (2024-25)
BCA-IV Sem.

Course Name: Software Engineering
Suman Mishra Tiwari

Course Code: BCA- S208 Teacher Name:

Lecture Plan				
Month	UNIT	Week	LP No.	Topic
March	I	1st	4	Definition and paradigms, a generic view of software engineering. Statement of system scope, isolation of top-level processes and entities. Entities their allocation to physical elements, refinement and review.
		2nd	1	Analyzing a problem Creating a software specification document, review for correctness, Consistency and completeness.
		3th	4	Designing Software Solutions: Refining the software Specification Application of fundamental design concept for data
		4th	4	architectural and procedural designs using software blue print methodology
		5th	--	
April	II & III	1st	4	Object oriented design paradigm. Creating design document.
		2nd	3	Review of conformance to software requirements and quality.
		3rd	3	Software Implementation: Relationship between design and implementation. Implementation issues and programming support environment.
		4th	4	Coding the procedural design Good coding style and review of correctness. Good coding style and review of correctness and readability
		5th	1	Software Maintenance: Maintenance as part of software evaluation, reasons for maintenance,
May	IV	1st	3	Types of maintenance (Perceptive, adaptive, corrective)
		2 nd	4	designing for maintainability, techniques for maintenance.
		3rd	4	Comprehensive examples using available software platforms
		4th	4	case tools, Configuration Management.
		5th	--	
Total Planned Lectures: 43				

Reference Books:

1. K.K.Agrawal & Yogesh Singh "Software engineering", 2nd Ed., New Age International 2005.
2. I.Sommerville, "Software Engineering", Addison Wesley, 2002.
3. James Peter, W. Pedrycz, "Software Engineering: An Engineering Approach" John Wiley & Sons.
4. Software Engineering : P. Jalote , Narosa Publishing House

LECTURE PLAN (2024-25)

Course Name: Optimization Techniques

Course Code: BCA-S209

Faculty Name: Mr. Abhishek Sharma

Lecture Plan				
Month	UNIT	Week	No. of Planned Lecture	Topic
M A R	I and II	1 st	2	LPP Intro, Various definitions including Statements of basic theorem and also their properties, Graphical Method Formulation
		2 nd	6	Simplex methods: tic-tac problem, and its solution Artificial Variable Technique Two Phase method, Degeneracy in simplex method
		3 rd	3	primal and dual simplex method, transport problem Transport problem Assignment problem and its solution.
		4 th	6	Classification of Queuing Model Single Channel Queuing Theory
		5 th	6	Generalization of steady state M/M/1 queuing models (Model-I, Model-II).
A P R	II and III	1 st	5	Generalization of steady state M/M/1 queuing models (Model-III, Model-IV).
		2 nd	5	Replacement of item that deteriorates replacement of items that fail
		3 rd	4	Group replacement and individual replacement.
		4 th	6	Single item deterministic model economics without shortage
		5 th	3	Single item deterministic model economics with shortage
M A Y	IV and V	1 st	3	, long size model without having production rate infinite and finite.
		2 nd	6	Introduction, solution of sequencing problem
		3 rd	5	Johnson s algorithm for n jobs through 2 machines
		4 th	6	REVISION CLASSES FOR EXTERNAL SEMESTER EXAM
Total Classes		Planned: 66		

Reference Books:

- Gillet B.E. "Introduction to Operation Research"
- Taha,H.A. "Operation Research - An Introduction"
- Kanti Swaroop "Operation Research"
- S.D.Sharma "Operation Research"
- Hira & Gupta "Operation Research"

LECTURE PLAN (2024-25)

Course Name: Graph Theory and Combinatorics

Course Code: BCA- BCA-S210-E1

Faculty Name: Mr. Abhishek Sharma

Lecture Plan				
Month	UNIT	Week	No. of Planned Lecture	Topic
M A R	I and II	1 st	2	A Brief History of Graph Theory — Theorems on graphs,
		2 nd	4	Application of Graph Finite and Infinite Graphs, Types of graphs Representations, Degree, operations on graphs,
		3 rd	1	TREES, CONNECTIVITY & PLANARITY, Spanning trees — Fundamental circuits —
		4 th	4	Spanning trees in a weighted graph cut sets
		5 th	4	Connectivity and separability
A P R	II and III	1 st	4	Network flows- Connectivity and separability — Network flows-
		2 nd	3	Isomorphism — 2-Isomorphism — Combinational and geometric Graphs-
		3 rd	3	Chromatic number Chromatic partitioning —
		4 th	4	Chromatic polynomial — Matching Covering- Four color problem Directed graphs —
		5 th	1	Types of directed graphs Digraphs and binary relations
M A Y	IV and V	1 st	3	Binomial theorem — combinations with repetition — Combinatorial numbers —
		2 nd	4	Principle of inclusion and exclusion — Derangements
		3 rd	4	Generating functions Partitions of integers — Exponential generating function — Summation operator —
		4 th	4	REVISION CLASSES FOR EXTERNAL SEMESTER EXAM
Total Classes		Planned:	45	

Reference Books:

1. Clark J. and Holton D.A, "First Look at Graph Theory", Allied Publishers, 1995.
2. Mott Mandel A. and Baker T.P. "Discrete Mathematics for Computer Scientists and Mathematicians", Prentice Hall of India, 1996.
3. Liu C.L., "Elements of Discrete Mathematics", Mc Graw Hill, 1985.
4. Rosen K.H., "Discrete Mathematics and Its Applications", Mc Graw Hill, 2007.

LECTURE PLAN (2024-25)

Course Name: Practical Work of Computer Graphics & Multimedia Application

Course Code: BCA-S206P

Faculty Name: Ms. Anita Shah

Lecture Plan				
Month	UNIT	Week	No. of Planned Lecture	Topic
M A R C H	II & III	1 st	12	Practical How to compile Graphics program on C++ IDE . Write a program for 2D line drawing as Raster Graphics Display. Write a program for 2D line drawing as Raster Graphics Display.
		2 nd		Write a program for Polygon filling as Raster Graphics Display. Write a program for circle drawing as Raster Graphics Display.
		3 rd		Write a program for Polygon filling as Raster Graphics Display. Write a program for circle drawing as Raster Graphics Display.
		4 th		Write a program for Line Clipping
		5 th		Write a program for Polygon Clipping.
		A P R I L		
2 nd	Write a program for displaying 3D objects as 2D display using perspective transformation.			
3 rd	Write a program for displaying 3D objects as 2D display using perspective transformation.			
4 th	Write a program for rotation of a 3D objects about arbitrary axis.			
5 th	Write a program for rotation of a 3D objects about arbitrary axis.			
M A Y	III IV	1 st	9	Write a program for Hidden surface removal from a 3D object
		2 nd		Write a program for Hidden surface removal from a 3D objects
		3 RD		Write a program for Hidden surface removal from a 3D object
		4 th		All shapes program practice
		5 th		All Algorithm program practice Short project on Computer Graphics Programming
Total Classes		Planned:	32	