Sunbeam
College for Women
Autonomous Post Graduate College
Accredited 'A' Grade by NAAC
BHAGWANPUR, VARANASI-221005 (U.P.)

BCA IV Sem.

ACADEMIC PLANNER

2025-26

LECTURE PLAN (2025-26)

Course Name: Operating System
Course Code: BCA-24-401: Sec – A & B
Faculty Name: Mr. Abhishek Sharma

Lecture Plan				
Month	**UNIT**	**Week**	**No. of Planned Lecture**	**Topic**
JAN	I and II	2nd	5	**Introduction**: What is an operating system, Simple Batch Systems, Multi-programmed Batch systems, Time- Sharing Systems
		3rd	5	Personal – Computer Systems, Parallel systems, Distributed systems, Real- Time Systems.
		4th	5	**Processes:** Process Concept, Process Scheduling, Operation on Processes
		5th	5	**CPU Scheduling:** Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple – Processor Scheduling
FRB	I and III	1st	6	Scheduling Algorithms, Multiple – Processor Scheduling
		2nd	6	Process Synchronization: Background, The Critical – Section Problem, Synchronization Hardware,
		3rd	6	Semaphores, Classical Problems of Synchronization
		4th	6	**Memory Management:** Background, Logical versus physical Address space, swapping, Contiguous allocation, Paging, Segmentation
MAR	III and IV	1st	1	**Virtual Memory:** Demand Paging,
		2nd	6	Page Replacement, Page- replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing, Other Considerations
		3rd	5	Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock prevention
		4th	5	Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Banker's Algorithm
		5th	1	Device Management: Techniques for Device Management,
APR	IV	1st	3	Dedicated Devices, Shared Devices, Virtual Devices; Input or Output Devices, Storage Devices, Buffering,
		2nd	6	Secondary Storage Structure: Disk Structure, Disk Scheduling, Disk Management, Swap- Space Management, Disk Reliability
		3rd	5	**Information Management:** Introduction, A Simple File system, General Model of a File System, Symbolic File System,
		4th	6	Basic File System, Access Control Verification, Logical File System, Physical File system File .System Interface; File Concept, Access Methods, Directory Structure, Protection,
		5th	4	Consistency Semantics File – System Implementation: File – System Structure, Allocation Methods, Free- Space Management
Total Classes		**Planned:**	**86**	

Reference Books:

1. Silberschatz and Galvin, "Operating System Concepts", Person, 5 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 (2025-26)

Course Name: Data Base Management System

Course Code: BCA-24-402: Sec – A & B

Faculty Name: Suman Mishra Tiwari

Lecture Plan				
Month	**UNIT**	**Week**	**LP No.**	**Topic**
Jan	I	1st		
		2nd	3	Introduction: Characteristics of database approach,
		3rd	3	data models. Hierarchical Model,
		4th	4	Network Model, Entity-Relationship Model Relational Model
		5th	4	Object-Oriented Data Model. Object-Relational Data Model
Feb	II & III	1st	4	Flat Data Model. Semi-Structured Data Model
		2nd	4	DBMS architecture, data independence, E-R Modeling, Entity types
		3rd	4	Entity set, attribute and key, relationships, relation types
		4th	4	roles and structural constraints, weak entities, enhanced E-R and object modelling. Sub classes; Super classes
		5th	----	
March	IV	1st	------	
		2nd	4	Inheritance, specialization and generalization, Indexed sequential access files
		3rd	4	implementation using B & B++ trees, hashing, hashing functions,
		4th	4	collision resolution, extendible hashing, Dynamic hashing approach implementation and performance.
		5th	1	Relational Data Model: Relational model concepts
April	V	1st	2	relational constraints, relational algebra
		2nd	4	SQL: SQL queries, Programming using SQL. EER and ER to relational mapping: Data base design using EER to relational language.
		3rd	3	Data Normalization: Functional Dependencies, Normal form up to 3rd normal form.
		4th	4	Concurrency Control: Transaction processing, locking techniques and associated Database recovery,
		5th	4	Security and authorization. Recovery Techniques, Database Security
Total Classes		**Planned: 60**		

1. Abraham Silberschatz, Henry Korth, S.Sudarshan, “Database Systems Concepts”, 4th Edition, McGraw Hill, 1997.
2. Jim Melton, Alan Simon, “Understanding the new SQL: A complete Guide”, Morgan Kaufmann Publishers, 1993.
3. A.K.Majumdar, P. Bhattacharya, “Database Management Systems”, TMH, 1996.
4. Bipin Desai, “An Introduction to database systems”, Galgotia Publications, 1991.

LECTURE PLAN (2025-26)
BCA-IV Semester (Section A and B)

Course Name: Programming in Python **Course Code:** BCA-24-403T **Teacher Name:** Daya Shankar Singh

Month	Week	No. of Planned Lecture	Topic
Jan	1st	---	
	2nd	4	**UNIT-I** Introduction to Python Programming: Introduction to Python: Python variables,
	3rd	3	Python basic Operators,
	4th	3	Understanding python blocks.
	5th	4	Python Data Types, Declaring and using Numeric data types: int, float etc.
Feb	1st	4	**UNIT-II** Python Program Flow Control Statements: Python Program Flow Control Conditional blocks: if, else and else if,
	2nd	4	Simple for loops in python, for loop using ranges, string, list and dictionaries.
	3rd	4	--do--
	4th	4	Use of while loops in python, Loop manipulation using pass, continue, break and else. Programming using Python conditional and loop blocks.
	5th	4	**UNIT-III** Python Complex Data Types: Python Complex data types: Using string data type and string operations, Defining list and list slicing,
Mar	1st	1	--do--
	2nd	4	Use of Tuple data type. String, List and Dictionary, Manipulations Building blocks of python programs, string manipulation methods, List manipulation. Dictionary manipulation,
	3rd	3	Programming using string, list and dictionary in-built functions.
	4th	3	Python Functions, Organizing python codes using functions.
	5th	0	---
Apr	1st	3	**UNIT-IV** Python File Operations: Reading files, Writing files in python,
	2nd	4	Understanding read functions, read(), readline(), readlines().
	3rd	4	Understanding write functions, write() and writelines()
	4th	4	Manipulating file pointer using seek Programming, using file operations.
	5th	2	--do--

Total: 62

Reference Books:

1. Vamsi Kurama(2018). Python Programming: A Modern Approach. Pearson
2. Mark Lutz and David Ascher (1999). Learning Python.O'Reilly & Associates, Inc.
3. Allen Downey (2015). Think Python:How to Think Like a Computer Scientist. Green Tea PressNeedham, Massachusetts.
4. Wesley J. Chun (2006). Core Python Programming, Prentice Hall.
5. Kenneth A. Lambert (2011). Fundamentals of Python: First Programs (Introduction to Programming. Course Technology Inc

LECTURE PLAN(2025-26)
Course Name: Operation research
Course Code: BCA-24-404 ME1
Faculty Name: Mr. Abhishek Sharma

Lecture Plan				
Month	**UNIT**	**Week**	**No. of Planned Lecture**	**Topic**
JAN	I and II	1st	0	---
		2nd	3	**Linear programming** Central Problem of linear Programming, various definitions including Statements of basic theorem and also their properties
		3rd	3	Simplex methods, Artificial Variable method, primal and dual simplex method, transportation problem
		4th	4	Assignment problem and its solution. Graphical Method Formulation, Linear Programming Problem.
		5th	3	Replacement Theory Replacement of item that deteriorates replacement of items that fail.
FEB	II	1st	4	Group replacement and individual replacement
		2nd	4	Queuing Theory Characteristics of queuing system, Classification of Queuing
		3rd	4	Model Single Channel Queuing Theory,
		4th	4	Generalization of steady state M/M/1 queuing models (Model-I, Model-II).
MAR	II and III	1st	0	---
		2nd	4	Generalization of steady state M/M/1 queuing models (Model-I, Model-II).
		3rd	4	Game theory Introduction, overview, uses of game theory
		4th	4	some applications and examples, and formal definitions of: the normal form, payoffs,
		5th	1	strategies, pure strategy Nash equilibrium. Introduction, characteristic of game theory
APR	III and IV	1st	2	Two- person zero-sum game,
		2nd	4	Pure and Mixed strategies, Saddle point and its existence.
		3rd	3	Basic assumptions, Johnson's algorithm, sequencing 'n' jobs on single machine using priority rules,
		4th	4	sequencing using Johnson's rule-'n' jobs on 2 machines
		5th	4	'n' jobs on 3 machines, 'n' jobs on 'm' machines.
Total Classes		**Planned:**	**57**	

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 (2025-26)

Course Name: Information System: Analysis, Design & Implementation
Course Code: BCA-24-404ME2
Faculty Name: Ms. Anita Shah

Lecture Plan				
Month	**UNIT**	**Week**	**No. of Planned Lecture**	**Topic**
JANUARY	I	1st	-	
		2nd	3	Overview of System Analysis and Design, SDLC concept and Models: requirements determination, logical design, physical design, test planning, implementation, planning and performance evaluation communication,
		3rd	4	Interviewing, presentation skills, group dynamics; risk and feasibility analysis group-based approaches, JAD, structures walkthroughs, and design and code reviews
		4th	4	Prototyping; database design software quality metrics application categories software package evaluation and acquisition
		5th	4	Information Requirement Analysis: Process modeling with physical logical data flow diagrams
FEBRUARY	II	1st	4	data modeling with logical entity relationship diagrams Developing a Proposal: Feasibility study and cost estimation
		2nd	4	System Design: Design of input and control, design of output and control, file design/database design,
		3rd	4	process, user interface design, prototyping; software constructors; documentation
		4th	4	Application Development Methodologies and CASE tools:
		5th	-	
MARCH	III	1st	-	Information engineering, structured system analysis and design
		2nd	4	, and object-oriented methodologies for application development data modeling
		3rd	4	process modeling, user interface design, prototyping
		4th	4	use of computer aided software engineering (CASE) tools in the analysis design
		5th	1	
APRIL	IV		2	implementation of information systems, Object oriented analysis and design through object modelling technique,
			4	Design and Implementation on OO Platform: object modelling, dynamic modelling and functional object-oriented design
			3	object oriented programming systems for implementation, object-oriented data bases, Managerial issues in Software Projects:
			4	Introduction to software markets; planning of software projects, size and cost estimates Project scheduling; measurement of software quality and productivity,
			4	ISO, capability maturity models for organizational growth.
Total Classes		**Planned:**	**61**	

LECTURE PLAN(2025-26)

Course Name: Digital Marketing **Course Code: BCA-24-405VC** **Section: A**

Faculty Name: Ms. Anita Shah

Lecture Plan				
Month	**UNIT**	**Week**	**No. of Planned Lecture**	**Topic**
JANUARY	**I**	1st	-	
		2nd	3	Overview of digital marketing, Evolution of digital marketing, Importance and benefits of digital marketing, Digital marketing channels and platforms.
		3rd	3	Developing a digital marketing strategy, Setting goals and objectives, Budgeting and resource allocation
		4th	2	. Campaign planning and execution, Monitoring and adjusting digital marketing campaigns
		5th	3	Overview of digital marketing, Evolution of digital marketing, Importance and benefits of digital marketing, Digital marketing channels and platforms.
FEBRUARY	**II**	1st	3	Overview of social media marketing, social media platforms and their features, Creating and optimizing social media profiles
		2nd	3	social media content strategy, social media advertising and analytics.
		3rd	3	Introduction to email marketing, building an email list, Creating effective email campaigns, Email automation and segmentation, Email marketing metrics and analytics.
		4th	3	Understanding content marketing, Content strategy and planning, Content creation and distribution.
MARCH	**III**	1st	-	
		2nd	3	Content promotion and amplification, Content marketing metrics and analytics. Mobile marketing overview, Mobile advertising strategies, Mobile app marketing, Location-based marketing, Mobile marketing analytics.
		3rd	2	Understanding content marketing, Content strategy and planning, Content creation and distribution, Content promotion and amplification, Content marketing metrics and analytics.
		4th	2	Importance of analytics in digital marketing, setting up web analytics tools (e.g., Google Analytics)
APRIL	**IV**	1st	1	Tracking and measuring key performance indicators (KPIs)
		2nd	3	Conversion tracking and optimization, Reporting and data visualization
		3rd	2	Importance of analytics in digital marketing, setting up web analytics tools (e.g., Google Analytics),
		4th	3	Tracking and measuring key performance indicators (KPIs), Conversion tracking and optimization,
		5th	1	Reporting and data visualization
Total Planned Lectures:			**40**	

Reference Books:

1. Digital Marketing: A Practical Approach — R. K. Suri & Rajeev Kumar
– Covers key digital marketing concepts with practical examples (SEO, SMM, SEM, analytics).

2. Digital Marketing for Beginners — Shubham Agarwal

– Simple introductory book useful for foundational chapters.

3. The Art of Digital Marketing — Pradeep Gohil
– Well-structured text on digital strategy and execution across platforms.

4. Concept Building Approach to Digital Marketing — Neeru Kapoor (Cengage)
– Designed for undergraduate syllabus with clear theory and applications

5. Digital Marketing for Dummies ,2nd Edition by Ryan Deiss and Russ Henneberry

LECTURE PLAN(2025-26)

Course Name: Digital Marketing **Course Code: BCA-24-405VC** **Section: B**

Faculty Name: Ms. Anita Shah

Lecture Plan

Month	UNIT	Week	No. of Planned Lecture	Topic
JANUARY	I	1st	-	
		2nd	2	Overview of digital marketing, Evolution of digital marketing, Importance and benefits of digital marketing, Digital marketing channels and platforms.
		3rd	3	Developing a digital marketing strategy, Setting goals and objectives, Budgeting and resource allocation
		4th	2	. Campaign planning and execution, Monitoring and adjusting digital marketing campaigns
		5th	3	Overview of digital marketing, Evolution of digital marketing, Importance and benefits of digital marketing, Digital marketing channels and platforms.
FEBRUARY	II	1st	3	Overview of social media marketing, social media platforms and their features, Creating and optimizing social media profiles
		2nd	3	social media content strategy, social media advertising and analytics.
		3rd	3	Introduction to email marketing, building an email list, Creating effective email campaigns, Email automation and segmentation, Email marketing metrics and analytics.
		4th	3	Understanding content marketing, Content strategy and planning, Content creation and distribution.
		5th	-	
MARCH	III	1st	-	
		2nd	1	Content promotion and amplification, Content marketing metrics and analytics. Mobile marketing overview, Mobile advertising strategies, Mobile app marketing, Location-based marketing, Mobile marketing analytics.
		3rd	3	Understanding content marketing, Content strategy and planning, Content creation and distribution, Content promotion and amplification, Content marketing metrics and analytics.
		4th	2	Importance of analytics in digital marketing, setting up web analytics tools (e.g., Google Analytics)
		5th	1	
APRIL	IV	1st	1	Tracking and measuring key performance indicators (KPIs)
		2nd	3	Conversion tracking and optimization, Reporting and data visualization
		3rd	3	Importance of analytics in digital marketing, setting up web analytics tools (e.g., Google Analytics),
		4th	3	Tracking and measuring key performance indicators (KPIs), Conversion tracking and optimization,
		5th	1	Reporting and data visualization
Total Planned Lectures:			**40**	

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