



Sunbeam
College for Women



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

B.C.A. V Sem.
ACADEMIC PLANNER
2025-26

B C A

LECTURE

PLAN

SEMESTER – 5

2025-26

Introduction to DBMS

BCA-S301T

Topics
UNIT – I Introduction: Characteristics of database approach, data models, DBMS architecture and data independence.
UNIT – II E-R Modeling: Entity types, Entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and object modeling, Sub classes; Super classes, inheritance, specialization and generalization
UNIT – III File Organization: Indexed sequential access files; implementation using B & B++ trees, hashing, hashing functions, collision resolution, extendible hashing, dynamic hashing approach implementation and per.
UNIT – IV Relational Data Model: Relational model concepts, relational constraints, relational algebra SQL: SQL queries, programming using SQL.
UNIT – V EER and ER to relational mapping: Data base design using EER to relational language.
UNIT – VI Data Normalization: Functional Dependencies, Normal form up to 3 rd normal form. Concurrency Control: Transaction processing, locking techniques and associated, database recovery, security and authorization. Recovery Techniques, Database Security.
Sessional Exam

Reference Books:

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

LECTURE PLAN

Course Name: Introduction to DBMS
Teacher Name: Suman Mishra Tiwari

Course Code: BCA-S301T

Lecture Plan				
Month	UNIT	Week	LP No.	Topic
July	I	1st	--	
		2nd	--	
		3rd	1	Introduction, Characteristics of database approach, data models
		4th	3	Hierarchical Model, Network Model, Entity-Relationship Model
		5th	2	Relational Model, Object-Oriented Data Model. Object-Relational Data Model
Aug	II	1st	1	Flat Data Model. Semi-Structured Data Model
		2nd	3	DBMS architecture, data independence, E-R Modeling, Entity types
		3rd	2	Entity set, attribute and key, relationships, relation types
		4th	3	roles and structural constraints, weak entities, enhanced E-R and object modelling. Sub classes; Super classes, Inheritance, specialization and generalization
		5th	3	Indexed sequential access files, implementation using B & B++ trees
Sep	II & III	1st	3	hashing, hashing functions, collision resolution, extendible hashing
		2nd	3	Dynamic hashing approach implementation and performance. Relational Data Model: Relational model concepts
		3rd	3	relational constraints, relational algebra, SQL: SQL queries, Programming using SQL.
		4th	3	EER and ER to relational mapping: Data base design using EER to relational language.
		5th	--	.
Oct	IV	1st	1	Data Normalization: Functional Dependencies, Normal form up to 3rd normal form.
		2nd	3	Concurrency Control: Transaction processing,
		3rd	2	locking techniques and associated
		4th	1	Database recovery, Security and authorization.
		5th	2	Recovery Techniques, Database Security
Total Classes		Planned: 38		

LECTURE PLAN

Course Name: Computer Laboratory and Practical Work of DBMS

Course Code: BCA-S301P

Teacher Name: Suman Mishra Tiwari

Lecture Plan				
Month	UNIT	Week	LP No.	Topic
July	I	1 st	--	--
		2nd	---	
		3rd	---	
		4th	3	SQL Commands- Introduction, SQL Commands Types
		5th	3	SQL Commands- Introduction, SQL Commands Types
Aug	II III	1st	--	SQL Commands- SELECT Commands, DML Commands
		2nd	3	SQL Commands- CREATE TABLE Command
		3rd	3	SQL Commands- INSERT Command
		4th	3	SQL Commands- INSERT Command for multiple values at same time
		5th	3	INSERT Command for multiple values at same time
Sep	IV	1st	3	SQL Commands- DROP Command
		2nd	3	SQL Commands- CREATE TABLE and INSERT Command SQL Commands- CREATE TABLE and INSERT Command
		3rd	2	SQL Commands- Introduction on ALTER TABLE
		4th	3	SQL Commands- ALTER TABLE – ADD and DROP Column
		5th	0	
Oct	V	1st	---	
		2nd	3	SQL Commands- ALTER TABLE - ADD Column and DROP Column
		3rd	3	SQL- Functions, SQL Commands- AND, OR, NOT and ORDER BY Commands, SQL- Functions
		4th	3	SQL- Functions
		5th	--	
Total Classes		Planned:38		

Signature of HOD with date & seal.....

Java Programming and Dynamic Webpage Design

BCA-S302T

Topics
UNIT – I Java Programming: Data types, control structured, arrays, strings, and vector, classes (inheritance, package, exception handling) multithreaded programming.
UNIT – II Java applets, AWT controls (Button, Labels, Combo box, list and other Listeners, menu bar) layout manager, string handling (only main functions).
UNIT – III Networking (datagram socket and TCP/IP based server socket) event handling, JDBC: Introduction, Drivers, Establishing Connection, Connection Pooling
UNIT – IV HTML: use of commenting, headers, text styling, images, formatting text with , special characters, horizontal rules, line breaks, table, forms, image maps, <META> tags, <FRAMESET> tags, file formats including image formats..
UNIT – V Java Servlets: Introduction, HTTP Servlets Basics, The Servlets Lifecycle, Retrieving Information, Sending HTML Information, Session Tracking, Database Connectivity
UNIT-VI Java Server Pages: Introducing Java Server Pages, JSP Overview, Setting Up the JSP Environment, Generating Dynamic Content, Using Custom Tag Libraries and the JSP Standard Tag Library, Processing Input and Output.
Sessional Exam

Reference Books:

- Patrick Naughton and Herbert Schildt, “Java-2 The Complete Reference” 199, TMH.
- Shelley Powers, “Dynamic Web Publishing” 2nd Ed. Techmedia, 1998.
- Ivor Horton, “Beginning Java-2” SPD Publication
- Jason Hunter, “Java Servlets Programming” O’Reilly
- Shelley Powers, “Dynamic Web Publishing” 2nd Ed. Techmedia, 1998
- Hans Bergsten, “Java Server Pages”, 3rd Ed. O’Reilly

LECTURE PLAN (2025-26)

BCA-V Sem.

Course Name: Java Programming and Dynamic Webpage Design **Course Code:** BCA-S302T

Teacher Name: Ms. Anita Shah

Month	Week	No. of Planned Lecture	Topic
July	3 rd	2	UNIT-I Java Programming: Data types, control structured
	4 th	3	Console I/O, String class, Array,
	5 th	1	Opp's concept, Class, Object, Constructor, Destructor, Inheritance
August	1 st	2	Static fields and methods, final and abstract keywords,
	2 nd	2	Vector, package, exception handling
	3 rd	3	Multithreaded programming. UNIT-II Java applets, AWT controls (Button, Labels, Combo box, list and other Listeners, menu bar)
	4 th	4	layout manager
	5 th	4	UNIT-III Networking concept
September	1 st	3	datagram socket and TCP/IP based server socket, event handling
	2 nd	4	JDBC: Introduction, Drivers, Establishing Connection, Connection Pooling.
	3 rd	4	UNIT-IV HTML: use of commenting, headers, text styling, images formatting text with , special characters horizontal rules, line breaks, table, forms image maps, <META> tags, <FRAMESET> tags, file formats including image formats.
	4 th	4	UNIT-V Java Servlets: Introduction, HTTP Servlets Basics, The Servlets Lifecycle, Retrieving Information, Sending HTML Information, Session Tracking, Database Connectivity
	2 nd	4	UNIT-VI Java Server Pages: Introducing Java Server Pages, JSP Overview Setting Up the JSP Environment Generating Dynamic Content,
October	3 rd	3	Using Custom Tag Libraries and the JSP Standard Tag Library,
	4 th	1	Processing Input and Output.
	5 th	3	Processing Input and Output.

Total: 46

Reference Books:

- Patrick Naughton and Herbert Schildt, "Java-2 The Complete Reference" 199, TMH.
- Shelley Powers, "Dynamic Web Publishing" 2nd Ed. Techmedia, 1998.
- Ivor Horton, "Beginning Java-2" SPD Publication
- Jason Hunter, "Java Servlets Programming" O'Reilly
- Shelley Powers, "Dynamic Web Publishing" 2nd Ed. Techmedia, 1998
- Hans Bergsten, "Java Server Pages", 3rd Ed. O'Reilly

LECTURE PLAN (2025-26)**BCA-V Sem.****Course Name:** Java Programming Lab**Course Code:** BCA-S302P**Teacher Name:** Ms. Anita Shah

Month	Week	No. of Planned Lecture	Topic
July	3 rd	2	UNIT-I <i>Java programs related to data types, variables, constants and control structures.</i>
	4 th	3	<i>Programs related to array and string</i>
	5 th	1	<i>Programs related to class, object, inheritance and Vector</i>
August	1 st	2	<i>Use of final and abstract keywords</i>
	2 nd	2	<i>Programs related to exception handling, multithreading</i>
	3 rd	3	UNIT-II <i>Programs related to applet</i> <i>Programs related to AWT controls and menu</i>
	4 th	4	<i>Programs related to layout manager</i>
	5 th	4	UNIT-III <i>Programs related to socket</i>
September	1 st	3	<i>Programs related to JDBC</i>
	2 nd	4	UNIT-IV <i>Programs related to static web page designing using HTML</i>
	3 rd	4	UNIT-V <i>Programs related to dynamic page designing using servlet.</i>
	4 th	4	<i>Programs related to sending/receiving information to/from servlet</i>
	5 th	-	
October	1 st	-	
	2 nd	4	<i>Programs related to servlet Session tracking and JDBC</i> UNIT-VI <i>Programs related to dynamic page designing using JSP</i>
	3 rd	3	<i>Programs related to Custom Tag Libraries and the JSP Standard Tag Library</i>
	4 th	1	<i>Programs related to Custom Tag Libraries and the JSP Standard Tag Library</i>
	5 th	3	<i>Programs related to JSP Input Output</i>

Total: 46

Computer Networks

BCA-S303

Topics
UNIT-I Basic Concepts: Components of data communication, distributed processing, standards and organizations. Line configuration, topology, Transmission mode, and categories of networks. OSI and TCP/IP Models: Layers and their functions, comparison of models. Digital Transmission: Interfaces and Modems: DTE-DCE Interface, Modems, Cable modems.
UNIT-II Transmission Media: Guided and unguided, Attenuation, distortion, noise, throughput, propagation speed and time, wavelength, Shannon capacity, comparison of media
UNIT-III Telephony: Multiplexing, error detection and correction: Many to one, One to many, WDM, TDM, FDM, Circuit switching, packet switching and message switching. Data link control protocols: Line discipline, flow control, error control, synchronous and asynchronous protocols, character and bit oriented protocols, Link access procedures. Point to point controls: Transmission states, PPP layers, LCP, Authentication, NCP. ISDN: Services, Historical outline, subscriber's access, ISDN Layers and broadcast ISDN.
UNIT-IV Devices: Repeaters, bridges, gateways, routers, The Network Layer; Design issues, Routing algorithms, Congestion control Algorithms, Quality of service, Internetworking, Network-Layer in the internet.
UNIT-V Transport and upper layers in OSI Model: Transport layer functions, connection management, functions of session layers, presentation layer and application layer.
Sessional Exam

Reference Books:

- A.S.Tanenbaum, "Computer Networks"; Pearson Education Asia, 4th Ed. 2003.
- Behrouz A.Forouzan, "Data Communication and Networking", 3rd Ed. Tata McGraw Hill, 2004.
- William Stallings, "Data and computer communications", Pearson education Asia, 7th Ed., 2002.

LECTURE PLAN (BCA- V)

Course Name: Computer Network Course Code: BCA-S303 Teacher Name: Abhishek Sharma

Lecture Plan				
Month	UNIT	Week	No. of Planned Lecture	Topics
Jul	I	3 rd	1	Basic Concepts: Components of data communication:
		4 th	3	Distributed processing, standards and organizations, Line configurations
		5 th	2	Topology: Transmission mode
Aug	II AND III	1 st	1	Categories of networks
		2 nd	2	OSI and TCP/IP Models
		3 rd	2	Layers and their functions: comparison of models.
		4 th	3	Digital Transmission: Interfaces and Modems: DTE-DCE Interface, Modems, Cable modems.
		5 th	3	Transmission Media: Guided and unguided: Attenuation, distortion, noise, throughput
Sep	III AND IV	1 st	3	propagation speed and time, wavelength Shannon capacity, comparison of media , Telephony: Multiplexing, error detection and correction: Many to one, One to many, WDM, TDM, FDM
		2 nd	3	Circuit switching, packet switching and message switching Data link control protocols: Line discipline, flow control, error control
		3 rd	3	synchronous and asynchronous protocols, character and bit-oriented protocols
		4 th	3	Link access procedures. Point to point controls: Transmission states, PPP layers, LCP, Authentication, NCP
		5 th	0	---
Oct	IV ANDV	1 st	1	ISDN: Services, Historical outline, subscriber’s access,
		2 nd	3	ISDN Layers and broadcast ISDN, Devices: Repeaters, bridges, gateways, routers, The Network Layer; Design issues, Routing algorithms, Congestion control Algorithms, Quality of service
		3 rd	2	Internetworking, Network-Layer in the internet, Transport and upper layers in OSI Model: Transport layer functions
		4 th	1	connection management, functions of session layers
		5 th	2	Presentation layer characteristic’s, functions and Responsibilities, Application layer characteristic’s, functions and Responsibilities
TOTAL PLANNED LECTURE: 38				

Reference Books:

- A.S.Tanenbaum, "Computer Networks"; Pearson Education Asia, 4th Ed. 2003.
- Behrouz A.Forouzan, "Data Communication and Networking", 3rd Ed. Tata McGraw Hill, 2004.
- William Stallings, "Data and computer communications", Pearson education Asia, 7th Ed., 2002.

Software Project Management

BCA-S304 E1

Topics
UNIT-I Introduction to software Project Management. Project Definition — Contract Management Activities covered By Software Project Management .Overview of Project Planning Stepwise Project Planning.
UNIT-II PROJECT EVALUATION Strategic Assessment — Technical Assessment Cost Benefit Analysis —Cash Flow Forecasting Benefit Evaluation Techniques — Risk Evaluation.
UNIT – III ACTIVITY PLANNING Objectives — Project Schedule — Sequencing and Scheduling Activities —Network Planning Models Forward Pass — Backward Pass — Activity Float — Shortening Project Duration — Activity on Arrow Networks — Risk Management — Nature Of Risk — Types Of Risk — Managing Risk — Hazard Managing Risk — Hazard, Identification — Hazard analysis — Risk Planning And Control, MONITORING AND CONTROL
UNIT – IV Creating Framework — Collecting The Data — Visualizing Progress — Cost Monitoring — Earned Prioritizing Monitoring — Getting Project Back To Target — Change Control, Managing Contracts Introduction — Types Of Contract Stages In Contract Placement — Typical Terms Of A Contract Contract Management — Acceptance MANAGING PEOPLE AND ORGANIZING TEAMS Organizational Behavior: A Background — Selecting the Right Person for the Job — Instruction in the Best Methods Motivation — The Oldham — Hackman Job Characteristics. Model — Working In Groups — Becoming A Team
Sessional Exam

TEXT BOOKS

1. Bob Hughes, Mike Cotterell, “Software Project Management”, Third Edition, Tata McGraw Hill, 2004.

REFERENCES

1. Ramesh, Gopalaswamy, "Managing Global Projects", Tata McGraw Hill, 2001.
2. Royce, “Software Project Management”, Pearson Education, 1999.
3. Jalote, “Software Project Management in Practice”, Pearson Education, 2002.

LECTURE PLAN

Course name: Software Project Management

Course Code: BCA- S304 E1

Teacher Name: Suman Mishra Tiwari

Lecture Plan				
Month	UNIT	Week	LP No.	Topic
July	I	1st	--	
		2nd	--	
		3rd	2	Introduction to software Project Management.
		4th	3	Project Definition — Contract Management Activities covered By Software Project Management
		5th	1	Overview of Project Planning, Stepwise Project Planning.
Aug	II	1st	2	PROJECT EVALU ATION
		2nd	2	PROJECT EVALU ATION
		3rd	2	Strategic Assessment — Technical Assessment
		4th	3	Cost Benefit Analysis —Cash Flow Forecasting
		5th	3	Benefit Evaluation Techniques — Risk Evaluation.
Sep	III	1st	3	ACTIVITY PLANNING. Objectives — Project Schedule — Sequencing and Scheduling Activities —Network Planning Models
		2nd	3	Forward Pass — Backward Pass — Activity Float — Shortening Project Duration — Activity on Arrow
		3rd	3	Networks — Risk Management — Nature Of Risk — Types Of Risk — Managing Risk — Hazard
		4th	3	Managing Risk — Hazard, Identification — Hazard analysis — Risk Planning And Control, MONITORING AND CONTROL
		5th	-	
Oct	IV	1st	1	Creating Framework — Collecting The Data — Visualizing Progress — Cost Monitoring — Earned
		2nd	3	Prioritizing Monitoring — Getting Project Back To Target — Change Control, Managing Contracts Introduction — Types Of Contract
		3rd	3	Stages In Contract Placement — Typical Terms Of A Contract Contract Management — Acceptance. MANAGING PEOPLE AND ORGANIZING TEAMS
		4th	1	Organizational Behavior: A Background — Selecting the Right Person for the Job -Instruction in the Best Methods
		5th	2	Motivation — The Oldham — Hackman Job Characteristics. Model. Working In Groups — Becoming A Team
Total Classes		Planned: 40		

Numerical Methods

BCA-S304 E2

Topics
UNIT-I Roots of Equations: Bisection Method, False Position Method, Newton's Raphson Method, Rate of convergence of Newton's method.
UNIT-II Interpolation and Extrapolation : Finite Differences, The operator E, Newton's Forward and Backward Differences, Newton's dividend differences formulae, Lagrange's Interpolation formula for unequal Intervals, Gauss's Interpolation formula, Sterling formula, Bessel's formula, Laplace- Everett formula.
UNIT - III Numerical Differentiation Numerical Integration : Introduction, direct methods, maxima and minima of a tabulated function, General Quadratic formula, Trapezoidal rule, Simpson's One third rule, Simpson's 3/8 th rule
UNIT - IV Solution of Linear Equation: Gauss's Elimination method and Gauss's Siedel,s iterative method.
UNIT - V Solution of Differential Equations: Euler's method, Picard's method, Fourth-order Runge – Kutta method.
Sessional Exam

Reference Books:

- Scarbourogh, "Numerical Analysis".
- Gupta & Bose S.C. "Introduction to Numerical Analysis, "Academic Press, Kolkata, 3. S.S.Shashtri, "Numerical Analysis", PHI

LECTURE PLAN

Course name: Numerical Methods
Teacher Name: Abhishek Sharma

Course Code: BCA- S304 E2

Lecture Plan				
Month	UNIT	Week	LP No.	Topic
July	I	1st	--	
		2nd	--	
		3rd	2	Roots of Equations: Bisection Method
		4th	3	Roots of Equations: False Position Method
		5th	1	Newton's Forward and Backward Differences
Aug	II	1st	2	Newton's Forward and Backward Differences
		2nd	2	Newton's dividend differences formulae, Lagrange's Interpolation formula
		3rd	2	Interpolation formula for unequal Intervals
		4th	3	Gauss's Interpolation formula
		5th	3	Gauss's Interpolation formula
Sep	III	1st	3	Sterling formula
		2nd	3	Bessel's formula, Laplace- Everett formula.
		3rd	3	Numerical Differentiation Numerical Integration: Introduction, direct methods
		4th	3	Numerical Integration: Introduction, direct methods
		5th	0	-----
Oct	IV	1st	1	maxima and minima of a tabulated function
		2nd	3	General Quadratic formula, Trapezoidal rule, Simpson's One third rule, Simpson's three eight rule.
		3rd	3	Solution of Linear Equation: Gauss's Elimination method
		4th	1	Gauss's Siedel,s iterative method
		5th	2	Solution of Differential Equations: Euler's method
Total Classes		Planned: 40		

Signature of HOD with date & seal.....