Bachelor of Computer Applications

Semester-V th

Course Code	Course Name	External	Internal	Total	L	T	P	C
BCA-S301T	Introduction to DBMS	75	25	100	3	0	0	3
BCA-S302T	Java Programming and Dynamic Webpage Design	75	25	100	3	0	0	3
BCA-S303	Computer Network	75	25	100	3	1	0	4
BCA-S304	Numerical Methods	75	25	100	3	1	0	4
BCA-S305	Minor Project	-	-	50	0	1	2	2
BCA-S306	Viva-Voce on Summer Training	-	-	50	0	0	2	1
BCA-S301P	Computer Laboratory and Practical Work of DBMS	-	-	50	0	0	3	2
BCA-S302P	Computer Laboratory and Practical Work of Java Programming & Dynamic Webpage Design	-	-	50	0	0	3	2
				600			21	

Bachelor of Computer Applications

Course Code	Course Name	L	T	P	C
BCA-S301T	Introduction to DBMS	3	0	0	3

UNIT-I

Introduction: Characteristics of database approach, data models, DBMS architecture and data independence.

UNIT-II

E-R Modelling: Entity types, Entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and object modelling, 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 performance.

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 3rd normal form.

Concurrency Control: Transaction processing, locking techniques and associated, database recovery, security and authorization. Recovery Techniques, Database Security

Reference Books:

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.

Bachelor of Computer Applications

Course Code	Course Name	L	T	P	C
BCA-S302T	Java Programming and Dynamic Webpage Design	3	0	0	3

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 <FONT>, 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.

Reference Books:

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

Bachelor of Computer Applications

Course Code	Course Name	L	T	P	C
BCA-S303	Computer Networks	3	1	0	4

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.

Reference Books:

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

Bachelor of Computer Applications

Course Code	Course Name	L	T	P	C
BCA-S304	Numerical Methods	3	1	0	4

UNIT-I

Roots of Equations: Bisection Method, False Position Method, Newton's Rapheson 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 three-eight 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.

Reference Books:

1. Scarbourogh, "Numerical Analysis".

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

Bachelor of Computer Applications

Course Code	Course Name	L	T	P	C
BCA-S305	Minor Project	0	1	2	2

Evaluation will be based on Summer Training held after fourth semester and will be Conducted by the college committee only.

Bachelor of Computer Applications

Course Code	Course Name	L	T	P	C
BCA-S306	Viva-Voce on Summer Training	0	0	2	1

The viva will be conducted based on summer training of four weeks after the end of fourth Semester and will be conducted by the college committee only.

Bachelor of Computer Applications

Course Code	Course Name	L	T	P	C
BCA-S301P	Computer Laboratory and Practical Work of DBMS	0	0	3	2

Practical will be based on Paper Data Base Management System on UNIT-IV covering the concept from UNIT-II to UNIT-VI of Syllabus

Bachelor of Computer Applications

Course Code	Course Name	L	T	P	C
BCA-S302P	Computer Laboratory and Practical Work of Java Programming and Dynamic Webpage Design	0	0	3	2

Practical will be based on the Paper Java Programming & Website Design based on Whole Syllabus