Proposed Syllabus by C.S.J.M.University,Kanpur.
Bachelors of Computer Application

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 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 performance.

UNIT-IV

Relational Data Model: Relational model concepts, relational constraints, relational alzebra

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

Referential 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.

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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 Servlet Basics, The Servlet 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.

Referential Books:

1. Patrick Naughton and Herbertz 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 Servlet Programming” O’Reilly
5. Shelley Powers, “Dynamic Web Publishing” 2nd Ed. Techmedia, 1998
6. Hans Bergsten, “Java Server Pages”, 3rd Ed. O’reilly

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Bachelors of Computer Application

Course Code	Course Name	L	T	P	C
BCA-S303	Computer Network	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.

Referential 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.

Proposed Syllabus by C.S.J.M.University,Kanpur.
Bachelors of Computer Application

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

UNIT-I

Roots of Equations: Bisections 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, Starling 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 iterative method.

UNIT-V

Solution of Differential Equations: Euler's method, Picard's method, Fourth-order Ranga – Kutta method.

Referential Books:

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

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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.

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Bachelors of Computer Application

Course Code	Course Name	L	T	P	C
BCA-S306	Viva-Voice 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.

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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 UINT-IV converging the concept from UNIT-II to UNIT-VI of Syllabus

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Bachelors of Computer Application

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 Paper Java Programming & Website Design : on Whole Syllabus