Bachelor of Computer Applications (BCA) **Curtailed** Syllabus

SEMESTER-V

Paper-1: .Net Framework & C# (BCA501)

1. **The .Net Framework and OOPS in .Net:** Introduction, DLL Hell, CLR, CTS, MSIL, Base Class Library , Namespace and its importance , System Namespace & Other Important Namespaces , Class / Object , Inheritance , Polymorphism , Abstract Class , Interfaces , Events & Delegates

2. **Basic C# and Win Forms Programming:** Introduction , Data Types , Identifiers , Arrays , Error Handling, Introduction , Window Controls – TextBox , Radio , CheckBox , Combo , PictureBox , Menu , Tab , Progress Bar , ListView , Report Viewer.

3. **Process And Threads:** Threads , Creation/Stopping Of Threads , Thread Pool Concept , Monitoring a thread,

5. **ADO.NET:** ADO.NET classes hierarchy , Connection , Command , Dataset , Datareader , DataAdapter ,SqlDataSource

Paper-2: Embedded Systems (BCA502)

1. **Introduction to Embedded System**: Definition; Real-Time vs Non-Real-Time System; Overview of Embedded System Architecture; Specialities of Embedded System – Reliability, Performance, Power Consumption, Cost, Size,Limited User Interface, Software upgradation facility; Recent trends in Embedded System- Processor Power, Memory, Operating System, Communication Interfaceand Network capability, Programming Languages, Development tools, Programmable Hardware, Microprocessor vs Microcontroller.

2. **Architecture of Embedded Systems**: **Hardware architecture**: CPU, Memory, Clock circuits, Watchdog Timer/Reset Circuitry, Chip Select, I/O methods, Debug port, Communication Interface, Power Supply, A/D Converters; Software architecture: Services provided by OS, Architecture of Embedded OS, Categories of Embedded OS, Application software, Communication software.

3. **Process of Embedded System Development**: Programming of Embedded Systems: GNU development tools,Bit manipulation using C, Memory Management, Device Drivers,, Productivity Tools, Programming in C++, Programming in Java, J2ME, Server side programming, Java Development tools.

4. **Development of Embedded Systems**: Hardware platforms: Single Board Computers, PC add-on cards, Custom built hardware platforms, Microcontroller development board: Communication interfaces: Serial/Parallel, UART/USART, PPI, USB, Infra Red, IEEE 1394 Firewire, Bluetooth, Ethernet; RFID and its applications; Managing Embedded System Development Projects.

Paper-3: Computer Graphics (BCA503)

1. **Introduction**: Introduction to Graphic Display Devices; Video Basics; LED & LCD Display; Physical InteractiveDevices; Output Devices; Data Generation devices; Graphical User Interface.

2. **Raster Scan Graphics**: Line, Circle & Ellipse Generation Techniques; Scan Conversion; Frame Buffer; Fillingalgorithms.

3. **Geometrical Transformations**: Two dimensional transformations; Clipping & Windowing methods for 2D images; Three Dimensional transformations; Parallel and Perspective Projections; Viewing Transformations and Viewing Systems.

4. **Plane Curves and Surfaces**: Parametric and Non-parametric curves and their representations;

Paper-4: Secure Computing (BCA504)

1. **Introduction:** History of Computer Crime; Data Communications & information security; Mathematicalmodels of computer security, CIA Triad

2. **Types of Ciphers:** Terminology; Mono-alphabetic ciphers; Poly-alphabetic substitution ciphers; Transpositions; Stream & block ciphers; Secure encryption systems; Public key encryption systems; RSA encryption; Hash algorithms; Secure secret key systems; DES algorithm.

3. **System Threats:** Information warfare; Viruses & other Malicious code; Mobile code; Denial-of-service attacks; Social Engineering & low-tech attacks; Spam, Phishing & Trojans; Web based vulnerabilities; Controlsagainst program threats.

4. **System security mechanism:** Protecting the information infrastructure; Operating system security; Protecting memory & addressing; File protection mechanisms; Database security; Security in networks & distributed systems; LAN & Gateway security devices; Intrusion detection & Intrusion prevention devices; Identification & authentication.

Paper-5: Advanced Database Management System (BCA505)

1. **Query Processing:** Optimization & Database Tuning; Algorithms For Executing Query Operations. HeuristicsFor Query Optimizations, Estimations Of Query Processing Cost, Join Strategies For Parallel Processors, Database Workloads, Tuning Decisions, DBMS Benchmarks, Clustering & Indexing, Multiple Attribute Search Keys, Query Evaluation Plans, Pipelined Evaluations, System Catalogue In RDBMS.

2. **Database Models:** Extended Relational Model & Object Oriented Database System; New Data Types, User Defined Abstract Data Types, Structured Types, Object Identity, Containment, Class Hierarchy, Logic Based Data Model, Data Log, Nested Relational Model And Expert Database System.

3. **Distributed Database System:** Structure Of Distributed Database, Data Fragmentation, Data Model, Query Processing, Semi Join, Parallel & Pipeline Join, Concurrency Control In Distributed Database System, Recovery In Distributed Database System, Distributed Deadlock Detection And Resolution, Commit Protocols.

5. **Specialized Databases:** Expert Database And Fuzzy Database System: Introduction and overview