UNIVERSITY OF KOTA, KOTA

BACHELOR OF COMPUTER APPLICATION (BCA) Exam.- 2016-17

(Applicable for students admitted in Session 2016-17)

1. **Eligibility:** The basic eligibility for admission to the course is 10+2 in any discipline with minimum 45% marks, 4% relaxation in marks will be given to the SC /ST/OBC (except creamy layer) / SOBC / PH candidates. The admission in the course is based on merit of XII class. Reservation policy will be applicable as per the state government rules.
2. **Selection** : Based on merit in qualifying examination

1. Scheme of Instruction:

Each year shall be of ten months (150 working days) duration. Details of lecture hours per week shall be as follows:

Theory: Three hours/week for each Paper

Practical: Students are required to work in the Laboratory for 4 hours per week for each practical under faculty guidance.

2. Examination Scheme:

1. University shall conduct examinations only after completion of 150 working days of instruction in a year.
2. Each theory paper shall be of 100 marks (75 marks for written examination of 3 hrs duration and 25 marks for internal assessment).
3. Each practical paper shall be of 100 marks.
4. The internal marks will be awarded by committee consisting of Head of the Department & the faculty concerned.
5. The student have to pass internal and external exam separately theory as well as practical papers.

Theory:

1. **Assignments:** 40% of the internal assessment marks for each theory paper will be awarded on the basis of performance in the assignments regularly given to the students, and its records.
2. **Internal Examination:** 40% of the total Internal Assessment marks for each theory paper will be awarded on the basis of performance in written examination conducted by the faculty, one at the end of fourth month and another at the end of eighth month.
3. **Seminar/Oral examination:** 10% of the total internal assessment marks for each paper will be awarded on the basis of performance either in a seminar or internal viva-voce.
4. **Overall performance:** 10% of the total internal assessment marks will be awarded for each paper on the basis of performance and conduct in the classroom.

Practical :

1. **Project**: 80% of the total Internal Assessment Marks for each practical paper during I & II year will be awarded on the basis of project, its presentation and project report submitted by the students. This activity can be held in the team of maximum two students. There should be a project co-ordinator (faculty member of computer science department).
2. **Internal examination:** 10 % of the total Internal Assessment marks for each practical paper during I & II year will be awarded on the basis of performance in practical examination conducted by the faculty, once during the session. In III year it will be 80%.
3. **Overall performance:** 10 % of the total internal assessment marks will be awarded during I & II year for each practical paper on the basis of performance and conduct of the student in the practical lab. In III year it will be 20%.

Note: Detailed breakup of Internal Marks awarded as per above guidelines must be submitted to the university in a tabular format for each paper. Department/College must preserve answer books of internal examination for a period one year from the date of examination and must be presented to the university as and when required.

(a) **I division with distinction:** 80% or more marks in the aggregate provided the candidate has passed all the papers and examinations in the first attempt.
(b) **I division :** 60% or more marks but fails to satisfy the criteria for being classified as first division with distinction laid in (a).
(c) **II division :** All other than those included in (a) and (b) above i.e. < 60% and ≥ 45%.
(d) Passing criteria is as per university ordinance. A candidate must pass the examinations within five years of the initial admission to the first year of the course.

BACHELOR OF COMPUTER APPLICATION (BCA)
I Year Exam 2016-17

Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Duration of exam. (hours)	Max. Marks		TOTAL
				University Exam.	Internal Assessment	
Paper-I (BCA-101)	Introduction to Information Technology	3	3	75	25	100
Paper-II (BCA-102)	Basic Mathematics	3	3	75	25	100
Paper-III (BCA-103)	Problem Solving through C Programming	3	3	75	25	100
Paper-IV (BCA-104)	Business Communication	3	3	75	25	100
Paper-V (BCA-105)	PC Software Packages	3	3	75	25	100
	Practical					
*Practical-I (BCA-106)	PC Software Lab	4(2+2)	3	75	25	100
*Practical-II(BCA-107)	Programming Lab	4(2+2)	3	75	25	100
	Total			**525**	**175**	**700**

*For each practical paper students have to submit the project.

BACHELOR OF COMPUTER APPLICATION (BCA)
II Year Exam

1. Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Duration of exam. (hours)	Max. Marks		TOTAL
				University Exam.	Internal Assessment	
Paper-I (BCA-201)	Digital Electronics & Computer Architecture	3	3	75	25	100
Paper-II (BCA-202)	Database Management System	3	3	75	25	100
Paper-III (BCA-203)	Fundamentals of Operating Systems	3	3	75	25	100
Paper-IV (BCA-204)	Data Structure	3	3	75	25	100
Paper-V (BCA-205)	Data Communication and Computer Networking	3	3	75	25	100
	Practical					
*Practical-I (BCA-206)	Database Management Lab	4(2+2)	3	75	25	100
*Practical-II(BCA-207)	Data Structure Lab	4(2+2)	3	75	25	100
	Total			**525**	**175**	**700**

*For each practical paper students have to submit the project.

BACHELOR OF COMPUTER APPLICATION (BCA)
III Year Exam

Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Duration of exam. (hours)	Max. Marks		TOTAL
				University Exam.	Internal Assessment	
Paper-I (BCA-301)	Software Engineering	3	3	75	25	100
Paper-II (BCA-302)	Visual Programming	3	3	75	25	100
Paper-III (BCA-303)	E- Commerce	3	3	75	25	100
Paper-IV (BCA-304)	Web Technology	3	3	75	25	100
Paper-IV (BCA-305)	Programming with Java	3	3	75	25	100
	Practical					
Practical-I (BCA-306)	Visual Programming Lab	3	3	75	25	100
Practical-II (BCA-307)	Web Technology + Java Lab	3	3	75	25	100
Practical-III(BCA-308)	Project	3	3	75	25	100
	Total			**525**	**175**	**800**

*For each practical paper students have to submit the project.

B.C.A. (First Year) Exam
BCA - 101: Introduction to Information Technology

Time: 3 Hrs. **Max. Marks: 100**

UNIT - I

Computer Basics: A Simple Model of a Computer, Characteristics of Computers, Problem-solving Using Computers, Algorithms.

Data Representation: Representation of Characters in computers, Representation of Integers, Representation of Fractions, Hexadecimal Representation of Numbers, Decimal to Binary Conversion, Error-detecting codes.

Input & Output Devices: Description of Input Units, Other Input Methods, Output Units.

UNIT - II

Computer Memory: Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to Construct Memories, Magnetic Hard Disk, floppy Disk Drives, Compact Disk, Read Only Memory, Magnetic Tape Drives.

Processor: Structure of Instructions, Description of a Processor, A Machine Language Program.

UNIT - III

Binary Arithmetic: Binary Addition, Binary Subtraction, Signed Numbers, Two's Complement Representation of Numbers, Addition/Subtraction of Numbers in 2's Complement Notation, Binary Multiplication, Binary Division, Floating Point Representation of Numbers, Arithmetic Operations with Normalized Floating Point Numbers.

Computer Architecture: Interconnection of Units, Processor to Memory communication, I/O to Processor Communication, Interrupt Structures, Multiprogramming, Processor Features, Virtual Memory.

UNIT-IV

Software Concepts: Types of Software, Software: Qualities & Attributes, Programming Languages: types and differences

Operating Systems: Definition, O.S. functions and O.S. types : brief introduction. A Brief History of: Linux, MS-DOS, Windows Operating System.

UNIT - V

Computer Generation & Classifications: First, Second, Third, Fourth and Fifth Generation, Classification of computers, Concept of Distributed and parallel computers.

Internet: Network, World Wide Web, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Service Providers, Introduction to Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services, Intranet and Extranet, how to connect with internet.

Text / Reference Books

1. "Computer fundamental", P.K.Sinha BPB Publications.
2. Fundamentals of Computers, V. Rajaraman, 3rd Edition, PHI Publications
3. Essentials of Computer & Network Technology, Nasib S. Gill, Khanna Publications.
4. Fundamentals of Information Technology, Deepak Bharihoke, Excel Books.
5. Information Technology by Reena Dadhich and R.C. Poonia, Vardhman Publications, 2009.

BCA - 102: Basic Mathematics

Time: 3 Hrs. **Max. Marks: 100**

UNIT - I

Number System, LCD & GCD, Fibonacci numbers, Sequences and series : AP, GP and HP, Sum of n terms, arithmetic–geometric- harmonic means between two numbers (excluding arithmetic- geometric series).
Logarithms: definition, Laws regarding product, quotient, exponent and change of base.

UNIT – II

SETS: Sets, subsets, equal sets, null set, universal set, finite & infinite sets, open & closed sets etc., operations on sets, partition of sets, Cartesian product.

UNIT - III

RELATIONS AND FUNCTIONS : relation, properties of relations, equivalence relation, equivalence relation with partition , partial order relation, maximal and minimal points, pigeonhole principle, function, domain and range, onto, into and one-to-one functions, composite functions, inverse functions, introduction of algebraic, trigonometrically, logarithmic, exponential, hyperbolic functions, zeros of functions.

UNIT – IV

DIFFERENTIATION: Derivative, derivatives of sum, differences, product & quotients, derivatives of composite functions, logarithmic differentiation, mean value theorem, expansion of functions, (Maclaurin's & Taylor's.), indeterminate forms, L'Hospitals rule, maxima & minima, concavity, asymptote, singular points, curve tracing, successive differentiation & Leibnitz theorem.

UNIT - V

Basic concepts of Graph Theory: Vertices, edges, degree, paths, circuits, cycles, complete graphs and trees.
Multi-graphs, weighted graphs and directed graphs, Adjacency matrix of a graphs. Connected and disconnected graphs.
Permutations (Simple and under restrictions), combinations (selections with and without replacement).

Text / Reference Books

1. C. L. Liu.: Elements of Discrete Mathematics, Tata Mc-Graw Hill.
2. Thomas, G.B. and R. L. Finney: Addison-Wesley , 9th edition.
3. Chandrika Prasad : Mathematics for Engineers, Prasad Mudranalaya, Allahabad, 19th edition
4. Shanti Narayan: Differential Calculus, S. Chand & Co.
5. Shanti Narayan: Integral Calculus, S. Chand & Co.

BCA -103: Problem Solving through C Programming

Time: 3 Hrs. **Max. Marks: 100**

UNIT- I

Algorithm and algorithm development: Definition and properties of algorithm, flow chart symbols, example of simple algorithms. Program design, errors: syntax error and semantic error, debugging, program verification, testing, documentation and maintenance.

Variable names, data type and sizes, constants, declarations, arithmetic operators, relational and logical operators, type conversions, increment and decrement operators, bitwise operators, assignment operators and expressions, precedence and order of evaluation, standard input and output statements.

UNIT- II

Control Flow: Statements and blocks, if-else, nested if, switch, looping statement: while, for, do-while, break and continue, go-to and labels.

Arrays : declarations, integer and character array, reading and writing an array, one and two dimensional array, operations on arrays.

UNIT – III

Functions and Program Structure: Basics of function, function definition and declaration, external variables, scope rules, header files, static variables, register variables, block structure, initialization, recursion, the C preprocessor.

Pointer : Pointers and addresses, pointers and function arguments, address arithmetic. Character pointers, pointers to pointers, Pointers to functions.

UNIT - IV

Structures: Basics of structures, structures and functions, arrays of structures, pointers to structures, self-referential structures, typedef, unions.

UNIT - V

File Handling: access methods, different file operations and functions, concept of text & Binary files, file I/O, command line argument, formatted file input and output.

Text / Reference Books

1. Deendayalu R., Computer science Volume I and II, Second Edition,Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. Rajaraman V., Fundamentals of computers, Second Edition, Prentice Hall of India Private Limited, New Delhi.
3. Kernighan B.W. and Ritchie D.M., The C Programming Language, Prentice Hall of India Private Limited, New Delhi.
4. Dromey R., How to solve it by computers. Prentice Hall of India Private Limited, New Delhi.
5. Programming with C, E. Balaguruswamy, PHI

BCA -104: Business Communication

Time: 3 Hrs. **Max. Marks: 100**

UNIT - I

Concepts and Fundamentals: Meaning of communication, Importance of communication, Communication scope, Process of communication, Communication models and theories, Essentials of good communication - The seven Cs of communication, Factors responsible for growing importance of communication, Channels of communication, Verbal and Non-Verbal communication , Formal and Informal communication , Barriers of communication.

UNIT - II

Written Communication: Objectives of written Communication, Media of written communication, Merits and demerits of written communication, Planning business messages.

Writing Letters: Business letters, Office memorandum, Good news and bad news letters, Persuasive letters , Sales letters , Letter styles/ layout.

UNIT - III

Report Writing: Meaning & Definition, Types of report (Business report & Academic report), Format of report, Drafting the report, Layout of the report, Essential requirement of good report writing.

UNIT - IV

Project Presentations: Advantages & Disadvantages, Executive Summary, Charts, Distribution of time (presentation, questions & answers, summing up), Visual presentation, Guidelines for using visual aids, Electronic media (power-point presentation).

UNIT - V

Arts of Listening: Good listening for improved communications, Art of listening, Meaning, nature and importance of listening, Principles of good listening, Barriers in listening.

Text / Reference Books

1. Communication by C.S. Rayudu, Himalaya Publishing House.
2. Communication Today - Understanding Creative Skill by Reuben Ray, Himalaya Publishing House.
3. Successful Communication by Malra Treece, Himalaya Publishing House.
4. Business Communication Today by Bovee & Thill, McGraw Hill.
5. Principles of Business Communication by Murphy and Hilderbrandth, Tata McGraw Hill.
6. Effective Communication Skiils by O. N. Kaul & K. K. Sharma, Creative Publishers
7. Essentials of Business Communication by Rajendra Pal & J. S. Korlahalli, Sultan Chand & Sons.
8. Business Communication by K. K. Sinha, Allied Publishers Limited.

BCA-105 PC Software Packages

Time: 3 Hrs. **Max. Marks: 100**

UNIT – I

DOS: Introduction, history & versions of DOS, DOS basics- Physical structure of disk, drive name, FAT, file & directory structure and naming rules, booting process, DOS system files, DOS commands: internal & external.

UNIT – II

GUI Based OS: Concepts, Features, Structure, Desktop, Taskbar, Start Menu, My Computer, Recycle Bin, Accessories- Calculator, Notepad, Paint, Word-pad, Character Map, Explorer, Entertainment, Managing Hardware & Software- Installation of Hardware & Software, Using Scanner, System Tools, Communication, Sharing Information between programs.

UNIT – III

Word Processing: Features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing, Previewing, Printing & Formatting a Document, Advanced Features of MS Word, Find & Replace, Using Thesaurus, Using Auto- Multiple Functions, Mail Merge, Handling Graphics, Tables & Charts, Converting a word document into various formats like- Text, Rich Text format, Word perfect, HTML etc.

UNIT – IV

Worksheet: Worksheet basics, creating worksheet, entering into worksheet, heading information, data, text, dates, alphanumeric values, saving & quitting worksheet, Opening and moving around in an existing worksheet, Toolbars and Menus, Keyboard shortcuts, Working with single and multiple workbook, working with formulae & cell referencing, Auto sum, Copying formulae, Absolute & relative addressing, Worksheet with ranges, formatting of worksheet, Previewing & Printing worksheet, Graphs and charts, Database, Creating and Using macros, Multiple worksheets- concepts, creating and using.

UNIT – V

Introduction to Power Point: Creating slide show with animations, Designing Presentations.
Case Study of web editing tool and DBMS tool such as: Front Page, Ms-Access Creating & using databases in Access.

Text / Reference Books

1. Introduction to computers by P.K. Sinha & Priti Sinha, BPB Publication, 1992.
2. Microsoft 2000, 8 in 1 by Joe Habraken, PHI
3. Window XP Computer Reference , BPB Publication.
4. IT Tools and Applications by A. Mansoor, Pragya Publications, Mathura.
5. DOS Quick Reference by Rajeev Mathur, Galgotia Publications.
6. Ms Office XP Computer, BPB Publications.

B.C.A. (Second Year) Exam

BCA 201: Digital Electronics and Computer Architecture

Time: 3 Hrs. **Max. Marks: 100**

Unit –I

Overview of electronics: Electronic components-Resistor, capacitor and Inductors, Semiconductor devices: Diodes, transistors (BJT and FET). Integrated circuits, Popular IC packages, Analog vs digital electronics, Transistor as a switch.
Boolean algebra: Representation of values and complements, De'Morgans theorem-simplifying expressions.

Unit –II

Logic gates: AND, OR, NOT, XOR, XNOR, NAND, NOR gates and their truth tables, Combining logic circuits for expressions using NAND and NOR gates, Logic circuit families and characteristics, SSI, MSI, LSI and VLSI circuits.
Combinational and sequential circuits: (Simple block diagrams, truth tables and IC packages only required). Adders, decoders, multiplexers, encoder circuits , Flip-flops: RS, clocked RS, JK, D and T flip flops, Master slave flip flops, edge and level triggering, Multivibrators - Astable, Bistable, Monostable, counters-ripple and decade. Registers, latches and Tristate buffers.

Unit –III

Building blocks of a computer system: Basic building blocks-I/O, memory, ALU, Control and their interconnections, Control unit and its functions- Instruction-word, Instruction execution cycle, organizational sequence of operation of control registers; controlling of arithmetic operations; branch, skip, jump and shift instructions, ALU-its components.

Unit –IV

Addressing techniques and registers: Addressing techniques-Direct, immediate addressing; paging, relative, Indirect and indexed addressing. Memory buffer register; accumulators; Registers-Indexed, General purpose, Special purpose; overflow, carry, shift, scratch registers; stack pointers; floating point; status information and buffer registers

Unit –V

Memory: Main, RAM, static and Dynamic, ROM, EPROM, EAROM, EEPROM, Cache and Virtual memory.
Interconnecting System components: Buses, Interfacing buses, Bus formats-address, data and control, Interfacing keyboard, display, auxiliary storage devices, and printers. I/O cards in personal computers.

Text / Reference Books

1. A.S.Tannenbaum : Structured Computer Organization, Pearson
2. Thomas C. Bartee : Digital Computer Fundamentals, McGraw-Hill
3. Duglus V Hall : Microprocessors and Interfacing: programming and Hardware, McGraw-Hill, 1986.
4. Introduction to Computer Architecture, Stone S.Galgotia Publicatons 1996.
6. Microprocessor Architecture Programming & Applications, R. Gaonkar, Wiley Eastern-1987.
7. Computer Architecture and Organization by N.P. Carter, 4th Edition, McGraw-Hill, 2014.

BCA 202: Database Management System

Time: 3 Hrs. **Max. Marks: 100**

Unit –I

Introduction : Purpose of the data base system, data abstraction, data model, data independence, data definition language, data manipulation language, data base administrator, data base users, overall structure.

Unit –II

ER Model : entities, mapping constrains, keys, E-R diagram, reducing E-R diagrams to tables, generation, aggregation, design of an E-R database scheme.

Unit –III

Relational Model : The catalog, base tables and views. Relational Data Objects - Domains and Relations: Domains, relations, kinds of relations, relations and predicates, relational databases.
Relational Data Integrity - Candidate keys and related matters: Candidate keys. Primary and alternate keys. Foreign keys, foreign key rules, nulls. Candidate keys and nulls, foreign key and nulls.

Unit –IV

The SQL Language: Data definition, retrieval and update operations. Table expressions, conditional expressions, embedded SQL.
Views: Introduction, what are views for, data definition, data manipulation, SQL support.

Unit –V

File and system structure : overall system structure, file organisation, logical and physical file organization, sequential and random, hierarchical, inverted, multi list, indexing and hashing, B-tree index files.

Text / Reference Books

1. Date C.J., Database Systems, Addision Wesley.
2. Korth, Database Systems Concepts, McGraw Hill.
3. Database Management System, Ramakrishna, Gehkre, McGraw – Hill
6. Database management systems, Leon alexis, leon Mathews, "Vikash publication
7. Database system, Rob, coronel, 7th edition, Cengage Learning.

BCA 203: Fundamentals of Operating Systems

Time: 3 Hrs. **Max. Marks: 100**

Unit I

Introduction: Definition of an operating system, Mainframe, desktop, single user & multi user OS distributed, real-time and handheld OS.

Unit II

Operating System Structures: System components, operating system services, system calls, systems programs, system structure, virtual machines.

Unit – III

Process Management: criteria, scheduling algorithms, algorithm evaluation.
Process Synchronization: The critical section problem, semaphores, classical problems of synchronization.

Unit IV

Memory Management: Swapping, contiguous memory allocation, paging, segmentation, segmentation with paging.

Unit V

Virtual Memory: Demand paging, page replacement, allocation of frames, thrashing.

Text / Reference Books

1. Silberschatz G.G., Operating System Concepts, John Wiley & Sons Inc.
2. Modern Operating Systems, Andrew S. Tanenbum, Pearson Edition, 2nd edition, 2004.
3. Operating Systems, Gary Nutt, Pearson Education, 3rd Edition, 2004.
4. Operating Systems, Harvey M. Dietal, Pearson Education, 3rd edition, 2004.
5. Fundamentals of Operating Systems, A.M. (1979).

BCA 204: Data Structure

Time: 3 Hrs Max. Marks: 100

Unit I

Introduction: structure and problem solving, algorithmic notation, Data Structure, Algorithms and sub algorithms, introduction to algorithm analysis for time and space

Unit II

Primitive and non primitive data structure concept, representation and manipulation of strings, concept and terminology for non primitive data structure, concept of arrays, stacks, queues. Basic operations on arrays, stacks & queues.

Unit III

Linear data structures and their linked storage representation: pointers and linked allocation, linked linear list, singly linked list, application of linked linear lists.

Unit IV

Non Linear data structure: Trees, types of trees, Graphs and their representations, applications of graph.

Unit V

Sorting and searching: concept of sorting and searching, selection sort, bubble sort, merge sort, binary search

Text / Reference Books

1. An Introduction to Data Structures with Applications, Tremblay & Sorensons, Tata Mcgraw hills publications.
2. Data structure and algorithms, Aho., Alfred V., Pearson Education.
3. Fundamentals of Data structure in C, Horowitz, Ellis, Galgotia publication.
4. Introduction to Data Structure and algorithms with C++ , Rowe, Glenn W., Prentice , Hall
5. Data structures using C and C++ , Langsun , Augenstein , Tenenbaum Aaron M, Prentice Hall

BCA 205: Data Communication and Computer Networking

Time: 3 Hrs. **Max. Marks: 100**

Unit - I

Components of a data communication system, model of a data communication, data transmission concepts, digital and analog transmission, serial/parallel data transmission, signal encoding techniques, modulation and modems.

Unit - II

Guided and unguided transmission media, Transmission impairments, channel capacity, baud rate, bandwidth, multiplexing techniques, synchronous and asynchronous transmission, simplex, half duples and full duplex transmission.

Unit - III

Circuit switching, Packet switching and Message switching , Connection oriented and Connection less services, Computer Networks Protocols and Standards, Local area networks, Types of LAN (star, Ethernet, bus, FDDI), LAN Technology(IEEE 802.3, 802.4, 802.5), wide area networks.

Unit – IV

ISO-OSI model of networking, different layers and their functions, Networking and Internetworking, Services gateways, bridges, repeaters, routers, Introduction to ISDN, DSL and cable TV modem.

Unit - V

Introduction to Internet applications like DNS, FTP, SMTP, SNMP, WWW, HTTP, URL, E-mail, Teleconferencing & Electronic Banking, Network Security and privacy, Awareness of Indian Networks-NIC NET,ERNET etc, introduction to mobile computing, impact of social engineering sites.

Text / Reference Books

1. Behrouz and Forouzan - Introduction to Data Communication and Networking - 2nd Edition - TMH – 2001.
2. Stallings W. Data and Computer Communications, Pearson Educations.
3. Jean Wairand - Communication Networks (A first Course) - Second Edition - WCB/ McGraw Hill - 1998.
4. S. Tannanbauim, Computer Networks, Pearson Educations.

BCA 206: Practical I: Database Management Lab.

Experiments based on the paper BCA 202 and project development for Internal Assessment.

BCA 207: Practical II: Data Structure Lab.

Experiments based on the paper BCA 204 and project development for Internal Assessment.

B.C.A. (Third Year) Exam

BCA 301: Software Engineering

Time: 3 Hrs. **Max. Marks: 100**

UNIT – I

Introduction to Software Engineering: Definitions - Size Factors - Quality and Productivity Factors - Managerial Issues - Planning a software project : Defining the problem - Developing a Solution Strategy - Planning the Development Process - Planning an Organization structure - Other Planning Activities.

UNIT – II

Software Cost Estimation: Software cost factors - Software Cost Estimation Techniques – Staffing level Estimation - Estimating Software Maintenance Costs - The Software Requirements, Specification - Formal Specification Techniques - Languages and Processors for Requirements Specification.

UNIT – III

Software design: Fundamental Design Concepts - Modules and Modularization Criteria – Design Notations - Design Techniques - Detailed Design Considerations - Real-Time and Distributed System Design - Test Plans - Milestones, walkthroughs, and Inspections.

UNIT – IV

Implementation issues: Structured Coding Techniques - Coding Style - Standards and Guidelines - documentation guidelines -Type Checking - Scoping Rules - Concurrency Mechanisms.

UNIT – V

Quality Assurance - Walkthroughs and Inspections - Static Analysis - Symbolic Execution – Unit Testing and Debugging - System Testing - Formal Verification: Enhancing Maintainability during Development - Managerial Aspects of Software Maintenance - Source Code Metrics – Other Maintenance Tools and Techniques.

Text / Reference Books:

1. R.Fairley, Software Engineering Concepts, Tata McGraw-Hill, 1997.
2. R.S. Pressman, Software Engineering, Fourth Ed., McGraw Hill, 1997.
3. Software Engineering, H. Sommervill Ian , Addition Wesley Pub. Co.
4. Software Engineering: An object Oriented Perspective by Braude, E.J., Willey, 2001.

BCA 302: Visual Programming

Time: 3 Hrs. **Max. Marks: 100**

UNIT – I

Client Server Basics: Discover Client-Server and Other Computing Architectures, Understand File Server Versus Client-Server Database Deployment, Learn About the Two Tier Versus Three Tire Client-Server Model, Visual Basic Building Blocks and Default Controls: Forms, Using Controls, Exploring Properties, Methods and Events, Introduction To Intrinsic Controls, Working With Text, Working With Choices, Special Purpose Controls, VB Advance Controls: Events, Menu bar, Popup Menus, Tool bar, Message Box, Input Box, Built-in Dialog Boxes, Creating MDI, Working with Menus

UNIT – II

VB Programming Fundamentals and Variables: Introduction to Variables, Variable Declaration, Arrays, Introduction to Constants and Option Explicit Statement, Assignment Statements, Math Operations, Strings, Formatting Functions, Controlling and Managing Program: Control Statements, Loops, Error Trapping, Procedures, Functions, Controlling How Your Program Starts, Introduction to common controls- Tree view, list view, tab strip, Creating and working with control arrays.

UNIT – III

Visual Basic and databases: Understanding the Data Controls and Bound Controls, Introduction to Data Form Wizard, Introducing DAO, Working with Record sets, Record Pointer, Filters, Indexes, Sorts and Manipulation of Records. Remote and ActiveX Data Objects: Working With ODBC, Remote Data Objects and Remote data Control, Introducing ADO, ADO Data Control.

UNIT – IV

Using Data Grid Control and ActiveX Data Objects. ActiveX Controls, Extending ActiveX Controls And Classes: Creating, Testing, Compiling, Enhancing and User Drawn ActiveX Controls, Using ActiveX Control Interface Wizard and Property Pages Wizard, Introducing Ambient, Extender Objects, Creating Property Pages, Building Class Modules, ActiveX DLL.

UNIT V

Client-Server Development Tools: COM, Services Models, Development Tools Included with VB 6, SourceSafe Projects. Reports and Packaging: Data Reports and Crystal Reports, Packaging A Standard EXE Project, VB and Internet: Introduction to VBScript, Tools used with VBScript and VBScript Languages, Introduction to Active Server Pages, ASP Objects.

Text / Reference Books

1. Gary Cornell - Visual Basic 6 from the Ground up - Tata McGraw Hill - 1999.
2. Noel Jerke - Visual Basic 6 the Complete Reference, Tata McGraw Hill - 1999.

BCA 303: E-COMMERCE

Time: 3 Hrs. **Max. Marks: 100**

Unit-I

E-commerce: Objectives, advantages and disadvantages, Forces driving E-Commerce, Traditional

commerce and E-commerce, E-Commerce opportunities for industries.

Unit-II

E-Commerce Models: Business to consumer, Business to Business, Consumer to Consumer, other models –Brokerage Model, Advertising mode, Aggregator Model, Info-mediary Model, Community Model and value chain Model.

Unit-III

Electronic Payment Systems: Special features required in payment systems, Types of E-payment systems, Smart Card, Electronic wallet, E-Cash, E-cheque, credit card.

Unit-IV

Digital Marketing, E-Customer Relationship Management, E-Supply Chain Management.

Unit-V

Security Issues in E-Commerce: Security risk of E-Commerce, Types of threats, Security tools and risk

management approach, Overview of Cyber law, Business Ethics, EDI Application in business.

Text/Reference Books

1. E - Commerce An Indian Perspective by P.T. Joseph, S.J., PHI
2. Doing Business on the Internet E – Commerce (Electronic Commerce for business) by S. Jaiswal, Galgotia Publications.
3. E-Commerce by Schneider, Thomson Publication.
4. E-commerce: Strategy – Technologies and Application by Whitley David, TMH, India.
5. Electronic Commerce by Greenstein, TMH.
6. Electronic Commerce: A managerial perspective – E.Turban – Prentice Hall of India
7. Electronic Commerce: Frontiers of Electronic Commerce – Kalarsta & Whinston, Addison-Wesley.

BCA 304: Web Technology

Time: 3 Hrs. **Max. Marks: 75**

Unit I

Introduction to Basics of Internet: Concepts of Internet: Domain, IP Addressing, Resolving Domain Names, Overview of TCP/IP and its Services, WWW.

Unit II

Introduction to HTML, Designing Pages with HTML, Essential Tags, Deprecated Tags, Tags and Attributes, Text Styles and Text Arrangements, Text, Effects, Exposure to Various Tags (DIV, MARQUEE, NOBR, DFN, HR, LISTING, Comment, IMG), Color and Background of Web Pages, Lists and their Types, Attributes of Image Tag.

Unit III

Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, concept of navigation, Different Section of a Page and Graphics, Footnote and e-Mailing, Creating Table, Frame, Form and Style Sheet.

Unit IV

DHTML: Dynamic HTML, Document Object Model, Features of DHTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), Layers of Netscape, The ID Attribute, DHTML Events.

Unit V

Web Designing Tools: Front Page Basics , Web Terminologies, Phases of Planning and Building Web Sites, The FTP, HTTP and WAP, Features, Front Page Views, Adding Pictures, Backgrounds, Links, Relating Front Page to DHTML.

Text / Reference Books

1. HTML Black Book – Steven Holzner – Dreamtech Press.
2. HTML, Java Script, DHTML, PERL, CGI – Evan Bayross – BPB.
3. http:www.W3schools.com/html/
4. Dynamic HTML webMagic/ jet douyer-hayden Development group
5. The DHTML Company only Robert mudrey, PHI.

BCA-305: Programming with JAVA

Time: 3 Hrs. **Max. Marks: 75**

Unit I

An overview of Java: Object oriented programming, Two paradigms, abstraction, the, OOP principles, Java class libraries, variables, arrays, Data types and casting, Operators, operator precedence, Control statements.

Unit II

Classes & Objects: Class fundamentals, declaring object reference variable, Introducing methods, constructors, the key word, garbage collection, Overloading methods. Inheritance and polymorphism: super class and subclass, protected members, Relationship between super and sub class. Inheritance hierarchy, abstract classes and methods, final methods and classes, nested classes, Type wrappers.

Unit-III

String handling: The string constructor, string length, special string operator character extraction, string comparison, searching string, modifying string, data conversion, changing the case of characters, string buffer.

Unit IV

Multithreaded Programming: The Java thread model, the main thread, creating thread, creating multiple thread, using is alive () and join (). Thread priorities, synchronization, Inter thread communications, suspending resuming and stopping thread using multithreading.

Exception handling: Exception handling fundamentals

Unit-V

Introduction to Applets : Applet Fundamentals, using paint method, basic of AWT

Recommended Books:

1. Herbert Schildt: JAVA 2 The Complete Reference, TMH, Delhi
2. Deitel: How to Program JAVA, PHI
3. U.K. Chakraborty and D.G. Dastidar: Software and Systems An Introduction, Wheeler Publishing, Delhi.
4. Joseph O'Neil and Herb Schildt: Teach Yourself JAVA, TMH, Delhi

Practical

BCA 306

Practicals: Experiments based on the paper BCA – 302 & 304 and Project development for Internal Assessment.

BCA 307

Practical II: Experiments based on the paper BCA-305.

BCA 308

Project may be developed in any language taught during BCA III Year under the guidance of College faculty.

Innovations and Employability in the area of Computer Science

Innovations

Computer Science is the most creative and diverse field of all the technology fields. If you can imagine an outcome, this major will provide you the tools to create it. In addition to providing a solid grounding in all the most significant areas of computer science, The syllabus is designed for students considering their individual needs, who want to study a broad computer science curriculum with an emphasis on combining both the theory and practice of computer science. Then the syllabus will be able to develop computer professionals with a good grasp of how to design and build high quality systems for industry that are usable in real world socio-technical contexts.

The overall aim to develop this syllabus of Computer Science course is to deliver a broad but rigorous Computer Science education coupled with direct exposure to cutting edge research. Graduates and Post Graduate of this programme are intended to continue directly into careers involving innovative thinking and problem solving, as part of an advanced research, development or other applied field of computer science.

Employability

Selection to study the Computer Science opens up many avenues for future career prospects.

Almost every major challenge in the world turns to the use of computer science to solve problems; from medical research, education, supporting aid work in disaster areas, helping to create a sustainable environment, the logistics of moving products around the world, to the world of business and securing and managing the vast levels of data through visualisation, security and transmission; not to mention the world of media.

Being a successful Computer professional is not just about solving technical problems, but also collaboration, leadership, and teamwork; which is why our degree courses encourage you to gain these interdisciplinary and interpersonal skills in addition too.

- Computers and computing technology lies at the heart of organisations across all industrial sectors; and our graduates are equipped to support and develop these systems.
- Computer Technology is the fastest developing technology in the world, and the requirement for graduates with the skills to work in this field is continuing to grow, whilst the actual supply of graduates with the skills is dropping worldwide.

Computer Science will fulfill the growing market demand in government and private sectors both for expertise in following:

Databases
Communication Networking
Image processing
Animation
Software development ..... etc

JOB OPPORTUNITIES FOR UNDERGRADUATE STUDENTS

A. [BCA/B.Sc. (CS/IT)/BA/BSc./B.Com (with Computer)/PGDCA] graduate can work as a

1. Programmer
2. Sr. Technical Assistant
3. Systems Analyst/System Engineer
4. Software Engineer
5. Database Administrator
6. System Architect
7. Software Project Managers
8. Work As a Faculty Member
9. Research Scientist
10. Web Master / Web Developers
11. Network Engineering/ Analyst