

SYLLABUS

**BACHELOR OF COMPUTER APPLICATIONS
(B.C.A)**

(Three Year Degree Course)

B.C.A. Part I Examination, 2013

B.C.A. Part II Examination, 2014

B.C.A. Part III Examination, 2015

**JAI NARAIN VYAS UNIVERSITY
JODHPUR**

Rules amended in the syllabus

- i. In theory there will be 20% marks for internal assessment and 80% for end semester examinations.
- ii. In practical there will be 20% marks for internal assessment and 80% for end semester examination.

Note:

- i. The basis for internal evaluation in theory shall be home assignment, quizzes, class test and regularities in the attendance.
- ii. The basis for internal assessment in the laboratory courses shall be timely submission of the lab records, performance in the experiments, tests quizzes etc.

3. Resolved to incorporate the following rules for Bachelor of Computer Applications (BCA)

1. The course of study of BCA shall extend over a period of six semesters spread over three years. On satisfactory completion of the course and after passing the examinations, a candidate will be awarded the BCA.
2. The admission process shall be as per University Rules.
3.
 - a. Every academic year shall be divided into two semesters.
 - b. There shall be an examination at the end of each semester. The examinations shall consist of written papers, practicals, sessionals and course work.
 - c. The examination in the first year of BCA will be designated as first and second semesters examinations at the end of each semester respectively.
 - d. The examinations conducted in the second year will be designated as third and fourth semester examination at the end of each semester respectively.
 - e. The examination conducted in the third year will be designated as fifth and sixth semester examination at the end of each semester respectively.
4. The term of regular course of study means that a candidate shall have attended 75% of total number of lectures and course work (Tutorial) in each written paper and 75% of the course work (Practical and Sessional) as per teaching and examinations scheme in each semester. Further he/she shall have completed his project and seminar.
5. For a pass, a candidate should obtain 35% marks in each theory paper, 50% marks in each practical and sessional, 50% marks in each course work/seminar/project and 40% marks in the aggregate of the semester every year as per the teaching and examination scheme.
6.
 - (a) If a candidate, fails in not more than two units in each semester examination, and if obtain an aggregate of 40% marks in the grand total, he/she shall be allowed to be regular candidate in the next semester. For the purpose of this clause each theory paper and each practical shall be counted as a separate unit.
 - (b) i. The make up examination shall be held along with the next regular semester examinations.
 - ii. The regular semester examination shall be held on alternate days.
 - (c) Those candidates who appear and pass in the units at the make up examination shall be awarded the actual marks obtained. But in no case will be awarded more than 60% of maximum marks in the Unit(s) irrespective of the marks secured by them in the unit(s).
 - (d) (i) No candidates shall be permitted to appear in the FOURTH Semester examinations unless he/she has cleared all the units of FIRST Semester.
 - (ii) No candidate shall be permitted to appear in the FIFTH Semester examinations unless he/she has cleared all the units up to SECOND Semester.

Note:- A candidates in any makeup examination will be admitted as a regular candidate in the next eligible semester as and when that semester is offered.

7. Ex-students:
 - (a) If a student fails in more that two units of theory papers of the semester examinations but pass in all the practicals, he/she shall be allowed to appear as ex-student. The marks secured in the practicals and course work, laboratory sessionals of the last I semester shall be carried over to the next examination.

- (b) If a candidate fails in more than two units of theory/practicals at the semester examination, he/she shall appear as an ex-student at the next semester examination in all theory papers, practicals and sessionals.

8. Award of Division:

The division given below shall be awarded on the basis of the total marks obtained from first to sixth semester (all taken together) by the candidate for the degree of BCA.

- | | | |
|------|-----------------|-----------------------------|
| i. | First Division | 60% or above |
| ii. | Second Division | Below 60% but 45% or higher |
| iii. | Third Division | Below 45% but 40% or higher |

9. (a) In no case will a candidate, who has not passed finally after six years from the date of enrolment be allowed to continue the course.

(b) Provided that the Vice-Chancellor in consultation with the Head of the Department/Dean/Convener may waive this limit of six years in the case of candidate who could not complete their BCA course in one stretch. The reason for granting exemption shall be recorded in writing. Such extension shall not exceed one year.

Bachelor of Computer Application
Three Year Degree Course
Syllabus for Teaching and Examination Scheme for BCA
Session 2012-2013, 2013-2014, 2014-2015

Note:- The breakup of Laboratory examination shall be as follows:

- (i) Laboratory Records 20% (on the basis of performance, record and attendance in laboratory class) and it will be awarded by the class teacher.
- (ii) Viva-voce : 20%
- (iii) Performance in Laboratory examination: 60% which cover various aspects asd circuit diagram, formula, algorithms, results etc. The students will be asked to attempt one exercise.
- (iv) BCA-106 Environmental Studies: Its marks will not be added for award of division.

BCA SEMESTER 1

Code	Subject	Hrs/week			Exams Hrs.	Max.Marks		Total
		L	T	P		IA*	Exam	
Theory								
BCA-101	Elementary Mathematics	3			3	20	80	100
BCA-102	Elementary Physics	3			3	20	80	100
BCA-103	Communicative English	3			3	20	80	100
BCA-104	P.C. Software	3			3	20	80	100
BCA-105	Information Technology Trends And Language FORTRAN	3			3	20	80	100
BCA-106	Environmental Studies	3			3	10	40	50
Practical								
BCA-107	M.S Office Lab			6	3	20	80	100
BCA-108	IT Lab			6	3	20	80	100
BCA-109	Physics Lab			3	3	10	40	50
Total						160	640	800

BCA SEMESTER II

Code	Subject	Hrs/week			Exams Hrs.	Max.Marks		Total
		L	T	P		IA	Exam	
Theory								
BCA-201	Differential Integral Calculus	3			3	20	80	100
BCA-202	Statistical Methods	3			3	20	80	100
BCA-203	Digital Electronics	3			3	20	80	100
BCA-204	Programming Language C	3			3	20	80	100
BCA-205	data Structure	3			3	20	80	100
Practical								
BCA-206	Digital Lab			6	3	20	80	100
BCA-207	C Lab			6	3	20	80	100
BCA-208	FORTRAN Lab			6	3	20	80	100
Total						160	640	800

BCA SEMESTER III

Code	Subject	Hrs/week			Exams Hrs.	Max.Marks		Total
		L	T	P		IA	Exam	
Theory								
BCA-301	Principles of Programming. Lang	3			3	20	80	100
BCA-302	Business Data Processing	3			3	20	80	100
BCA-303	Computer System Architecture	3			3	20	80	100
BCA-304	Finance & Cost Accounting	3			3	20	80	100
BCA-305	Comp. Oriented Numerical Meth.	3			3	20	80	100
Practical								
BCA-306	Microprocessor Lab			6	3	20	80	100

BCA-307 COBOL Lab	6	3	20	80	100
BCA-308 Numerical Methods Lab	6	3	20	80	100
Total			160	640	800

BCA SEMESTER IV

Code	Subject	Hrs/week		P	Exams Hrs.	Max.Marks		Total
		L	T			IA	Exam	
Theory								
BCA-401	Management Accounting & Eco	3			3	20	80	100
BCA-402	DBMS I	3			3	20	80	100
BCA-403	JAVA Programming Language	3			3	20	80	100
BCA-404	Operating System Concept	3			3	20	80	100
BCA-405	Object Oriented Prog. C++	3			3	20	80	100
Practical								
BCA-406	DBMS I lab			6	3	20	80	100
BCA-407	JAVA Programming Language			6	3	20	80	100
BCA-408	Object Oriented Programming (C++) Lab			6	3	20	80	100
Total						160	640	800

BCA SEMESTER V

Code	Subject	Hrs/week		P	Exams Hrs.	Max.Marks		Total
		L	T			IA	Exam	
Theory								
BCA-501	Visual Programming	3			3	20	80	100
BCA-502	Comp. Graphics & Multimedia	3			3	20	80	100
BCA-503	Computer Comm. & Networks	3			3	20	80	100
BCA-504	Economics & e-commerce	3			3	20	80	100
BCA-505	DBMS II	3			3	20	80	100
Practical								
BCA-506	Visual Programming Lab			6	3	20	80	100
BCA-507	Graphics Lab			6	3	20	80	100
BCA-508	DBMS II Lab			6	3	20	80	100
Total						160	640	800

BCA SEMESTER VI

Code	Subject	Hrs/week		P	Exams Hrs.	Max.Marks		Total
		L	T			IA	Exam	
Theory								
BCA-601	Management Information System	3			3	20	80	100
BCA-602	System Analysis and Design	3			3	20	80	100
BCA-603	Seminar			3	1	20	80	100
Practical								
BCA-604	System Design Lab			6	3	20	80	100
BCA-605	Project			6	3	80	320	400
Total						160	640	800
Grand Total								<u>4800</u>

Grand Total of BCA 4800 (For awarding division 4750)

BCA I Year Session 2012-2013
SEMESTER I
BCA-101

ELEMENTARY MATHEMATICS 1

Set, Relation and Functions: Set, Cartesian product of sets, relations, functions, binary operations.

Trigonometric Functions: Angles, trigonometric functions and trigonometric identities.

Cartesian system of rectangular coordinates: The number plane, distance formula area of a triangle, section formulae, slope of a line, locus and equation.

Straight line: To find equation of a straight line parallel to an axis: the point slope form, two point form, intercept form, slope-intercept form, normal form, condition of concurrency for three straight lines, analytical proof of geometric theorems.

Circle and family of circles: Standard form of equation of a circle, its general form, condition of tangency.

Quadratic equation: Solution of quadratic equations, symmetric functions of roots.

Determinants and matrices: Properties and applications, definition and type of matrices, elementary transformation of a matrix, inverse of a matrix, normal form of a matrix, orthogonal matrices.

BCA – 102

ELEMENTARY PHYSICS

Note:- This course is of introductory nature and therefore, emphasis will be on basic concepts and direct applications of mathematical expressions without rigorous analysis.

Physical quantities: Scalar and vector quantities, vector addition, scalar and vector product of two vectors.

Modern Physics: Electromagnetic spectrum, different categories and properties of the electromagnetic waves, communication of signals, modulation and demodulation, cable, microwave and satellite communication. Photoelectric effect, LASER, application of LASER, CD and Laser printers (Only qualitative aspects without derivation of formula etc.)

Electrostatics and Current Electricity: Coulomb's law, electric field, Gauss law, force on charged particle in electric field, motion of charged particle in uniform electric field. Electric current: current in conductors, ohm's law, conductivity, insulators, dielectric materials, dielectric constant, resistance, potential difference, Source of Direct current, emf, capacitance, charging & discharging of capacitor through resistance. Potentiometer, Alternating Current, Peak and rms values, power factor. Electric motors and generators.

Magnetic field, faraday's law, self inductance and mutual inductance.

Electronics: Semiconductors, doping, N-type and P-type semiconductors. P-N junction diodes, transistors characteristics. Physical principles of LED, Photocells, CRT, Plasma Panel and LCD. Thermoelectric effect, LD Rs, piezo-electric effect. Principle of transducers.

Books suggested:

Basic Physics: A self teaching guide, Karl F. Kuhn, John Wiley & Sons, Inc

Optics and Atomic Physics, Khandelwal D.P., Shiv Lal Agarwal & Co.

Electricity and Magnetism, Berkeley Physics Course Vol. II, Tata McGraw Hill

NCERT Physics Books.

BCA-103 COMMUNICATIVE ENGLISH

Comprehension: (Comprehension includes understanding the language by reading and listening & writing. Passages or poems will be given to read, read out or made audible in class and question will be asked verbally to evaluate the level of comprehension)

Reading Comprehension: Simple passages and note making passages, poems (question relating to understanding, relationship, summarizing the main idea & judging the tone of the passage).

Listening Comprehension: Talks, reports, poems usage of multimedia (Relates to extracting ideas, understanding the meaning of words and sentences in context).

Writing Skills: Writing of paragraph, report, composition, diary, entry, various types of business letters and applications relating to bio-data & testimonials.

Functional Grammar: Grammar will be taught in functional, integrated and informal way, laying stress more on the usage rather than defining them (relates to stress marking, pronunciation, word formation, words in usage in different situations) Maximum possible exercises will be given.

Structural Items: Simple compound and complex sentences. Coordinate clause (with, but or either-or, neither-nor otherwise or else), Subordinate clauses noun, clause subject, object and complement: Relative clauses (restrictive and non-restrictive clauses), Adverb clauses (open and hypothetical, conditional with because, though here, so that as long as, as soon as)

Tenses: Simple present progressive and present perfect, Simple past, progressive and past perfect, indication of futurity, the passive (simple present and past, present and past perfect and 'to' infinitive structure), Report speech: (i) Declarative sentences (ii) Imperatives (iii) Interrogatives wh questions, Yes/No Questions, Exclamation sentences, Modals (will, shall, should, would, ought to, have to/ have got to, can, could, may-might and need), Verb structures (infinitives and gerundial), Linking devices. The focus should be to eradicate grammatical errors.

Literature: Six good essays and six poem should be discussed with the students to enhance their comprehension ability.

BCA-104 PC SOFTWARE

Introduction and history of Operating system, Basic commands of windows OS, FAT and NT file systems, file and directory structures and naming rules, booting process, system files, integral and external files.

Windows 98/XP/2000. Windows concept, Features, Windows structure, Desktop, Taskbar, Start menu, My Computer, Recycle bin, Windows Accessories-Calculator, Notepad, Paint, Word Pad, Character Map, windows Explorer, Entertainment, Managing Hardware & Software-installation of Hardware and Software, Using Scanner, System Tools, Communication, Sharing information between programs.

Word processing, MS-Word Features, Creating Saving and Opening Documents in Word, Interface , Toolbars, ruler Menus, Keyboard shortcut, Editing, Previewing, Printing & Formatting a Document, Advance 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.

Worksheet-MS Excel: Worksheet basics, creating worksheet, entering data 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 formula & cell referencing, Auto sum, coping formulas, absolute and relative addressing, working with ranges, formatting of worksheet, Previewing & Printing worksheet, Graphs and Charts, Database, Creating and using macros, Multiple worksheets-concepts, creating and using.

Introduction to Power Point: Creating slide show with animation.

Introduction to front Page & Microsoft Access: Creating & using database in Access.

BCA-105

INFORMATION TECHNOLOGY TRENDS

Introduction to computer: Brief history of development of computers, computer system concept, characteristics, capabilities and limitations, types of computers-Analog, Digital, Hybrid, General, Special, Purpose, Micro, Mini, Mainframe, Super, Personal computer (PCs) Configuration, Pentium and Newer PCs specifications and main characteristics, types of PCs desktop, Laptop, Notebook, Palmtop, Workstations etc. their characteristics, Bios, software, Hardware, firmware, booting files & Directory system.

Data, Need to data processing, Information & its need, Information ?, Levels of information, Need of information, Quality of information, Comparison of manual & electronics storage of data, Organization of data as file, Use of information in data processing systems, Various data processing methods.

Need, types of Software: System Software, Application Software, Program concept, characteristics of programming, various stages in program development, Generation/ types of computer languages, Machine, Assembly, high level, 4 GL Merits & demerits.

Language translators: Comparative study, assembler, compiler, Interpreter, Examples & areas of use of various high level language & their features, procedure & object oriented Language, applications programming generators.

Internet technology: Introduction of networking, Concept of LAN and WAN. Concept, e-mail service, browsers, search engines, WWW, HTML, introduction to e-commerce, advantages & growth. Introduction to LAN and WAN. Virus working principals, Types of viruses, Trojans and horses, Virus detection and prevention, viruses on network.

Language FORTRAN: numerical constant, Variable names, Arithmetic operation, Mixed mode, Built-in-mathematical functions, unformatted Input output, formatted Input Output, field specifications, literal field. Transfer on control: unconditional and conditional transfer, relational expression, logical if statement, Arithmetic IF, Do loops: use of Do statements, exit form Do loops, continue statement and nested loops, Arrays: declaration of arrays, linear and multidimensional array. Input/Output statement for array. An introduction to function sub program.

BCA-106

ENVIRONMENTAL STUDIES

The multidisciplinary nature of environmental studies, Definition, scope and importance. Need for public awareness.

Natural Resources

Renewal of non-renewable resources: Natural resources and associated problems.

- a. Forest resources: Use and over-exploration, deforestation, mining and effects on forest and tribal people.
- b. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, benefits and problems.
- c. Mineral resources: Use and exploitation, environmental effects of extracting and using minerals resources.
- d. Food resources: World food problem, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems.
- e. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy source.
- f. Land resource: Land as a resource, land degradation, soil erosion and desertification.

Conservation of natural resources

Equitable use of resources for sustainable development.

Ecosystem

Concept of ecosystem, structure and function of an ecosystem, Producers, consumers and decomposers. Energy flow in the ecosystem. Food chains, food webs and ecological pyramids. Introduction types characteristics features, structure and function of following ecosystems:

- a. Forest ecosystem
- b. Desert ecosystem
- c. Aquatic ecosystem (Ponds, streams, lakes, rivers, oceans, estuaries)

Biodiversity and its conservation: Introduction-Definition: genetic, species and ecosystem diversity. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and opinion values.

Biodiversity at global, national and local levels. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Important Endangered and endemic species of India.

Environmental Pollution: Definition, causes, effects and control measures of:

- a. Air pollution
- b. Water pollution
- c. Soil pollution
- d. Noise pollution
- e. Thermal pollution
- f. Nuclear hazards

Soil water Management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Role of NGOs.

PRACTICALS
BCA-107
MS OFFICE LAB

1. Write a paragraph in Ms-Word and show the use of various tools.
2. Write an application & copy it to another document & differentiate between paste & paste special.
3. How to insert a picture or chart in a document & reference it to another document?
4. Write a paragraph in Ms-word of 12 line and Explain these Formatting tools:-
 - a) Columns.
 - b) Drop cap.
 - c) Paragraph.
 - d) Alignment.
 - e) Bullet & Numbering.
 - f) Tab Setting
5. What is mail merge? How to use this facility? Describe it Step by Step.
6. Create a Student Table (Rno,Name,Fname,Class,Address,Phone) and insert 5 records in it.
7. To study various charts and their implementations using a marksheet of 10 students.
8. Create a salary statement of an organization of 10 employees using if condition (S.no., name, designation, basic, da, hra, total, net salary)
9. What is a pivot table? How to create and use a pivot table?
10. Create a power point presentation to present your institution detail, create at least 7 slides with different animations effect.
11. Create a power point presentation on “destination India” & show the following.
 - (a) Custom Animation.
 - (b) Computer & mere presentations.
 - (c) Slide design
 - (d) Cascade.

BCA – 108

ITT LAB

1. Design a simple HTML document using basic elements like:
<HTML>, <body>, <head>, <title>,
, <hr>.
2. Design a HTML document which show the use of following Text formatting tag:
, <u>, <i>, , <big>, <small>,
<strike>, <s>, , <ins>, <sub>,
<sup>, <center>, , <h1> to <h6>
3. Design a HTML document to demonstrate the use of all computer output tag:
<code>, <kbd>, <samp>, <tt>, <var>, <pre>, <listing>, <xmp>
4. Design a HTML document witch demonstrate the use of following tag: <abbr> <acronym>, <address>,
<bdo>, <blockquote>, <q>.
5. Apply these character entities in your HTML document:
Non-breaking space
<
>
&
“
,

Multiplication
Division
6. Demonstrate how to create a link in an HTML document.
7. Demonstrate how to use an image as a link in HTML document.
8. Demonstrate how to link to another page by opening a new window...
9. Demonstrates how to use a link to jump to another part of a same document.
10. Demonstrates how to make a vertical and horizontal frameset with three different documents.
11. Design a HTML document which does not allow a user to resize frame.
12. Demonstrate how to make a navigation frame. This navigation frame contains a list of links with the second frame as the target.
13. Design a HTML document which shows how to jump to a specified section in a frame.
14. Design a HTML document having.
 - (a) Colored background table
 - (b) Table having image in background.
 - (c) Colored background cell
 - (d) Table having image in only one cell.
15. Demonstrates how to use the “frame” attribute (with values like: box, void, above, below, hside, vside, lhs,

rhs) and border attribute to control the borders around the table.

BCA – 109
PHYSICS LAB

1. Conversion of galvanometer into voltmeter
2. Comparison of two emf using potentiometer.
3. Determination of potential difference using potentiometer
4. Charging and discharging of capacitor through resistance
5. Variation of Magnetic field along the axis of circular coil
6. Characteristics of P-N junction diode.
7. Half wave and Full wave rectifier with and without capacitive filter.
8. Characteristics of PNP/NPN transistor (Common Base configuration)
9. Characteristics of PNP/NPN transistor (Common Emitter configuration)
10. Common Emitter transistor amplifier
11. Characteristics of Zener diode.

SEMESTER II
BCA-201
DIFFERENTIAL & INTEGRAL CALCULUS

Introduction to Differential Calculus: Derivative of a function, various formulae i.e. product and quotient rule of differentiation, logarithmic differentiation etc.

Limits, continuity and differentiability, Successive Differentiation, partial derivative, Rolle's theorem, Mean value theorem, Taylor's theorem, Maclaurin's series.

Maxima and Minima: tracing of curves with equations in Cartesian and polar forms. Tangents and normals.

Integral Calculus: Introductory formulae, integration of rational, irrational & transcendental functions, multiple integrals, Double and triple integrals, use of Double and Triple integrals in finding area and volumes.

Ordinary Differential Equations of first order.

BCA – 202
STATISTICAL METHODS

Note:- Teaching approach shall be algorithm based.

The basic concepts: Variables and Attributes, Statistics, Population and sample, complete enumeration vs sample surveys, probability and purposive sampling, simple random sampling.

Theory of Attributes: Consistency of data, association of attributes coefficient of association, contingency labels.

Frequency distributions: Frequency distributions, histograms, Frequency polygons, frequency curves, cumulative frequency, distributions, ogives.

Measure of Central Tendency, Median, mode, arithmetic mean, weighted arithmetic mean, geometric mean, harmonic mean, partition values: quartiles, deciles and percentiles.

Absolute and relative measures of Dispersion: The range, quartile deviation (Semi inter-quartile range). Mean deviation, standard deviations and coefficient of variation.

Skewness and kurtosis: Moments, various type of moments and relation between them, measures of skewness, measures of kurtosis.

Correlation theory: Linear correlation, measures of correlation, the least square regression lines, expected and unexpected variation, coefficient of correlation, rank correlation, multiple and partial correlation for three variables.

Elements of Probability Theory: Random experiment, sample space, events, Classical and Statistical definition of probability, Additive law of probability, conditional probability, statistical Independence of events, multiplication law of probability.

Random variable: Discrete and continuous random variable, Expected value, moments of r.v. and moment generating function. Theoretical discrete and continuous probability. Distribution: Bernolli, Binomial, geometric and Poisson Distribution. Normal distributions.

BCA – 203

DIGITAL ELECTRONICS

Boolean Algebra, Connective, Expression, Functions, Theorems of Boolean Algebra, Simplifications of Boolean Expressions, Truth-Tables, Duality.

Logic Circuits: Transistor as electronic switch, transistor bistable multivibrator, Gates-NOT, OR, AND, NAND, NOR and XOR gates. Boolean algebra, De Morgan's Theorem, Logic circuits for Boolean expressions. Simplification of logic circuits, Karnaugh map.

Combination Circuits: Half adder, Full adder, Full subtractor, Flip-Flops, Rs flip-flop, D flip-flop, JK flip-flop and master slave JK flip-flops, Sequential circuits, IC's, LSI and VLSI.

Registers: Buffer registers, Shift registers, Counters: Ripple counter, Ring counter, Synchronous counter, Mod counter, Decoders and multiplexers, Memories, RAM and ROM.

Number System: Decimal, Binary, Octal and Hexadecimal number system and their inter conversion, Arithmetic operations on binary numbers, Character codes, ASCII, BCD and Grey codes.

BCA – 204

PROGRAMMING LANGUAGE C

Structure of C Program, Identifiers and keywords, Data types, Constants and variables, scope of variables, Local and Global variables, Type conversion, Arithmetic operators, Local and Global variables, Type conversion, Arithmetic operators, Library functions, Expressions, Input/Output statements, Get char and putchar, scanf, printf, compound statements and blocks.

Transfer of control: Relational operators, Logical operators, Bit wise operators, Unary operators, Hierarchy of Operations, If-else statement, switch statement, Goto statements and labels, while, Do-while and for statements, Nested loops, Break statement.

Transfer of control: relational operators, Bit wise operators, Unary operators, Hierarchy of Operations, If-else statement, switch statement, Goto statements and labels, while, Do-while and for statements, Nested loops, Break statement.

Array and Structures : Declaration, one-dimensional and multidimensional arrays, Structures: Defining a structure variables, unions, Difference between structure and Unions, Processing a Structure.

Functions: Defining and accessing a function, Arguments of a function, Passing arguments and array to a function, External, State and Register variable, Scope rules, Block structure, Recursion.

Pointers, Pointer declaration, operations on pointers, Pointers to Array, Array of Pointers, Passing Pointers to functions, Pointers to structures.

Files: Definition, Processing of sequential and random access files.

BCA – 205

DATA STRUCTURE

Elementary data Structures: Arrays and Records, STACKS: Definition, implementation, operations on stack, application of stacks, evaluation of arithmetic expression and recursion, Prefix fix and post fix notations, evaluation of post fix expression using stacks.

Queues: Queue data structure, implmention, operations on queues, Circular queue, Circular queue.

Linked lists: Singly linked list, ordered list, Inserting and deleting element form odered list: Implementation stack and queue using linked lists.

Trees: Concepts and terminology, Binary tree, Linear and linked representation of binary tree, Operation on a tree, Tree traversal, Inorder, Preorder and post order traversal.

Graphs: Representation, Adjacency matrix, Graph traversal, Breadth first search and Depth first search traversal.

Searching and Sorting: Sequential searching, binary searching, Hashing, Hashing methods, Internal and external sorting, Selection, Insertion, Bubble and quick sort algorithms.

Practical

BCA-206

DIGITAL LAB

Combinational Circuits

1. Verify various logic gates: NOT, AND, NAND, NOR, XOR and XNOR.
2. Verify various Boolean Laws
3. Verify NAND gate as Universal Gate

4. Verify NOR gate as Universal Gate
5. Realize Half-Adder and Half-Subtractor circuits
6. Realize Full-Adder and Full Subtractor Circuit
7. Realize BCD to Seven Segment Decoder Sequential Circuits
8. Realize RS Flip flops using NAND and NOR gates
9. Realize D Flip Flop using NOR and NAND gates
10. Realize JK flip flop using gates
11. Realize JK flip flop using IC
12. Realize 3 bit ripple up counter
13. Realize 3 bit ripple down counter
14. Realize mod- 5 counter
15. Realize mod-10 counter
16. Realize mod-13 counter
17. Realize ring counter

BCA- 207

C LAB

1. Write a program to show the use of arithmetic operations and library functions in evaluating expressions.
2. Write a program to show the use of Input Output statement.
3. Write a program to show the use of If else statement
4. Write a program to show the use of switch statement.
5. Write a program to show the use of one dimensional and multi dimensional arrays.
6. Write a program to show the use of while statement.
7. Write a program to show the use of Do while statement.
8. Write a program to show the use of for statement.
9. Write a program to show the use of functions
10. Write a program to show the use of recursion
11. Write a program to define and use a structure.
12. Write a program to manipulate strings.

BCA- 208

FORTRAN LAB

1. Write a program to show the use of arithmetic operations with different data types.
2. Write a program to show the use of Input and Output statements.
3. Write a program to show the use of arithmetic expression using built in functions.
4. Write a program to show the use of arithmetic If statement.

5. Write a program to show the use of logical If statement.
6. Write a program to show the use of Do loops.
7. Write a program to show the use of I dimensional Array.
8. Write a program to show the use of 2 dimensional Array.
9. Write a program to show the use of function sub program.

Note: - The programme should be of reasonable complexity and for problem solutions.

BCA II Year Session 2013-14
SEMESTER III
BCA-301
PRINCIPLES OF PROGRAMMING LANGUAGE

Importance of programming languages, brief history and features, attributes of good programming language, Introduction to language translator, binding and binding time.

Elementary and structured data types, their specifications, representations, and

Implementation of numbers, vectors and arrays, records, character string, variable size data structure, sets, input files. Encapsulation and information hiding, sub programs. Type definition and abstract data types.

Implicit and explicit sequence control. Subprogram sequence control. Recursive sub-programs, exception and exception handlers. Co-routines and scheduled subprograms, task and concurrency exception. Name and reference environments, static dynamic and block structure. Local data and local referencing environments.

Dynamic and static scope of shared data. Block structure, parameters and their transmission. Task and shard data storage requirement for major runtime elements. Program and system controlled storage management. Static and stack based storage management. Fixed size and variable size heap storage management.

Reference Books:

Ghezzi: Programming Language Concepts, Addison Wesley

Pratt, Zelkowitz: Programming Language Design and Implementation PHI.

Sebasta: Concept of Programming Language, Addison Wesley

Sethi Ravi: Programming language Concepts & Constructs, Addison Wesley.

BCA-302
BUSINESS DATA PROCESSING

Management Information System: Introduction, Data processing concepts, Data processing functions, Input/Output and Storage devices, Central Processing Unit.

Programming concepts and COBOL language: Elements of COBOL language, Structure of COBOL program, its coding, Introduction to Identification division, Environment division, Data division and Procedure division.

Data division features: Picture clause, Usage clause, Justified right clause, Redesigns, Renames, Procedure division, File oriented Input and Output: OPEN; CLASE; READ; WRITE, Data oriented Input and Output: Accept, Display data movement: move; move corresponding, Procedure Control: Perform.

Procedure division: Compute verb, Copy, Go To....depending verb, Conditions and conditional statements: Relation conditions, Nested conditions, Class conditions, Sign conditions.

Batch processing of Sequential files, sorting and merging of files.

Table handing: OCCURS clause, PERFORM verb and table handling. Direct Access Files: Indexed sequential file organization.

BCA-303

COMPUTER SYSTEM ARHITECTURE

Micro operations: Bus transfer, Memory transfer, Arithmetic and logic micro-operations, Control functions, Instruction codes: Computer instructions, Timing and control, Instruction cycles, I/O and interrupt.

I/O Architecture: I/O devices and their controllers, Hex keyboard, LED Display, VDU, Floppy disk drive, Transfer of information between I/O devices, CPU and memory, Elementary concept of I/O mapped and memory mapped I/O, Direct memory Access.

CPU Organization: Data bus and address bus, ALU, Instruction formats, Addressing modes-Direct, indirect, Immediate, Indexed and relative. Addressing formats one, two and three addresses.

Microprocessor: Organization of 8085 microprocessor, Instruction set of 8085, Mnemonics and operation codes of data transfer group, Arithmetic group, Logic group, Branches group and stack, I/O and Machine control group, Assemble language, Assembler, Simple programs in assembly language.

BCA- 304

FINANCIAL AND COST ACCOUNTING

Basic Accounting Concepts, Accounting structure, Process of Accounting, Journal, Ledger and Trial Balance based on double entry book-keeping.

Practical System of accounting: Journal and subsidiary books, Sales and purchase book, Bills of exchange, Bank reconciliation statement.

Preparation of Financial Statement: Income Statement (Profit and Loss A/C), Statement of Financial Position (Balance Sheet) and adjustments, Depreciation methods.

Capital and Revenue-Expenditure and Receipts, sectional and Self-Balancing system, Single Entry System, Accounting for non-profit organization.

Introduction to cost accounting; Elements of cost, cost sheet preparation, cost determinates, Direct and Indirect cost, Cost centers and cost units, Accounting for Materials.

BCA- 305

COMPUTER ORIENTED NUMERICAL METHODS

Note:- Teaching approach shall be algorithm based.

Computer Arithmetic: Floating point representation of numerals, arithmetic operations with normalized floating point number and their consequences, errors in number representation, pitfalls in computing.

Numerical Methods of solving Algebraic and Transcendental equations, Concepts of Roots: Synthetic division, value and values of derivative of a polynomial by synthetic division, location of roots, methods for finding the roots (zeros) of an equation, scaling approximation of roots (graphic method) Descartes' rule of sign.

Iterative methods: Successive approximation methods, Bisection methods, false position, Newton Raphson method for nearly equal roots, Multiple roots, Solving Polynomial equation, Baristow's method for finding complex roots.

Solution of simultaneous linear equation: Gauss elimination method, Pivoting, ill conditioned equations, Refinement of solution, Gauss seidal iterative method.

Ordinary differential equations: Taylor's series and Euler's methods. Runge-Kutta methods, Runge-Kutta methods, Predictor-Corrector methods, Picard's method of successive approximations Curve fitting, linear regression, polynomial fitting and other curve fitting, Reduction of non-linear equations to linear equations.

Numerical Integration: Trapezoidal and Simpson's rules of Integration, Quadrature for unequal sub-division of the range of integration, Gauss-quadrature formulae, estimation of errors in quadrature formulae.

PRACTICAL

BCA- 306

MICROPROCESSOR LAB

1. Write a program to find the Sum of a series of 8 bit numbers.
2. Write a program of find the Sum of two 16 bit numbers.
3. Write a program of find 2's complements of 16 bit numbers.
4. Write a program of mask off least/ most significant 4 bit of an 8 bit no.
5. Write a program to find the smallest of the series of 8 bit numbers.
6. Write a program to find the largest of the series of 8 bit numbers.
7. Write a program to arrange a series of 8 bit numbers into ascending order/ descending order.
8. Write a program to find the product of 8 bit * 8 bit numbers.
9. Write a program to divide an 8 bit number by an 8 bit number.
10. Write a program to find square root of a perfect/ imperfect 8 bit number.

BCA- 307

COBOL LAB

1. Write a COBOL Program which display a non-numeric literal showing the use of continuation character.
2. Write a COBOL Program which checks the eligibility of a person to vote.

3. Write a COBOL Program to perform arithmetic operations (menu driven).
4. Write a COBOL Program which calculates number of days between two dates.
5. Write a COBOL Program which displays formatted marksheet with required inputs form user.
6. Write a COBOL Program to generate formatted salary slip.
7. Write a COBOL Program which use condition name condition to check the narital Status of a person.
8. Write a COBOL Program which accepts students records & search for a student record of display if it exists.
9. Write a COBOL Program which display weekday of a given day (redefines clause).
10. To find factorial of a number.
11. Write a COBOL Program which sorts a table using bubble no from a table.
12. Write a COBOL Program to find second largest no from a table.
13. Write a COBOL Program to find addition of two matrices.
14. Write a COBOL Program to create a menu driven program for sequential file creation. Records should be created, inserted, deleted & displayed.
15. Write a COBOL Program to create a file & sort it (SORT verb).
16. To merge two sorted files.
17. To merge two files without using SORT & merge verb.

BCA- 308

NUMERICAL METHODS LAB

1. Write a C program to find root of an equation using bisection method.
2. Write a C program to find root of an equation using Regular Falsi method.
3. Write a C program to find root of an equation using Newton Raphson method.
4. Write a C program to to implement Euler's method.
5. Write a C program to implement Runger kutta II order method.
6. Write a C program to implement Runge Kutta IV oder method.
7. Write a C program to implement Modified Euler's method (Predictor corrector method).
8. Write a C program to find solution of simultaneous equations using Gauss Elimination method.
9. Write a C program to find solution of simultaneous equations using Gauss Elimination method.
10. Write a C program to find regression line of y on x for the given data.
11. Write a C program to find regression line of x on y for the given data.
12. Write a C program to find both the regression lines for the given data and also find it's intersection point.
13. Write a C program to find numerical integration using Trapezoidal rule for the given set of points.
14. Write a C program to find numerical integration using Trapezoidal rule for the given function.
15. Write a C program to find numerical integration using Simpson's 1/3 rule for the given set of points.
16. Write a C program to find numerical integration using Simpson's 1/3 rule for the given function.
17. Write a C program to find numerical integration using Simpson's 3/8 rule for the given set of points.
18. Write a C program to find numerical integration using Simpson's 3/8 rule for the given function.

19. Write a C program to find addition and subtraction of two normalized floating point numbers.
20. Write a C program to find multiplication and subtraction of two normalized floating point numbers.

SEMESTER IV

BCA -401

MANAGEMENT ACCOUNTING AND ECONOMICS

Introduction to Management Accounting, Financial Statements, Ratio, Analysis, Fund Flow and cash flow.

Valuation of Goodwill and shares, Working Capital Management.

Standard for control: Variable Cost/Fixed costs, cost volume profit analysis, break even, marginal and full costing, contribution, standard costing.

Budgeting/ Forecasting: Characteristics of budgets, definitions, advantages, preparations, forecasting long terms and short term, Zero base budgeting, performance Budgeting.

Definitions of Economics, Price Mechanism, Law of Demand and Law of supply Elasticity of Demand, Types of price Elasticity of Demand, Measurement of Elasticity of Demand, Equilibrium.

BCA -402

DBMS I

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

ER Models, entities, mapping constrains, keys, E-R diagram, reduction E-R diagrams to tables, generation, aggregation, design of an E-R data base scheme.

Network Model, basic concepts, data structure diagrams, DBTG CODASYL mode, DBTG data retrieval facility, DBTG update facility, DBTG set processing facility, mapping networks to file, networks systems.

Hierarchical model, basic concepts, tree structure diagrams, data retrieval facility, update facility, virtual records, mapping hierarchical to files, hierarchical system.

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

BCA -403

JAVA PROGRAMMING LANGUAGE

Introduction: Object Oriented Programming Concepts: Encapsulation, Inheritance, Polymorphism, Features, of JAVA Language.

Data Types: Literals, Floating-point literals, character literals, Boolean literals, integer, Floating types, character types, arrays.

Structure of Java program, comments, type conversions, operators arithmetic, bit wise, relational, Boolean

Operators Control statements- if, while, switch, do, for, continue, break.

Class definitions, Constructors, destructors, method overloading, Inheritance, creating subclasses, abstract classes.

Packages and Interfaces, Exceptions, Input and Output classes. Introductory idea of threads.

BCA -404

OPERATING SYSTEM CONCEPT

Function of operating system, operating system concepts, process files, systems calls, CPU Scheduling concepts, algorithms, and their evaluation.

Memory management, contiguous allocating, swapping, multiple, partitions, fragmentation compaction, paging, segmentation, combination of paging and segmentation.

Virtual memory management, demand paging, page replacement and virtual memory concepts, Page replacement and allocation algorithms. Thrashing hardware support, protection and sharing.

The deadlock problem, characterization prevention, avoidance detection and recovery from deadlock, concept of Fork and Join methods, Process concurrency.

Concept of concurrency, precedence graph, Review of process concept, hierarchy of processes. Critical section problem, semaphores, classical process, Co-ordination problem and interprocess communication.

BCA -405

OBJECT ORIENTED PROGRAMMING C++

Principles of Opp, data hiding, encapsulation, inheritance, polymorphism, overloading, C++: Token, keywords, basic, user defined and derived data types, variables, dynamic initialization of variables, reference variables, operators, control structures.

Functions, function overloading, classes and objects, friendly functions, constructors and destructors: operator, overloading, rules of overloading operators.

Inheritance, single, multilevel, multiple, hierarchical, hybrid inheritance, pointers, virtual functions, polymorphism and working with files. Templates, naming space.

Data structures, linked lists, stacks, queues, trees, dynamic memory allocation. Exception handling, throwing, catching and rethrowing and exception, exceptions and inheritance.

PRACTICAL

BCA -406

DBMS I LAB

1) Create a database file having following details:

- i) empname
- ii) eid
- iii) Salary
- iv) deptno
- v) deptno

vi) job_type

2. Create a database and implement the following words.

- i) List ii) Display iii) Go/Goto
- iv) Delete v) Recall vi) Pack
- vii) Locate viii) Find ix) Seek
- x) Sort xi) Index xii) Browse
- xiii) Edit xiv) Append xv) Use databases
- xvi) Close Databases

3. Explain following commands

- i) Replace ii) Create iii) Del Default iv) Set confirm on

4. Write a menu driven program to add, subtract, multiply and divide two numbers.

5. Design an Employee Database according to requirement, and perform following query on it:

- a. List out the employee having Kumar in name field.
- b. List out the employee name that lives in either Rajasthan or Ajmer.
- c. List details of all employees of Sales department.
- d. Replace the department of "Ritu Singh" with "Finance".
- e. List the names of employees who have worked for more than 15 yrs.

6. Create a Database for student which has five fields: Name, Fathers Name, Marks in three subjects (Pc-Package, Maths-I, Physics), Total, Percentage.

- a. Calculate the Total Marks and percentage of each student.
- b. Display the name of topper
- c. List the name of students with highest marks in Maths.

7. Create an Electricity Bill database which contains Fields: Cust_Id, Customer name, Address, Previous Reading, Final Reading, Final reading, Units used, Amount to be paid before due date (units used * 4),] Amount to be paid after due date (10% extra). The fields units used, amount to be paid before due date and amount to be paid after due date are to be calculated and Cust_Id is to be generated automatically.

8. Create a database Salary with fields like Emp_Id, Name, Basic, HRA, DA, Net Salary (Basic + HRA+ DA), Deduction, Gross Salary (net-Deduction).

- a. List out the employee name having salary more than 20000.
- b. Calculate income tax of all employee.
- c. Edit the Basic of "Ravi Kapoor".

9. Sort the student database on the name field (if names are same then on father name). The sorted file contains only Name and percentage fields. List the records in student database and sorted file.

10. Create a single index file the date of joining field of employee database then list the records of index file.

11. Create a report file for the Employee database. It should contain header (heading, data and page no.) and footer (Sum of the Basic, max of basic and average of basic).

12. Generate the sales report. Group the report on a monthly basis and list the quantity sold during each month separately.

13. Write a program to print record whose id is given by the user, check user exist or not.

14. WAP to print customer details a/c to requirement.
15. Write a program to print merit list.
16. Write a program to print record of a student having biggest score.
17. Write a program to print information about a particular product.
 - i) Reorder level
 - ii) Present Stock
 - iii) Etc.

BCA – 407
JAVA PROGRAMMING LANGUAGE

Note:- All programs should be done using DOS editor.

1. Write a program that produces the following output:
Hello World
It's been nice knowing you.
Goodbye world
2. Write a program that prints all the integers between 0 and 36.
3. Make a program that flips a coin 10 times, saying "heads" or "tails" each time. Use Math.random() method that returns a double between 0 and 1.
4. Create an array of 4 random numbers (each between 0 and 1). Use one-step array allocation. Loop down the array and print out the values.
5. Make a program that prints the command line arguments in reverse order, converted to upper case.
6. Except for the first two numbers each Fibonacci number is the sum of the two previous numbers. Write a program that prints the first 20 Fibonacci numbers.
7. Sales tax in JODHPUR City is 8.25%. Write a program that accepts a price on the command line and prints out the appropriate tax and total purchase price.
8. Write a program that reads two numbers from the command line, the number of hours worked by an employee and their base pay rate. Then output the total pay due. Add warning messages to the payroll program if the pay rate is less than the minimum wage (\$ 4.35 an hour as of mid-1996) or the employee worked more than the number of hours in a week.
9. Java has a complex data type. Write a Complex class that represents a single complex number and includes methods for all the usual operations, i.e. addition, subtraction, multiplication, division, etc.
10. Create a Circle class that contains a radius field. Give it a constructor where you pass in the radius. Have your test routine create a few circles, assign a value to the radius, then print out some information about the circles. Put your Circle class and your test routine in two separate classes, like this:

```
Circle.java
public class Circle {
    public double radius;
    .....
}
```

```

    }
    Circle Test. Java
    public class CircleTest {
    public static void main(String[] args) {
        .....}
    }

```

11. Give your Circle a get Area method that calculates its area, and a print Info method that prints out the radius and area. Make a test case that tries these capabilities out.
12. Make a program that creates an array of 10 circles, each with a random radius. Print out the sum of the areas of the 10 circles. Also print the biggest and smallest areas.
13. Create a Rectangle class that contains width and height fields. Also give it a getArea method. Again, make a few test cases.
14. Create a Square class with width and getArea. Then, give both Square and Circle setArea methods that let you specify a desired area. Make a few test cases.
15. Write an application program in Java to implement the different uses of static keyword.
16. Write an application program in Java to implement the different uses of final keyword.
17. Write an application program in Java to implement the different uses of super keyword.
18. Write an application program in Java to implement the different uses of this keyword.
19. Write an application program in Java to implement the simple inheritance.

BCA- 408

OBJECT ORIENTED PROGRAMMING (C ++) LAB

1. Create three overloaded function named area for calculating area of circle, triangle with two arguments, triangle with three arguments.
2. Write a program that swaps two nos using call by reference.
3. Create a matrix class with following functions.
 1. create matrix dyanamically
 2. print matrix
 3. Addition
 4. multiplication
 5. cheek matrix is unit matrix or not
4. Create employee class with four constructors including copy constructor.
5. Write a program that clearly shows use of static member and static function.
6. Create string class with following
 - a. function that creates string dyanamically
 - b. three overloads constructors.
 - c. Functions to join, copy, compare two strings.
7. Overload following operators for matrix class.
 - a. +=

- b. ==
 - c. ++
 - d. ~
 - e. – (unary minus)
8. Write a program to implement hybrid inheritance.
 9. Implement link list in c + + with following functions.
 - a. create link list
 - b. insertion after and before a particular node.
 - c. delete a particular node.
 - e. reverse link list
 10. Implement stack Implement stack using Link list and make PUSH and POP function.
 11. Implement circular queue using link list and insert and delete element in Queue.
 12. create employee database file in c + + and make following functions.
 - a. add new record
 - b. list all records
 - c. delete a particular record

BCA III Year Session 2014-15

SEMESTER V

BCA – 501

VISUAL PROGRAMMING

The Integrated development environment.

Menu bar, toolbars, project, explorer, toolbox, the properties window, The form designer. Form layout, Immediate window, Edit, View, Run, Debut, options, using the application wizards.

Managing Project, Creating the project, Opening, remaining and saving the projects.

Elements of the user interface-Designing the user interface, creating forms and code modules, aligning the controls.

Running the application, Programming an application-programming the command buttons, Grouping controls, Visual Development and Event-driven programming.

Introduction to database handling.

BCA – 502

COMPUTER GRAPHICS & MULTIMEDIA

Display devices: Point and line, display devices, CRT, direct menu, storage tube, plasma panel, color monitor, display procedures, random scan, raster scan, graphic display, VGA and SVGA, pixels and frame buffer.

Graphic out-put: Vector generation, DDA and Bresenham's algorithms, Antialiasims of lines, Character generation,

Display Files: Structure of display file, graphic primitives, normalized device coordinators, display file algorithms for line and move commands, entities text in display file, display file interpreter, polygon entities polygon in display file, adding line style and fill style to graphic system.

Transformations: Scaling and rotation transformations, homogeneous coordinates, translation transformation, transformation matrices and routines.

Viewing transformation: Window and viewport, Viewing transformations, clipping, cropping algorithms.

Graphic device: Locator and selector devices, mouse track ball, light pen, tablet, touch panels.

Introduction to 3-D Graphics: 3-D transformation and projections.

Multimedia: Evolution, sound and audio, image and graphics, file format, Data compression, JPEG, MPEG, RLI animations.

BCA – 503

COMPUTER COMMUNICATION & NETWORKING

Principles of Data Communication: General features and tasks of a communication system, The need for modulation, theory of amplitude modulation, general principles of frequency modulation and phase modulation, Evolution of computer networks, elements of LAN, WAN, MAN

Networking Architecture: ISO-OSI, IBM SNA architecture, their functions and implementation. Concepts of circuit switching, packet switching and network switching. Introduction to serial communication standards and parallel communication interfacing.

Data communication concepts: Types of signals encoding and decoding techniques, signal bandwidth requirements, signal formats used in LAN, switching and broadcast techniques, modulation, multiplexing, switching, network protocols.

Error detection and correcting codes: Hamming codes, parity generation and detection, single error detection and correction, double correction codes. CRC

Transmission media, twisted pair, coaxial cable, optical fiber.

LAN topologies: STAR, BUS and RING network

LAN access techniques: ALOHA, CSMA, token ring and token bus. Issues related with network reliability and security.

BCA – 504

COMPUTER COMMUNICATION & NETWORKING

Introduction: Basic Problems of Economy, Market demand & Mixed Economy, State of Indian Economy, Meaning of an underdeveloped economy, Characteristics of Indian Economy, National Income: Concepts of GNP, NNP Estimates.

Human Resources: Population : Size, growth rate, Composition and density, Quality of population occupational Structure, Distribution, Workforce participation rates, Natural Resources, Natural Resources & Economic Development, Environmental Degradation, Infrastructure, Importance and Present condition in India.

Economic Planning: Objectives and Strategy, Industrial Policy, Review, Public Sector, Evolution, Performance, Future directions, Industry, Industrial Growth, Small Scale Enterprise, Industrial Finance, Labor Problems, Agriculture, Importance in Indian Economy, Causes for low production, Green Revolution.

Capital Formation: Process of capital formation, Mobilization of savings, Capital output ratio, Foreign capital, Serious Economical Problems, Unemployment, Inflation-causes & cures, Foreign Trade, Consumption and direction, Exports, Trade Deficit and Balance of Payment, Convertibility.

Banking: Commercial Banks, Nationalization, Reserve Bank of India, Public Finance, Revenues, Deficit Financing, budgets of state governments, Potential of Indian Economy, New economical Policy, Future directions.

Types of e-commerce: B-B, B-C, C-B

Empowering Your Script with Client Scripting

Data Storage, Programming with control structures, Functions and Procedures, Introduction to server side scripting, Developing active server pages, Using the ASP object Mode, Using the Request and Response objects, Maintaining state between client and Server, Maintaining user information, Using the data environment, Integrating Database with ASP pages, Cyber law, Security over net, EDI.

BCA – 505

DBMS II

Oracle RDBMS, architecture, kernel, system global area (SGA), data base writer, log writer, process monitor, archiver, database files, control files, redo log files, oracle utilities.

SQL: commands and data types, data definition language commands, data manipulation commands, data query language commands, transaction language control commands, data control language commands.

Joins, equi-joins, non-equi-joins, self joins, other joins, aggregate functions, math functions, string functions, group by clause, data function and concepts of null values, sub-queries, views.

PL/SQL, basics of pl/sql, data types, control structures, database access with PL/SQL, data base connections, transaction management, data base locking, cursor management.

Error handling, predefined and user defined exceptions, procedure and functions and their overloading, stored procedures and functions, database triggers.

Practical

BCA- 506

VISUAL PROGRAMMING LAB

1. Design a Digital Clock using Timer Control.
2. Design an application that accepts an Item name form the user and adds it to a List Box.
3. Design application to implement Password check for Security.
4. Design implements for the working of DriveListBox, DirListBox, FileListBox as path name. It should also allow the user to type the File address directly in Textbox.

5. Create a VB application that lets a user decide the Height and Width of a shape through Scroll Bars.
6. To implement the working of Popup menu on Textbox.
7. Design an application that can test whether a temperature is freezing or not. It should be able to test the temperature for both Fahrenheit and Celsius scales. Use the temperatures 32° F and 0° C as the freezing temperatures.
8. Create an application to Display Image file kept in different folders in the system. The application should allow the user to navigate in the folders and list all Image Files (*.BMP,*.JPG) when ever a image files is selected it should get that picture is displayed in an Image Control.
9. Store some Country names and their Capitals. Ask the user to select a Country and its Capital form given two lists. If the match is correct, display “Correct Answer”, otherwise display Error Message and tell the correct answer.
10. Design an application to display Traffic Lights. The lights should display for around 7 seconds. Yellow light should be on for approx. 2 seconds.
11. Write a program to design a simple calculator
12. Design and code COLOR GENERATOR
13. Design and code notepad
14. Write a program to use Combo box
 - a) Add item
 - b) Remove item
 - c) Sort item
15. Write a program using Frame control for grouping of controls.
16. Write a program using data controls to maintain database of a student.
 - a) add record
 - b) Delete record
 - c) Find record
 - d) Update record
17. Write a menu driven PROGRAM.
18. Write a program using connection string to maintain database of a student
 - a) add record
 - b) Delete record
 - c) Find record
 - d) Update record
19. Write a program to use List box
 - a) Add item
 - b) Remove item
 - c) Sort item

1. Detect the Graphics settings of given computer system.
2. Draw a pixel at position X, Y
3. Generate a line using DDA Algorithm
4. Use Bresenham's Algorithm to generate line in different quadrants.
5. Create a display file with Move and Line commands and use this file to generate the graphical object.
6. Draw a geometrical figure (Hut, house etc) using Move and line Relative as well as absolute commands.
7. Draw a rectangle with coordinates (x1,y1) and (x2, y2)
8. Draw a Bar with coordinates (x1, y1) and (x2, 2y)
9. Fill the bar with different styles and colors
10. Display polygons of n side
11. Display text message over a graphic screen
12. Perform justification of text (Horizontal as well as Vertical)
13. Perform basic animation of an object using getimage () and putimage () commands
14. Draw a circle using Bresenham's Algorithm
15. Draw circle using midpoint subdivision
16. Perform Translation Geometrical Translation of a graphic object by TX and TY
17. Perform Scaling Geometrical Translation of a graphic object by Sx and Sy, the scaling factors to enlarge and shrink the geometrical image.
18. Perform Rotation Geometrical Translation of a graphic object and rotate the object by an angle Theta clockwise/ counterclockwise.
19. Plot Bezier curves of degree 2,3,4 and 5 using parametric equation
20. Draw Mandelbrot fractal image
21. Perform the tweening of Line
22. Activate mouse pointer over graphics screen and display mouse pointer coordinates
23. Develop a basic Graphics Editor using mouse.
24. Develop functions for windows look alike buttons and use them to produce menu based graphic system.
25. Save a generated graphical image over a file and reload the file content to generate the same image.

BCA -508
DBMS II LAB
SQL ASSIGNMENT I

1. Display all the employee details who belong to department 10.
2. Display employees name along with their Salary who are MANAGER.
3. Display the employees who are getting Salary between 2000 and 5000.
4. Display the annual Salary of employee of department 30.
5. Display employees who are CLERK and managed by 7698.
6. Display employees of department 10 and 20.
7. Display employees who are not managers.

8. Display employees whose name begins with Character 'S'.
9. Display employees who are analyst but getting salary greater than 2000.
10. Display employees those who are not getting any commission.

SQL ASSIGNMET-II

1. Display all the employees name along with their jobs.
2. Display all the employees having 'A' in their names.
3. Display all the employees having T and 'T' in their names.
4. Display Employees whose job start with 'S'.
5. Display Employees Details in following format:

SMITH-Manager Getting Salary : 1500
 CLERK-Analyst Getting Salary: 1500

.....

* Column Name: Ename Job Sal

6. Display Employees Details in following format:

Employee: 7369 form Department: 10 working as: MANAGER salary: 1500

.....

7. Display Employee who is top in Hierarchy.
8. Display Employees who are not there in department 30.
9. Display Employees who are working with department 10 or 20 and who are MANAGER or CLERK.
10. Display Employees who are CLERK and getting salary more than 1000.
11. Display Department located in 'XXX'
12. Display all the Department
13. Display all the Employees who are Joined on a given date '10-MAR-81'.
14. Display all Employees who are 'SALESMAN' or 'CLERK' or getting salary more than 1000.
15. Display all the Employees who are not 'SALAESMAN' or 'CLERK'.

Assignment III- Functions

1. Display all the Employee Names in lowercase.
2. List first occurrence of 'A' in each employee name.
3. Display all employees name with their length.
4. Display all the Employees names having first character in Capital Letter.
5. Produce the following OUTPUT.

Employee
 Smith (Clerk)
 Allen (Salesman)
 Ward (Salesman)
 ...
 ...

... ..

6. Display all the 'MANAGER' Job as 'mAnAger'.
7. Display all the employee names up to character 'N'.
8. Display all the employees who are not MANAGERS.
9. List all the departments with the position of 'AEES' and 'C' in their dname.

Dname	A at	ES at	C at
Accounting	1	0	3
Research	5	2	0
Sales	2	4	0
Operations	5	0	0

10. Produce the following OUTPUT.

Employee Detail

Smith Working in Department: 10 Post Held: MANAGER Salary: 1500

Allen Working in Department: 20 Post Held: SALESMAN Salary: 3500

Ward Working in Department: 10 Post Held: CLERK Salary: 4500

11. Produce Following OUTPUT.

Department Name	Location
Accounting	New York
Research	Dallas
Sales	Chicago
Operations	Boston

12. Display all the employees who are 'managers' [Write is same way in criteria].

13. Display the system date.

14. Display the square root of 3 with two decimal places.

15. Produce the following OUTPUT for the value 45.953.

First	Second	*Third	Fourth
45	45.9	50	46

16. Display 'UNMANAGEABLE' along with the employee name who are not managed by anyone.

17. Display each employee name with hire date and salary Review Date. Assume review date is one year after hire date, order the output in ascending.

18. Write a query to calculate the length of time any employee has been with the company.

19. List the employee name and salary increased by 15% and expressed as a whole number.

20. Display all the Salesman whose monthly salary is greater than their commission. Output should be ordered by Salary If two or more employees have the same salary sort by employee name.

21. List all the Employees who joined after '01-JAN-80' and before '18-AUG-80'

22. Write a query which will return the day of the week for a given date.

23. Employee hired on or before 15th of any month are paid on last Friday of the month. Those hired after 15th are paid the last Friday of the following month. Print a list of employees their hire date and first pay date.
24. List Name and Job for every employee name should be left aligned and job should be right aligned.
25. List all the employees who have more than 16 years of experience.

Assignment IV-Group BY

1. Display the difference between Highest and the Lowest salary for each department.
2. List only those jobs which are having maximum salary more than 4000.
3. List all jobs for MANAGER and difference between Average and maximum salary.
4. Find all the department which are having more than 3 employees.
5. Display Minimum and maximum salary for each job type.
6. List average salary for each department.
7. Display the number of employees working under each Manager.
8. Find out how many Managers are there without listing them.

Assignment V- SUBQUERY

1. Display job with the highest salary.
 2. Display employees who earn more than lowest salary of department 30.
 3. Find all the employees who are getting salary more than the overall minimum salary.
 4. Display all the employees who do not manage anyone.
 5. Display the most recently hired employee.
 6. Display the year in which most people join the company.
 7. Find all the employees who have the same job as 'BLAKE'.
 8. Display ename.job. hire date for employees whose salary is greater than the highest salary in SALES department.
 9. List the name and year of hire for each manager.
 10. List out the number of employees working under each manager.
 11. List out the number of employees working under 'SMITH'.
- [Assuming he is Manager do accordingly]
12. List the average salary for each department. Then find out the Employees who are getting more than those average salary.
 13. Find out all the employees having who are working in department which is having more than 3 employees.
 14. List only those jobs where maximum salary is equal or greater than 5000.
 15. Find out the Employees, where smith is working.
 16. Display Employees where department having all the unique jobs.
 17. Display Employees which at least 3 employees are there.
 18. Display number of tables in student account.
 19. Display all the employees who working in same department on same post where SMITH is working.
 20. Display departments for which minimum salary is more than the minimum salary of department 10.

21. List all the employees for all the jobs there in department 10.

Assignment VI-Procedures/ Functions

1. Create Procedure disp_emp, which will display a employee's complete information.
2. Create a function check_dept, which will check for a dept and return true if found otherwise return false.
3. Create procedure check_emp. [Same as q.2]

IMP: All the functions from Q4 to Q6 will return Boolean i.e. TRUE/ FALSE

4. Create function Insert_emp, which will insert a rows in emp table and emp_hist tables simultaneously.
[Right now you may enter some static values only]
5. Create function update_emp, which will update an employee record. [Any Column]
6. Create function update_dept, which will update a department record. [Any Column]
7. Create procedure disp_dept, which will display a department's complete information.
8. Create procedure disp_emp, which will display a department's complete information.

PL/ SQL Assignments

Write a pl/ sql block to raise the salary of all the managers by 1000 and 500 for all the clerks.

SEMESTER VI

BCA – 601

MANAGEMENT INFORMATION SYSTEM

Overview of a Management Information System. Computers and information processor, Data, information systems, Information resource management and decision making, MIS structure, Structure base on management activity and organizational functions.

Various phases in the decision making process. Behavioral models of decision maker and organization decision making. Decision under psychological stress and methods for deciding among alternatives.

Documentation and communication decision rules. Relevance of decision making. Age of information and application of information. Type of system and subsystems. Preventing systems entropy. System stress and system change. System concepts and its use in MIS.

Concepts of organizational planning, computational support for planning. Nature of control in organization. Information system support for control. The basic model of organizational structure. Information processing model of organization structure. Management theories and their application to MIS.

Decision support system (DSS), Expert system (ES), support for decision making phases. Various approaches of Decision support system.

BCA – 602

SYSTEM ANALYSIS AND DESIGN

Introduction: System concept and the need for system approach, Definition of system and system analysis, Factoring into subsystems, Black box system, Introduction to the basic elements of the system, Different types and behavior of system.

The System Development Life Cycle and System Analyst: Source and inspiration of a new system development, Recognition and need, Linear approach and prototype approach, Different phases in SDLC, Role of System Analyst.

System Analysis: Importance of planning and control, Information Gathering: Various Methods, Tools of Structured Analysis: DFD, Decision Tree, Structured English, Decision Tables, Data Dictionary, Feasibility study.

System Design: The Process of Design: Logical and Physical development, Methodologies: Structured, Form-Driven IPO Charts etc, Input Output From Design, File Organization: Sequential Indexed, inverted List, Database Design, Logical and Physical View of data.

System Implementation: Need of Testing, Test Plan, Quality Assurance, Trends in Testing Audit Trail, Post Implementation Review, Project Scheduling, Selection of Hardware and Software.

Security and Recovery in System Development: System Security: Definition, Threats on system security, Control measures, Disaster/ Recovery Planning, Ethics in System Development.

PRACTIVAL

BCA 603 SEMINAR

- a) Content Material : 50 Marks
- b) Presentation : 30 Marks
- c) Viva Voce : 20 Marks

BCA – 604 System Design Labs

- a) Content Material : 50 Marks
- b) Presentation : 30 Marks
- c) Viva Voce : 20 Marks

BCA – 605 Projects

- a) Content Material : 50 Marks
- b) Presentation : 30 Marks
- c) Viva Voce : 20 Marks