BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)
B.C.A. COURSE STRUCTURE

Paper No.	SUBJECT CODE	Type ofCourse	Course Name	Credit	Internal Marks	Term-End Marks	Total Marks
SEMESTER –I							
EC-101	22633	Elective Course	Environmental Science –I	2	30	70	100
FC-102	22634	Foundation Course	Business Communication -I	2	30	70	100
CC-103	22635	Core Course	Fundamental of Computer Organization –I	4	30	70	100
CC-104	22636	Core Course	Introduction to Programming (C Language)	4	30	70	100
CC-105	22637	Core Course	RDBMS-I	4	30	70	100
CC-106	22638	Core Course	Mathematics	4	30	70	100
CC-107	22639	Core Course	Practical Based On (104,105)	4	00	100	100
SEMESTER – II							
EC-201	22640	Elective Course	Environmental Science –II	2	30	70	100
FC-202	22641	Foundation Course	Business Communication -II	2	30	70	100
CC-203	22642	Core Course	Fundamental of Computer Organization –II	4	30	70	100
CC-204	22643	Core Course	Web Designing	4	30	70	100
CC-205	22644	Core Course	Advanced C Programming	4	30	70	100
CC-206	22645	Core Course	Statistics	4	30	70	100
CC-207	22646	Core Course	Practical Based On (204,205)	4	00	100	100

B.C.A.Course:	Environmental Science –I	Course No: EC-101
Semester: 01	Type of Course: Elective Course	
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks		
Credits: 02		Theory Hours: 30

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Natural resources	8	18
	- Introduction - Types of natural resources a. Renewable and b. non renewable resources – - Natural resources and associated problems. - Renewable resources -1 : Forest Forest types in India Deforestation Forest functions Threats to the forest in India - Renewable resources-2: Water - Over-utilization and pollution of surface and underground water. - Effect of Global climate change on water management. - Water for agriculture and power generation. Sustainable water management.		
Unit-2	Renewable resources- 3: Energy	8	18
	- Hydroelectric power, Solar energy - Biomass energy - Wind power Tidal and wave power - Nuclear power Energy conservation		
Unit-3	Ecosystem	7	17
	- Producers consumers and decomposers - Food chain food webs and ecological pyramids - Forest ecosystem - Desert ecosystem - Aquatic ecosystem - Fresh water and Marine ecosystem		
Unit-4	Biodiversity	7	17
	- Value of biodiversity - Consumptive use value - Productive use value - Social value - Ethical and moral values -Aesthetic value -Option value India as a mega diversity nation - Threats to biodiversity		
Reference Books			
1. Paryavaran Adhyayan – University Grants Commission Oriental Longman private limited.			

B.C.A.Course: Business Communication-I Course No: FC-102
Semester: 01 Type of Course: Foundation Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks
Credits: 02 Theory Hours: 30

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Barriers of communication	8	18
	- What is communication? - Physical barriers - Language or semantic barriers - Socio-psychological barriers and how to over barriers.		
Unit-2	Improve business english & grammar.	8	18
	- Use of Internet Chapter 1 only from 50 Ways to Improve Business English Using the Internet - Introduction of email. - Introduction of Verb Forms - Introduction of Modal Auxiliary Verbs		
Unit-3	Parts of Speech	7	17
	- Jupp and Milne Grammar Book Chapter 1 only		
Unit-4	Tenses and Vocabulary	7	17
	- Introduction of Tenses Giving Personal Information. - Antonyms - Synonyms - Prefix, suffix - one word substitute		

Reference Books

1. Jupp, and Milne, 'English Sentence Structure', ELBS, 1984.
2. Business Communication. By Sathya Swaroop Debasish &Bhagaban Das. PHI Learning Private Limited. Delhi. 110092.
3. Business Communication" Rai & Rai, HimaliyaPublishibg House, Mumbai
4. Bond Ruskin, 'Treasury of Stories for Children', Puffin Books, New Delhi, 2001
5. Bacon, Francis, 'English Essayists', (Ed)Sinha, Susanta, OUP, 1987
6. "Communication" By C.S. Rayudu. Himaliya Publishing House.
7. Green, David, 'Contemporary English Grammar Structures and Composition', Mac Millan, 1971

B.C.A. Course: Fundamental of Computer Organization-I Course No: CC-103
Semester: 01 Type of Course: Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks
Credits: 04 Theory Hours: 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Basics of Computer	16	18
	- Introduction: Block diagram of a computer, characteristics of computer - Generation of computer: First, Second, Third, Fourth and Fifth Classification of Computer system: Mini Computers, Micro Computers, Mainframe computer, super computer. - Uses and Application of Computer - Basics of Windows: Desk top, file, folder, icon, Windows explorer, and Control panel, Recycle bin, etc.		
Unit-2	Input/ Output Devices and Storage Device	16	18
	- Input Devices: Key board, mouse, and touch panel. - Display Devices: LCD and LED Monitors, Touch Screens - Printer and Scanner: Dot matrix, Line, Drum, Ink Jet, Laser, scanner. - Magnetic storage & Hard Disk, Optical storage technology, CDs, DVDs. Flash memory, Memory stick (pen drive)		
Unit-3	Data Representation and Number Systems	14	17
	- Representation: Representation of Number, Binary, Octal, Hexadecimal number and its arithmetic. - Representation of Integers, Representation of Fractions, Representation of Character, Characters codes (ASCII, EBCDIC, UNICODE) - Binary arithmetic's: Binary addition and subtraction. Binary Multiplication and Division with the help of long-hand method. - Conversion of Numbers: Conversation of number in Decimal, Binary, Octal, Hexadecimal.		
Unit-4	Processors, Memory, port and Computer buses	14	17
	- CPU organization: Registers, ALU, and Control Unit, execution of instruction Primary Memory: RAM, ROM, Types of RAM and ROM - Cache Memory : L1 cache and L2 cache - Port: Parallel Port, Serial Port, USB Port and SCSI Port - Introduction to buses, Read and write cycle, introduction to FSB, PCI Bus and USB.		

Reference Books

1. Tanenbaum A. S.: Structured Computer Organization, Prentice-Hall of India Pvt. Ltd.
2. V. Raja Raman: Fundamentals of Computers
3. Alexis Leon, Mathews Leon: Information Technology

B.C.A. Course: Introduction to Programming(C Language) Course No: CC-104
Semester: 01 Type of Course: Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks
Credits: 04 Theory Hours: 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Programming Language Fundamentals	16	18
	- Flowchart and Algorithm - Introduction to programming language and types of programming language - Concept of Editor, Compiler, Interpreter, Translator, Assembler - Getting started with C:Histroy, Structure of C program, Compilations & linking C program - Character Set, Keywords, Identifier, Data Type, Variable and Constant		
Unit-2	Programming Constructs	16	18
	- Formatted Input and output statements - Operators - Decision making and Branching (If, if-else, switch etc) - Looping construct (While loop, Do..While loop, For loop etc) - Break, Continue, go to and exit		
Unit-3	Array, sorting searching technique, character and string handling	14	17
	- Introduction of array - Declaration and initialization of 1-D and 2-D arrays - Programming using 1-D and 2-D Array - Sorting method(selection, bubble), - Searching method (linear, Binary) - Declaration and initialization of string and character data - Character and string operation - Character and String handling Function		
Unit-4	Functions	14	17
	- Concept of modular programming - Elements of function, Type of Function - Declaration, Calling, and Defining a function. - Passing Array and string as function argument - Built-in Function: math's, input output function etc		

Reference Books

1. Programming in ANSI 'C' – Balaguruswamy: TMH.
2. Let Us C By Yasvant Kanitkar
3. Mulish Cooper: The Spirit of C, Jaico Pub. House, 19th Edition-1999

B.C.A. Course: RDBMS-I Course No: CC-105
Semester: 01 Type of Course: Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks
Credits: 04 Theory Hours: 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit 1	Introduction to database	16	18
	- Basic concepts – Data, Information, Database, DBMS - Overview of RDBMS – Tables, records (rows) & fields (columns) - Applications of RDBMS. - Theoretical concepts – Entity, attribute, Tuple, Domain Set, Relationship between entities, E-R Diagrams, Normalization - Dr. Codd's 12 rules		
Unit 2	Basic elements of database and Detailed look on Queries in open office.	16	18
	- Creating a table, various data types, other properties of field - Creating form and report using single table - Modifying form and report layout - Select queries – By Design and SQL statement – on single table - Select queries based on multiple tables (rigorous practical exercises to be covered) - Insert, Update & Delete queries – Design, SQL statements, execution, How they differ from select query - Advanced query building - Automating Tasks using Macro		
Unit 3	Electronics Spreadsheet as database in open office	14	17
	- Introduction to spreadsheet : Opening Spreadsheet, Menus - main menu, Toolbars, Spread sheet addressing - Rows, Columns & Cells, Referring Cells & Selecting Cells - Entering the data in tabular form, inserting / deleting of rows and columns - Using formula in columns - Database operations: Sorting, Filtering, Consolidation, and Subtotal.		
Unit 4	Importing & Exporting Data in open office	14	17
	- Importing Data from text file, XML file, Spreadsheet file - Exporting Data to text file, XML file, Spreadsheet file - Managing Database – Taking Backups & Repair Database		

Reference / Text-Books / Additional Reading :

1. Desai Bipin C: Introduction to database Systems, West Publishing Co.
2. A conceptual guide to open office.org3 R. Gabriel Gurely

B.C.A. Course: Mathematics Course No: CC-106
Semester: 01 Type of Course: Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks
Credits: 04 Theory Hours: 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit 1	Sets and Functions	16	18
	- Sets - Introduction to set theory, Methods of representation of a set, - Operations on Set, Algebra of Sets, DE 'Morgan's Law and examples. - Functions - Function Definition, Domain, Range, One-to-One function, onto Function. Composite function and Inverse of a function.		
Unit 2	Vectors & Matrices	16	18
	- Definition of Vector, Addition and Subtraction of Vectors, Magnitude of a Vector, Unit Vectors, Dot Product and Cross Product. - Definition of a Matrix, Equal matrices, Diagonal element of a matrix, Row matrix, Column Matrix, Symmetric Matrix - Skew-Symmetric - Matrix, Orthogonal Matrix, Diagonal Matrix, Identity Matrix. - Operation on a Matrix (Addition, Subtraction and Multiplication), - Inverse of a Matrix.		
Unit 3	Permutation & Combination	14	17
	- Permutation - Meaning of permutation, Formula of permutation, Permutation of n different things, Permutation of similar things, - Permutation of repeated things, Circular Permutation - Combination - Combination: Meaning of Combination, Formula of Combination.		
Unit 4	Graph Theory	14	17
	- Introduction to Graph, Graph Definition, Vertices, Edges, Loops, - Parallel Edges, Simple Graph, Finite Graph, Adjacent vertices, - Incidence between vertex and edge, Degree of a vertex, Isolated - Vertex, Pendent Vertex, Null Graph. Isomorphism, Labeled Graph,		

	- Unlabeled Graph. Walk, Closed Walk, Open Walk, Simple Path, Circuit, - Connected Graph. - Tree Definition, Rooted Tree, Binary tree and its properties, Uses of - Binary Tree. Level of a tree. - Note: Only Concepts and Simple Examples are included. Theorems are not included.		

Reference / Text-Books / Additional Reading :

1. D. C. Sancheti, V. K. Kapoor: Business Mathematics, Sultan Chand & sons.
2. Lipschutz & Marc Lipson: DISCRETE MATHEMATICS, Tata McGraw Hill
3. Narsingh Deo: Graph Theory with application to engineering and computer science, Prentice Hall of India Pvt. Ltd

B.C.A.	Course: Practical	Course No: CC-107	
Semester: 01	Type of Course: Core Course		
Marking Scheme: External Examination: 100 + Internal Evaluation: 00 = 100 Marks			
Credits: 04	Practical Sessions per Week: 08	**Practical Hours**: 120 Hours	
Unit	Detailed Syllabus	**Teaching Hours**	**Marks/ Weight**
Unit-1	Practical Problem from -104	60	50
Unit-2	Practical Problem from -105	60	50

B.C.A.	Course: Environmental Science -II	Course No: EC-201
Semester: 02	Type of Course: Elective Course	
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks		
Credits: 02		Theory Hours: 30

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Climate change	8	18
	- Global worming - Case study of global warming - Acid rain - Case study of Acid rain - Ozone layer depletion - Case study of Ozone layer depletion		
Unit-2	Pollution	8	18
	- Air pollution - Water pollution - Noise pollution - Pollution case study - Minamata disease - Ground water pollution in India - Pesticides pollution in India - River pollution in India.		
Unit-3	Disaster management	7	17
	- Floods, Earthquake, Cyclones & Landslide - Social issues and the environment : - Unsustainable to sustainable development - Water conservation - Rain water harvesting - Water shed management - The air (prevention and control of pollution) Act - The water (prevention and control of pollution) Act - The wildlife (protection) Act - Using an environmental calendar of activities		
Unit-4	Population Growth and the Environment	7	17
	- Population growth variation among nation - Population explosion : family welfare program me -Methods of sterilization -Urbanization -Urban poverty and environment -Environment and human health -Bhopal gas incident -Climate and health		

	-Infectious disease -Globalization and Infectious disease -Water born disease -Water scarcity diseases -Diarrhea -Cancer and the environment		
Reference Books			
1. Paryavaran Adhyayan – University Grants Commission Oriental Longman private limited.			

B.C.A. Course: Business Communication-II Course No: FC-202
Semester: 02 Type of Course: Foundation Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks
Credits: 02 Theory Hours: 30

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Public Speaking	8	18
	- Definition - Components of Speech - Presentation Methods, Audience Analysis - Advantages &Disadvantages of Effective public speaking		
Unit-2	Professionalism.	8	18
	- Personal and Food Etiquette - Professions and occupations.		
Unit-3	Grammar	7	17
	- Active Passive Voice - Direct-Indirect Speech - Word Building		
Unit-4	Study of Poetry	7	17
	- Beauty – John Masefield - Old Familiar Faces – Charles Lamb - To the Cuckoo – William Wordsworth. - (Short notes 2/3 each in 500 words approximately)		

Reference Books

1. Jupp, and Milne, 'English Sentence Structure', ELBS, 1984.
2. Poem "Beauty" written by John Masefield.
3. The Old Familiar Faces BY CHARLES LAMB
4. To the Cuckoo by William Wordsworth
5. Bond Ruskin, 'Treasury of Stories for Children', Puffin Books, New Delhi, 2001
6. Green, David, 'Contemporary English Grammar Structures and Composition',Mac Millan, 1971

B.C.A.	Course: Fundamental of computer organization-II	Course No: CC-203
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks		
Credits: 04		Theory Hours: 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Gates and Boolean algebra	16	18
	- Introduction to gates and invertors - Boolean algebra with truth table - Preparing truth table for given circuit - Preparing truth table for given circuit(SOP & POS) - De Morgan's theorem		
Unit-2	Basic digital logical circuits	16	18
	- Integrated circuits - Encoder, decoder - Multiplexer, demultiplexer - Comparators		
Unit-3	Arithmetic circuits	14	17
	- Shifters - Adders, subtractors - Half adder, full adder - Binary adder/subtractors		
Unit-4	Memory units	14	17
	- Latches (RS, D, level locking) - Flip-flops (D, JK) - Registers (shift, buffer, controlled) - Computer bus - Bus width, bus clocking, arbitration, operations		

Reference Books

1. Tanenbaum A. S.: Structured Computer Organization, Prentice-Hall of India Pvt. Ltd.
2. Malvino A. P.: Digital Computer Electronics, Tata McGraw, Hill Pub. Co. Ltd.
3. Thomas Bartee: Computer Architecture & Logic Design, Tata McGraw, Hill Pub. Co. Ltd.
4. Pal Chaudhuri: Computer Organization and Design, Prentice-Hall of India Pvt. Ltd.
5. IBM PC and Clones by Govindrjalu, TMH Publication.

B.C.A.	Course: Web Designing		Course No: CC-204
Semester: 02	Type of Course: Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks			
Credits: 04			Theory Hours: 60
Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Internet Fundamental	16	18
	- Basic concept of Internet, Intranet and Extranet, Internet Applications (WWW,E-mail, FTP & FTP Commands, IRC ,Web Chat, BBS, News Group, UseNet, NetMeeting) - Email Protocol (SMTP, POP, IMAP) - Introduction to TCP/IP, DNS, Search Engine and it's working. - Overview of Internet Security (Firewall and SSL)		
Unit-2	HTML and DHTML	16	18
	- Introduction to HTML - Formatting of Text Hyperlinks, working with images, Image Map, List, Tables and Frame - Working with Form (GET-POST Methods) and Form Tags. - Various Forms Controls		
Unit-3	DHTML	14	17
	- Introduction to style sheet and <STYLE> - Font Attributes, color Attributes, Text Attributes, Border Attributes, Margin Attributes, List Attributes - Working with class, Implement external style sheet - and Tags		
Unit-4	JavaScript and CSS	14	17
	- Introduction of JavaScript, Variable and data types of JavaScript - Decision Making statements , Control structure , Operators of Java Script, Handling event by using Java Script, Message Box in Java Script(Confirm, Alert, Prompt) - Validation using Java Script, Built in Objects (String, Math, and Date) - Introduction, Syntax structure, selectors, background, text, fonts, link, lists , tables, border, outline, margin, padding, align, navigation bar, image gallery, image opacity, etc		

Reference Books
1. Douglas Comer:- Internet - An Introduction Prentice-Hall of India Pvt. Ltd 2. Ivan Bayross: - WEB enabled Comm. Appli. Develop. using HTML, DHTML, JAVASCRIPT 3. Thomas A. Powell:- The Complete reference HTML and CSS 4. Danny Goodman:- Java Script Bible

B.C.A. Course: Advanced C Programming Course No: CC-205
Semester: 02 Type of Course: Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks
Credits: 04 Theory Hours: 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Structure and Union	16	18
	- Structure Declaration and initialization - Creating variable and accessing data members - Array within structure and array of structure - Structure within structure - Union - Passing structure and union as function argument		
Unit-2	Pointer	16	18
	- Declaration, initialization and arithmetic of pointers - Pointer to array and structures - Pointers and strings - Pointers as function arguments - Functions returning pointers		
Unit-3	Dynamic memory allocation and introduction to linked list	14	17
	- Introduction to dynamic memory allocation, malloc() and calloc() functions, - Introduction to linked list, comparison with array, - Creation of singly linked list - Various operations on singly linked list - Singly circular linked list		
Unit-4	File Management, Pre-processors and Bit-wise operators	14	17
	- Introduction to files and its significance - File pointer, declaring file pointer - Opening and closing a file – fopen(), fclose() - Modes to open a text file “w”,”r”,”a”,”w+”,”r+”,”a+”. - I/O operations on files, I/O functions : fread(), fwrite(), fscanf(), fprintf(), fgetc(), fputc(), fgets(), fputs(), fseek(), ftell() - Introduction to pre-processors : #define, #include - Bit-wise operators - Applications of bit-wise operators		

Reference Books

1. Programming In ANSI C by E. Balagurusamy, TMH Publication.
2. Understanding Pointers in C By Yashwant Kanitkar, BPB Publication
3. Programming with C, Schaums Series, and TMH Publication.

B.C.A.	Course: Statistics		Course No: CC-206
Semester: 02	Type of Course: Core Course		
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100 Marks			
Credits: 04			Theory Hours: 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Measure of Central Tendency & Dispersion	16	18
	- Definition, Ungrouped Data, Grouped Data (Discrete and Continuous Grouped data). Mean: Arithmetic Mean, Geometric - Mean and Harmonic Mean for ungrouped data, Combined Mean - Weighted Mean. Median, Quartiles, Deciles, Percentiles and Mode. - Definition, Different measure of dispersion. Quartile Deviation, - Mean Deviation, Standard Deviation, Combined Standard Deviation, Coefficient of Variation.		
Unit-2	Correlation and Regression	16	18
	- Correlation:-Definition, Types of Correlation (positive and Negative correlation), Correlation Coefficient. Karl Pearson's Method and Spearman Rank correlation coefficient method. - Regression - Regression: Linear regression, regression line of y on x and regression line of x on y. Difference between Correlation and Regression.		
Unit-3	Probability	14	17
	- Probability:-Random Experiment, Sample Space, Event, Mutually - exclusive event, Exhaustive event, Equally likely event - Probability Classical definition. (Simple examples of Probability).		
Unit-4	Probability Distribution	14	17
	- Binomial distribution - Poisson Distribution - Normal Distribution		

Reference Books

1. Gupta and Gupta: Business Statistics, Sultan Chand and Sons.

B.C.A.	Course: Practical	Course No: CC-207	
Semester: 02	Type of Course: Core Course		
Marking Scheme: External Examination: 100 + Internal Evaluation: 00 = 100 Marks			
Credits: 04	Practical Sessions per Week: 08	**Practical Hours: 120 Hours**	
Unit	Detailed Syllabus	**Teaching Hours**	**Marks/ Weight**
Unit-1	Practical Problem from -204	60	50
Unit-2	Practical Problem from -205	60	50