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

Paper No.	SUBJECT CODE	Type of Course	Course Name	Credit	Internal Marks	Term-End Marks	Total Marks
			SEMESTER – III				
EC-301	22689	Elective Course	Personality Development	2	30	70	100
FC-302	22690	Foundation Course	Business Communication –III	2	30	70	100
CC-303	22691	Core Course	Operating System	4	30	70	100
CC-304	22692	Core Course	Data and File Structure	4	30	70	100
CC-305	22693	Core Course	Object Oriented Programming with C++	4	30	70	100
CC-306	22694	Core Course	System Analysis and Design	4	30	70	100
CC-307	22695	Core Course	Practical Based On (304,305)	4	00	100	100
SEMESTER – IV							
EC-401	22696	Elective Course	Time Management	2	30	70	100
FC-402	22697	Foundation Course	Business Communication –IV	2	30	70	100
CC-403	22698	Core Course	Advance Operating System and Introduction to Linux	4	30	70	100
CC-404	22699	Core Course	Application Development using VB.NET	4	30	70	100
CC-405	22700	Core Course	Web Application Development using PHP	4	30	70	100
CC-406	22701	Core Course	Object Oriented Analysis And Design	4	30	70	100
CC-407	22702	Core Course	Practical Based On (404,405)	4	00	100	100

Paper No.	SUBJECT CODE	Type of Course	Course Name	Credit	Internal Marks	Term-End Marks	Total Marks
SEMESTER – V							
EC-501	22703	Elective Course	IT Project Management	2	30	70	100
FC-502	22704	Foundation Course	Designing using Photoshop	2	30	70	100
CC-503	22705	Core Course	Software Engineering	4	30	70	100
CC-504	22706	Core Course	Web Application Development Using Asp.Net	4	30	70	100
CC-505	22707	Core Course	RDBMS using Oracle I	4	30	70	100
CC-506	22708	Core Course	Data Communication and Networking	4	30	70	100
CC-507	22709	Core Course	Practical Based On (504,505)	4	00	100	100
SEMESTER – VI							
EC-601	22710	Elective Course	Multimedia and Application	2	30	70	100
FC-602	22711	Foundation Course	Animation Using Flash-MX	2	30	70	100
CC-603	22712	Core Course	Network Security	4	30	70	100
CC-604	22713	Core Course	Core Java	4	30	70	100
CC-605	22714	Core Course	RDBMS Using Oracle II	4	30	70	100
CC-606	22715	Core Course	Project Work	4	30	70	100
CC-607	22716	Core Course	Practical Based On (604,605)	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

B.C.A. Course: Personality Development Course No: EC-301
Semester: 03 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	Emotional intelligence	8	18
	- What is emotional intelligence? - Emotional Quotient, Emotional, Enlightenment and Business, Emotional Literacy, Miscommunication, Validation - Human Emotional Needs - Developing your EQ		
Unit-2	Negotiation Skills	8	18
	- Negotiation Skills, Guidelines for Successful Negotiation - Negotiations and resolving Conflicts - Distributive Vs Integrative - The Intangibles, Some Tricks, Types of Negotiators, Soft, Hard and Principled Negotiation - Dealing with Difficult People		
Unit-3	Business and Social Etiquette	7	17
	- Introduction, Workplace Etiquette, Travel Etiquette, Formal Dressing Etiquette, Dining Etiquette, Wine matters - Being a Good Guest, Being a Good Host - The Etiquette of Gift Giving - Team Building: Team Building, Basic Team Organization and Characteristics - Team Motivation, Empowering People, Conditions of - Effective Team Building		
Unit-4	Customer Relationship Management	7	17
	- Customer Relationship Management (CRM) - What is CRM, Why CRM - How to Achieve a Better and Stronger Relationship with your Customer? - How to Achieve Customer Delight? - Customer Focused Selling		

Reference Books

1. David A. Whetten and Kim S. Cameron, Developing Management Skills, 8th Edition, Pearson
2. Felix, Oberman. From Hello to Hired: You're Guide to Resume Building and Interview Skills. How to land your ideal job, Kindle Edition, 2015
3. Richard Smith HOW TO GET HIRED: The Step-by-Step System: Standing Out from the Crowd and Nailing the Job You Want, 2015,
4. Emma Sue-Prince, The Advantage: The 7 soft skills you need to stay one step ahead, Pearson

Gulati, Sarvesh. Corporate Skills. New Delhi: Rupa and Co, 2010 and SOFTSPAN (India) PVT. LTD. New Delhi

B.C.A. Course: Business Communication- III Course No: FC-302
Semester: 03 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	Listening –a communication tool	8	18
	- What is listening? Faults of listening How to improve listening skills? Approaches of listening.		
Unit-2	Group Communication	8	18
	- What is group? Group personality - Types of groups (formal and informal) - Role of communication in small group - How to make group discussion effective? Its advantages and disadvantages.		
Unit-3	Interview	7	17
	- Define interview - Features of interview - Types of interview - Guidelines for candidates to prepare for interview		
Unit-4	Orders and their execution	7	17
	- Characteristics of order letter - Placing an order letter - Acknowledging orders - Reply to orders - Cancelling the order		

Reference Books

1. "Essentials of Business Communication" Rajendra Pal and J.SC. Korhali – New Delhi
2. Business Communication. By Sathya Swaroop Debasish &Bhagaban Das. PHI Learning Private Limited. Delhi. 110092.
3. "Communication" By C.S. Rayudu. Himaliya Publishing House
4. Cracking the Coding Interview: by Gayle Laakmann McDowell

B.C.A. **Course:** Operating System **Course No:** CC-303
Semester: 03 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 Theory Hours: 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Basic concept of an operating system**	**16**	**18**
	- Definition and Function of operating systems. - Evolution of operating system: Batch system, Multi programmed system, time sharing and PCs. - Introduction to basic terms & batch processing system: Jobs, Processes files, command interpreter. - Different types of operating system-real time systems, parallel, distributed system. - Operating system structure-monolithic layered, virtual machine & Client server.		
Unit-2	**Process Management**	**16**	**18**
	- Processes: Definition, Process States , Process Control Block ,Context switching. - Process Scheduling: Definition, Scheduling objectives. - Types of Schedulers ,Scheduling criteria : CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time (Definition only) , - Scheduling algorithms : Pre emptive and Non , pre emptive , FCFS – SJF – RR		
Unit-3	**Deadlocks and Threads**	**14**	**17**
	- Definition, Deadlock characteristics, Deadlock Prevention. - Introduction of Deadlock Avoidance: banker's algorithm and problem solving, - Deadlock detection and Recovery. - Threads - Concept of multithreads, Benefits of threads – Types of threads.		
Unit-4	**Memory Management – Basic Memory Management and Virtual Memory**	**14**	**17**
	- Definition, Logical and Physical address Map. - Memory allocation: Contiguous Memory allocation – Internal and External fragmentation. - Paging: Principle of operation – Page allocation – Hardware support for paging – Protection and sharing – Disadvantages of paging. - Segmentation. - Introduction to Virtual Memory.		

	- Page Replacement policies, Optimal (OPT) , First in First Out (FIFO), Least Recently used (LRU)		

Reference Books

1. Silberschatz, Galvin and Gange: Operating System Concepts, Wesley.
2. Tanenbaum A.S., "Modern Operating Systems", 4th Edition, PHI, 2001
3. Stalling W, "Operating Systems", 6th edition, Prentice Hall India.

B.C.A. **Course:** Data and File Structure **Course No**: CC-304
Semester: 03 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction to Data Structure and Sorting Techniques**	**16**	**18**
	- Definition of Data Structure, Classification of Data Structure (Linear, Non Linear) - Applications, Aims and Goals of Data Structure, Sparse Matrix. - Representation of Array in Memory: Row-Major and Column-Major order. - Address calculation of elements of one and two-dimensional arrays. - Sorting and Merging Methods: Insertion Sort, Shell Sort, Quick Sort, Merge Sort.		
Unit-2	**Linear Data Structure : Doubly Link list**	**16**	**18**
	- Introduction to Linked list and its types. - Introduction of Doubly Linked list. - Advantages and Disadvantages of Doubly linked list. - Application of Doubly linked list. - Different between single and double link list. - Operation on Doubly Linked list.(insert, update, delete, display Algorithm and program)		
Unit-3	**Linear Data Structure: Stack and Queue**	**14**	**17**
	- Definition of Stack, Applications of Stack. - Stack Operations using Array (Push, Pop, Peep, Display) - Stack Operations using Linked List (Push, Pop, Peep, Display) (Algorithm and Program of All Stack Operations using Array and Linked List) - Polish Notation: Conversion of Expression (Prefix, Infix, Postfix) (using hand or stack method) Definition of Queue, Applications of Queue. - Queue Operations using Array (Insert, Update, Delete, Display) - Queue Operations using Linked List (Insert, Update, Delete, Display) (Algorithm and Program of All Queue Operations using Array and Linked List) - Circular Queue using Array. - Concept of Priority Queue and Double Ended Queue.		

Unit-4	Non Linear Data Structure: Tree and Graph	14	17
	- Concept of Binary Tree, Representation of Binary Tree: Sequential and Linked List. - Types of Binary Tree : Strictly, Full, Complete, in complete, - Creation of Binary Tree - Binary Tree Traversal : Pre order, In order, Post order (using recursion) Definition of Graph and its terminologies - Representation of Graph : Adjacency Matrix, Adjacency List Definition of Tree, Basic Tree Terminology (Root, Node, Degree of Node, Degree of Tree, Leaf Node, Non Terminal Node, Siblings, Level of Tree, Edge, Path, Depth, Forest)		

Reference Books

1. Data and File Structure: Trembly & Sorenson.
2. Expert in Data Structure with C: R.B.Patel.
3. Data Structure using C: Aaron M. Tanenbaum.
4. Data Structure through C: G.S.Baluja

B.C.A. **Course:** Object Oriented Programming with C++ **Course No:** CC-305
Semester: 03 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Principal Of Object Oriented Programming**	**16**	**18**
	- Introduction of OOP, OOP V/s POP - Concept of OOP – Object, Class, Inheritance, Encapsulation, Polymorphism, Abstraction ,Message Passing - Structure Of C++ Program - Tokens in C++ - Data type, Constant, Variable, Statement & Operators - Function – Member function, Inline function, Friend function - Input/output statements - Declaration & Creation of Class and Object		
Unit-2	**Constructor, Operator overloading and Type conversion**	**16**	**18**
	- Constructor – Types of constructor, characteristics of constructor, constructor overloading. - Destructor - Basic of operator overloading - Types of operator overloading-Unary, Binary - Operator overloading using member function & friend function		
Unit-3	**Type Conversion and Inheritance**	**14**	**17**
	- Type conversion - Categories of type conversion - Basic of inheritance- - Types of inheritance- Single level, multiple, multilevel, hierarchical and hybrid - Constructor in derived class - Concept of Abstract class - Nesting of classes		
Unit-4	**Polymorphism**	**14**	**17**
	- Basic of Polymorphism-Compile time & Runtime polymorphism - This pointer - Pointers to derived classes - Virtual and Pure virtual function - Virtual constructor and destructor		

Reference Books
1. E-Balagurusamy: Object Oriented Programming with C++ Mc Graw-Hill 2. Robert Lafore: Object Oriented Programming with C++ Galgotia Publications. 3. Rajaraman: Object Oriented Programming with C++ New age International

B.C.A. **Course:** System Analysis and Design **Course No: CC**-306
Semester: 03 **Type of Course :** Core Course
Marking Scheme: External Examination**:** 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit 1	**System Concept**	**16**	**18**
	– Introduction to system – Characteristics and elements of system – Types of system – System analysis – System analyst & its role. – CBIS, Information system and categories of information system. – System users.		
Unit 2	**System Development Strategies**	**16**	**18**
	– Introduction to SDLC – Phases of SDLC – Application of SDLC Method – Limitation of SDLC Method – Introduction to SSADM, Need of SSADM – System survey – Structured analysis – Structured design – Advantages of SSADM – System Prototype Method (SPM)		
Unit 3	**Input/ Output Design & Fact Finding Techniques**	**14**	**17**
	– Input – data capture objectives. – Data verification & Validation – Interactive screen – Output - Design of Output & its Objectives – FFT – Interview, Questionnaire, Record Inspection, Observations.		
Unit 4	**Analysis & Design Tools**	**14**	**17**
	– DFD, Symbols uses in DFD, Physical & Logical Design – Decision table & tree – Data Dictionary – HIPO chart, Warnier/Orr diagrams – Structured English		

Reference Book:
1. James A Senn: Analysis and Design of Information Systems, McGraw Hill Intl. Stdt. Edn 2. S. Parthasarthy & B. W. Khalkar: System Analysis & Design 1st Edition, Master Ed.Cons. 3. Yourdon E. and Constantine L. L : Structured Analysis & Design Yourdon press NY

B.C.A.	**Course:** Practical	**Course No:** CC-307
Semester: 03	**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 Based on 304	60	50
Unit-2	Practical Based on 305	60	50

B.C.A. Course: Time Management Course No: EC-401
Semester: 04 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	Introduction	8	18
	- Setting goals - Making goals smart - Plan your success		
Unit-2	Working with time	8	18
	- Evaluate priorities - Analyze your current use of time - Deal with procrastination		
Unit-3	Work environment	7	17
	- Managing your work environment - Identify time bandits - Brainstorm solutions for time bandits		
Unit-4	Meetings	7	17
	- Manage your meetings effectively - Organize your workplace - Learn to delegate- the ABC's of delegation - Learn to say 'NO' - Manage stress effectively		

Reference Books

1. Matt Kane: SURGE your guide to put any idea into action
2. Atul gawande : the checklist manifesto how to get things right
3. David Allen : getting things done: the art of stress free productivity

B.C.A. Course: Business Communication-IV Course No: FC-402
Semester: 04 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	Management Communication	8	18
	- Introduction. - Need For Organizational Communication. - Importance of Organizational Communication. - Principles of Effective Organizational Communication. - Causes for Poor Organizational Communication.		
Unit-2	Written Communication	8	18
	- Introduction. - Essentials of a Good Business Letter. - Basic Considerations while Writing Business Letters. - Parts of Business Letter. - Styles & Layout of Business Letter.		
Unit-3	Corporate Communication.	7	17
	- Corporate & Communication. - Defining Corporate Communication. - Employee Relations & Communication. - Crisis & Disaster - Managing & Communicating		
Unit-4	Conflict and Negotiation in Organizations	7	17
	- What is Conflict? Defining Conflict. - Origins of Conflict. - Guidelines for Effective Conflict Management. - Conflict and Negotiations in Industrial Relations. - Guidelines for successful Negotiations Rights & Wrong.		

Reference Books

1. "Communication: By C.S. Rayudu. Himalaya Publishing House. New Delhi. Chapter No: 08 'Management Communication'. Page No: 216 to 250
2. "Communication: By C.S. Rayudu. Himalaya Publishing House. New Delhi. Chapter No: 04 'Written Communication'. Page No: 146 – 181
3. "Business and Managerial Communication" By Sailesh Sengupta. PHI Learning Private LTD. New Delhi. 110001. Chapter No: 19 'Corporate Communication'. Page No: 529 to 559.
4. "Business and Managerial Communication" By Sailesh Sengupta. PHI Learning Private LTD. New Delhi. 110001. Chapter No: 18 'Conflict & Negotiation In Organization'. Page No: 492 to 528

B.C.A. **Course:** Advance Operating System and Intro. to Linux **Course No:** CC-403
Semester: 04 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**File Management and Directory Management**	**16**	**18**
	– File format, Characteristics of file, File operations, File system structure, – File access methods: Sequential, direct and Index sequential. – Directory structure: single level, two level, tree level , – Directory operations, directory implementation: Linear list, Hash table – Disk Space Allocation Method: Continuous, Linked, Index, Free Space Management.		
Unit-2	**I/O Management**	**16**	**18**
	– Typical PC Bus structure, Pooling and Interrupts, DMA Controller, Kernel I/O Subsystem: I/O Scheduling, Buffering, Caching, Spooling, Error Handling. – Mass Storage Structure and Disk scheduling algorithm (FIFO, SSTF, SCAN, C- SCAN.)		
Unit-3	**Introduction to Unix and Linux Operating System (Open Source)**	**14**	**17**
	– History of Unix Operating System Definition of Kernel, Shell, File, Process, – System Calls., Linux Operating System, Features of Unix and Linux Operating System, Application area of Linux Operating System , Various Linux Flavors, Desktop Environment : (a) X Window Basics (b) KDE Basics (c) GNOME Basics, Advantages and Disadvantages of Linux		
Unit-4	**File Structure and Linux Shells.**	**14**	**17**
	– Understanding File system hierarchy standard, Directory Commands, File and Directory commands, Understanding Job (process). – Process Commands, User commands: Misc Commands, Keyboard commands using ctrl key.		

Reference Books
1. Silberschatz, Galvin and Gange: Operating System Concepts, Wesley. 2. Tanenbaum A.S., "Modern Operating Systems", 4th Edition, PHI, 2001 3. Stalling W, "Operating Systems", 6th edition, Prentice Hall India. 4. Sumitabha Das: Concepts and Application of UNIX 4th edition Tata McGraw Hill 5. Yashwant Kanitkar: Unix Shell Programming, BPB Publication

B.C.A. **Course:** Application Development Using VB.NET **Course No:** CC-404
Semester: 04 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction**	**16**	**18**
	– .Net Framework, Common Language Runtime – Feature & Advantages of CLR. – JIT & It's Types : Pre-JIT, Econo-JIT, Normal-JIT – Introduction to Integrated Development Environment (IDE) – Programming Construct – Variable, Data type, Type Casting, control structure, looping statement, array, function & procedure, Exception Handling.		
Unit-2	**Basic Controls and Advance Control**	**16**	**18**
	– Introduction of form. – Label, Textbox, Button. – Link Label, Combo box, List box, Checkbox, Radio button, Scrollbar. – Timer Control, Group box, Panel – Event Handling, Method & Property of controls. – MDI & SDI form, Main Menu Strip & Context Menu. – Rich text box, Picture box, Date time Picker. – Track bar, Notify Icon, Progress Bar, Tool tip		
Unit-3	**Dialog Box and Database Connectivity**	**14**	**17**
	– Built In Dialog box (Open File Dialog, Save File Dialog, Color Dialog, Font Dialog, Folder Browser Dialog) – ADO.Net Architecture. – Create database using MS Access and accessing database using server explorer. – Database connectivity using programming code. – Database binding with Data Grid View & combo box. – Crystal Report.		
Unit-4	**Object Oriented Programming**	**14**	**17**
	– Class, Object & it's characteristics – Inheritance, Polymorphism. – Function Overloading – Properties: Read Only Properties, Write Only Properties. – Constructor & Destructor. – Small application development.		

Reference Books

1. Steven Holzner: Visual Basic .NET Programming Black Book DeramTech Press.
2. Rod Stephens: Visual Basic 2005 Programmer's

B.C.A. **Course:** Web Application Development Using PHP **Course No:** CC-405
Semester: 04 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction**	**16**	**18**
	– Fundamental of webpage, website and apache server – Static and Dynamic Website – Introduction of PHP-Features, Advantages and Limitations – Data Type, Variable, Constant – Operator in PHP		
Unit-2	**Basic of PHP**	**16**	**18**
	– Conditional Statement – Looping Statement – Array- Types of Array(Numeric, Associative, Multi-dimensional) – PHP Server variables – Built-in-functions: ○ **String**(print(),echo(),chr(),trim(),ltrim(),rtrim(),soundex(),str_word_count(),strcmp(),stristr(),strstr(),strlen(), strpos(), strrev(), substr(), strtoupper(), strtolower(), ucfirst(),ucword(),sucbstr_replace()) ○ **Mathematical**(abs(),sqrt(),log(),floor(),ceil(),pow(), max(),min()) ○ **Date/Time**(Date(),time(),getdate(),gettimeofday(), localtime(),checkdate())		
Unit-3	**Working with form , Cookie and Session**	**14**	**17**
	– Form elements- TextBox, TextArea, Password,RadioButton, Check Box, Combo Box, Image – Buttons – Submit and Reset – Uploading File to web server – POST & GET method – PHP include and require statement – Basic of Cookie-Setting Cookies, Accessing Cookies, Deleting Cookies. – Basic of Session- Starting a Session, Destroying a session.		

Unit-4	Database Connectivity and Error Handling	14	17
	– PHP-MySQL architecture – Database interaction –Creating and connecting database – Executing commands- Selecting, Inserting, Updating, Deleting – Small application development – Error Handling- Try, Catch and Throw block, die() function – Page redirection in PHP		

Reference Books

1. Ivan Bayross,Sharanam Shah:PHP 5.1 For Beginners,Sh off Publishers & Distributors(SPD)
2. Janet Valade: PHP5 & MYSQL Projects, Wiley Dreamtech
3. Dave W. Mercer: Beginning PHP5,Wiley India Edition
4. Steven Holzer: The Complete Reference PHP,Tata McGRAW-HiLL,New Delhi.

B.C.A. **Course:** Object Oriented Analysis and Design **Course No:** CC-406
Semester: 04 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**SYSTEM DESIGN, SYSTEM TESTING & IMPLEMENTATION**	**16**	**18**
	- Introduction to database? - System development in database environment - Design of database – Normalization - Principles of Software Design - System Testing - Testing Strategies - Types of system testing - Level of Testing - System conversion methods – parallel, direct cut over, pilot & phase-in method.		
Unit-2	**OBJECT ORIENTED MODEL**	**16**	**18**
	- What is object oriented model? - Characteristics of OOM – class & object, Link & association, Generalization & Inheritance. - Benefits of OOM - Introduction to OOA & Advantages & Disadvantages of OOA		
Unit-3	**OBJECT ORIENTED ANALYSIS & DESIGN**	**14**	**17**
	- Analysis Techniques – Object Modeling, Dynamic Modeling & Functional Modeling. - Object design process, steps & solution - Defining classes & its implementation, inheritance, association & object representation. - Breaking system into sub system & managing data store.		
Unit-4	**MODELING & IMPLEMENTATION STRATEGIES**	**14**	**17**
	- Object modeling – identifying object classes, user object model, object modeling notations. - Dynamic modeling – state diagram - Functional modeling – steps of constructing function model, DFD - Structural Diagram – what is structural diagram & class Diagram - Implementation strategies		

Reference Books
1. James A Senn: Analysis and Design of Information Systems, McGraw Hill Intl. Stdt. Edn 2. Yourdon E. and Constantine L. L : Structured Analysis & Design Yourdon press NY 3. Object Oriented Analysis and Design by James Rumbaugh, Michael Blaha, William Premerlain, Frederick Eddy, William Lorensen

B.C.A. **Course:** Practical **Course No:** CC-407
Semester: 04 **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 Based on 402	60	50
Unit-2	Practical Based on 403	60	50

B.C.A. Course: IT Project Management Course No: EC-501
Semester: 05 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	Introduction	8	18
	- Definition of the project - Project specification and parameters. - Goals of IT Project Management. - Project management life cycle		
Unit-2	IT Project	8	18
	- Introduction to types of Project. - Overview of Project Planning. - Project Analysis. - Software Estimation.		
Unit-3	Activity Planning	7	17
	- Project Management Activity. - Project Coast Estimation. - Project Planning. - Project Scheduling.		
Unit-4	Risk Management	7	17
	- Risk Management: Resource Allocation –Monitoring and control. - Team Management. - Role and Responsibilities in Project Team - Project Tracking.		

Reference Books

1. John J. Rakos, “Software Project Management”, 1998, Prentice Hall
2. Walker Royce, “Software Project Management”, 2001, Pearson Education.
3. Roger S. Pressman, “Software Engineering”, 2001, McGraw Hill.
4. Jack T. Marchewka, Information Technology Project Management, 4th Edition.
5. Mike Cotterell, Bob Hughes- Software Project Management- McGraw Hill 5th Edition.

B.C.A. Course: Designing using Photoshop Course No: FC-502
Semester: 05 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	Introduction	8	18
	- Photoshop environment - Raster and vector graphics - Photoshop environment elements - Navigating in Photoshop		
Unit-2	Working with images	8	18
	- Image size and resolution - Cropping - Selecting image areas using tools - Modifying selections		
Unit-3	Working with layers	7	17
	- Floating versus fixed selections, undo previous steps, copy selections - Creating layers, transforming layers - Blending and compositing defringing, opacity and blending modes - Feathering edges - Layers effects ,flattening of layers		
Unit-4	Working with image modes and filters	7	17
	- Images modes - Mode characteristics - Grayscale and bitmap mode, color modes - Text filter - Applying various filters to image and text - Adjusting color, brightness, hue, saturation, toning tools.		

Reference Books

1. Desktop publishing by computer world

B.C.A. **Course:** Software Engineering **Course No:** CC-503
Semester: 05 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 02 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction, Software Requirement Analysis & Specification**	**16**	**18**
	– Define -Software & Software Engineering – Software Engineering Approach – Phase Development Process, Project Management – Software Process & It's Characteristics – Software Development Process Models – Water Fall Model, Prototyping, Iterative Enhancement, Spiral Model – Define Software Requirements – Need For SRS – Role of SRS Requirement Process -Problem Analysis ,Requirement Specifications, Validation		
Unit-2	**Software Planning & Designing**	**16**	**18**
	– Team Structure – Egoless team, Chief Programmer Team, Controlled Decentralized Team – Quality Assurance Plan – Verification & Validation, Inspection & Review – Risk Management – types of risk management – System Design principles. – Module level concepts - Coupling & Cohesion – Design Methodology - Structure Chart – Functional approach vs. Object Oriented Approach		
Unit-3	**Coding & Testing**	**14**	**17**
	– Programming Practice – Testing Fundamentals (errors, fault & failure) – Levels of Testing – Testing Methods		
Unit-4	**UML**	**14**	**17**
	– Fundamental of UML – Associations, Multiplicity, Qualified Association, – Reflexive Association, Inheritance & Generalization, Dependencies – Component of UML – Class Diagram, Object Diagram, Use Case Diagram, Activity Diagram		

	– Case study –Library management system, ticket reservation system, hospital management system.		

Reference Books

1. Pankaj Jalote: An Integrated Approach to Software Engineering, Narosa Publication
2. Joseph Schmuller: Teach Your Self UML in 24 Hours, Tec media Publication
3. Roger Pressman: Software Engineering, McGraw-Hill Publication
4. Object Oriented Modeling and Designing with UML, Michael R Blaha & James R Rumbaugh - Pearson

B.C.A. **Course:** Web Application Development Using ASP.NET **Course No:** CC-504
Semester: 05 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction and Basic Controls**	**16**	**18**
	– Introduction of IDE. – Introduction of web forms & Page event life cycle. – Global application class & web.config file. – Advantages and features of asp.net. – State management using view state, query string, session and cookies. – Label, Button and Textbox. – List Controls:Dropdownlist, listbox, checkbox list, radiobutton list,BulletedList. – Radio button, checkbox.		
Unit-2	**Advance controls**	**16**	**18**
	– File upload and Image control. – Hyperlink, table, panel and wizard – Navigation controls using menu, treeview and sitemap path. – Validation Controls – Ad Rotator – Login Controls. – Master Page, Theme and CSS.		
Unit-3	**Working with Database**	**14**	**17**
	– ADO.NET architecture. – Introduction of Server Explorer and its Features. – Create database using sql server express and access with server explorer. – Connectivity using code and sql data source. – Data controls using grid view, form view, det**ails view and data list control.**		
Unit-4	**AJAX & Web services**	**14**	**17**
	– Introduction of AJAX : History, Advantages, Application – AJAX architecture. – AJAX basic controls- Script Manager, ScriptManagerProxy, Update Panel, Update Progress and timer.		

	– Introduction of web services. – Create and deploy web services.		

Reference Books

1. ASP.NET Black BOOK Published By Dreamtech Press
2. ASP.NET UNLEASHED By STEPHEN WALTHER

B.C.A. **Course:** RDBMS using Oracle-I **Course No:** CC -505
Semester: 05 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**DBMS AND RDBMS CONCEPTS & INTRODUCTION TO ORACLE SERVER**	**16**	**18**
	– Overview of DBMS and RDBMS – Three schema Architecture – Data models: Hierarchical Model, Network model, Relational model. – ORACLE Server & Instances – Database Structure & Space Management – Memory & Process Structure – Client Server Architecture – Distributed Database Processing – How Oracle Works		
Unit-2	**BASIC SQL*PLUS**	**16**	**18**
	– Introduction of SQL, Characteristics of SQL. – Basic Data Types of ORACLE, Oracle Operators. – Data Definition Language (DDL) – Data Manipulation Language (DML) – Data Control Language (DCL) – Transaction Processing Language (TPL) – Query Generation using Clause: Where, Between, Distinct, Like, Order by, IN,NOTIN		
Unit-3	**ADVANCE SQL*PLUS-I**	**14**	**17**
	– Data Constrains – Types of Data Constrains. – In Built Functions: Aggregate, Numeric, String, Data/Time, Conversion. – Grouping of Data		
Unit-4	**ADVANCE SQL*PLUS-II**	**14**	**17**
	– Sub queries and Types of Sub queries – Join and types of join – Union, Intersect and minus Clause – Schema and Schema objects: View, Sequence, index, synonyms.		

REFERENCE BOOKS

1. Learn Oracle 8i. By Jose A. Ramalho. Published by:BPB
2. SQL in 21-Days - Techmedia
3. PL/SQL in 21 Days - Techmedia
4. SQL, PL/SQL:THE PROGRAMMING LANGUAGE OF ORACLE By Evan Bayross

B.C.A. **Course:** Data Communication and Networking **Course No:** CC-506
Semester: 05 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Data Communication Fundamentals**	**16**	**18**
	- Introduction of Ancient, Electronic and Computerized Methods of Communication. - Digital and Analog Data - Data transmission Modes (Simplex, Half Duplex and Full Duplex) - Types of Transmission media: Guided and Unguided - Guided Transmission Media: Twisted Pair, Coaxial Cables, Fiber Optics. - Unguided Transmission Media: Radio Waves and Micro Waves		
Unit-2	**Introduction to Computer Network , Local Area Network Technology and Networking Devices**	**16**	**18**
	- Meaning of the basic terms: – Network, Internetwork, Protocol. - Types of Connection (Point to Point and Multipoint.) - Types of Computer Network (LAN, MAN, WAN). - Different types of Server: File Server, Application Server, Mail Server, Web Server, Database Server - Introduction and Characteristics of LAN. - LAN Topologies : Bus, Ring, Star, Tree, Mesh - Functions of Various Networking Components: Repeater, Hub, Switch, Router, Bridge, and Gateway		
Unit-3	**Network Model**	**14**	**17**
	- Switching Technique: Circuit, Packet, and Message Switching - Layered Tasks: Sender, Receiver. - OSI Reference Model. - Connection Less Vs Connection Oriented, Reliable Vs Unreliable Connections - IP Packet Format and IP Addressing(IPV4)		
Unit-4	**Network Applications**	**14**	**17**
	- Domain Name System: DNS Basics, Characteristics, Working Of DNS, DNS Hierarchy. - File Transfer Protocol: FTP Basics, FTP Modes, FTP Commands.		

	- Email: Email Basics, Email Structure, How Email Works? - Email Protocol :SMTP,IMAP, MIME and POP - HTTP Protocol & UDP Protocol.		

Reference Books

1. Data Communication and Networking, Author – Satish Jain / M. Jain, ISBN – 81-7656-484-2, BPB Publication.
2. Data Communication and Networking, Author – Behrouz Forouzan, Tata McGraw Hill Publication

B.C.A. **Course:** Practical **Course No:** CC-507
Semester: 05 **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 Based on 504	60	50
Unit-2	Practical Based on 505	60	50

B.C.A **Course: Multimedia & application** **Course No: EC-601**
Semester: 06 **Type of Course :** Elective Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 02 **Teaching Hours:** 30

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Multimedia- the Concept	**8**	**18**
	- Introduction - Multimedia Definition and Main properties of multimedia system - Combination of media - Use of multimedia in Education, Entertainment, Advertisement, etc.		
Unit-2	Components of Multimedia-1 (Text and Graphics)	**8**	**18**
	- Text - Images and File Format - Graphics and File Format - Basic concept, Digital image representation		
Unit-3	Components of Multimedia-2	**7**	**17**
	- Digital Audio - Basic sound concept, representation of sound, audio formats - Basic concept of Video - Signal representation and Computer video format - Basic concept of animation and languages		
Unit-4	Multimedia application & data compression	**7**	**17**
	- Application of multimedia - Compression technique - JPEG - MPEG - Storage Media		

Reference Books

1. Multimedia: Computing, Communications and Application by Ralf Steinmetz and Klara Nahrshedt (Pearson Education Asia)

B.C.A **Course: Animation using Flash MX** **Course No: FC-602**

Semester: 06 **Type of Course :** Foundation Course

Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100

Credits: 02 **Teaching Hours:** 30

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Introduction	**8**	**18**
	- What is animation - Use of animation - Introduction to flash environment - Menu, toolbox of flash - Managing the workspace - Frames, key frames, blank key frames - timeline		
Unit-2	- Getting started	**8**	**18**
	- Creating shapes - Using primitive tools - Drawing with pen, pencil and line tool - Editing shapes - Using selection tool - Managing color		
Unit-3	- Working with graphics	**7**	**17**
	- Creating rectangle - Creating oval - Simple animation - Manuplating objects - Masking of objects - What is tweening - Motion and shape tween		
Unit-4	- Creating and editing symbols	**7**	**17**
	- Converting text to symbols - Converting object to symbols - Frame by frame animation and onion skin - Giving effects to frame fade in fade out - Working with color		

Reference Books

1. Adobe ® Flash Professional CS5 – Todd Perkins – Wiley India

B.C.A. **Course:** Network Security **Course No:** CC-603
Semester: 06 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Network Security Fundamental.**	**16**	**18**
	- Concept of Computer Security, Challenges of Computer Security. - The OSI Security Architecture. - Types of Security Attacks: Active Attacks and Passive attacks - Security Services: Authentication, Access Control, Data Confidentiality, and Data Integrity. - A Model for Network Security.		
Unit-2	**Cryptography**	**16**	**18**
	- Concept of Cryptography. - Basic terms: Cryptography, Plaintext, Cipher text, Cipher, Key, Encryption and Decryption. - Cryptography Keys: Public Key and Private Key - Types of Cryptography: Symmetric key, Asymmetric key Cryptography. - Symmetric Cryptography: Substitutional and Transposition Cipher.		
Unit-3	**Network Device Securities and E-Mail**	**14**	**17**
	- Switch. - Router. - Network Management System. - Administrative Practice. - Centralize Account Management.		
Unit-4	**IP Security, Firewall and IP Security**	**14**	**17**
	- E-mail Security: S/MIME. - IP Security Overview. - IP Security Architecture. - Application and Benefits of IP Security. - IP Security Services. - Firewall: Introduction, Need for Firewall, Characteristics. - Types of Firewall. - Introduction to Virtual Private Network. - VPN Protocol. - Introduction to Wireless Network Security		

Reference Books

1. Cryptography and Network Security, - William Stallings
   Person – Printice Hall Publication
2. Data Communication and Networking, - Author – Behrouz Forouzan,
   Tata McGraw Hill Publication

B.C.A. **Course: Core Java** **Course No:** CC-604
Semester: 06 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation : 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction to Java**	**16**	**18**
	- History of Java Features of Java, Applications of Java, Java Virtual Machine (JVM) and Byte Code, Buzz Words. - Basics Concept of OOP: Abstraction and Encapsulation, Inheritance and Polymorphism - Comparison Between C++ and Java. - Data types, Operators. - Control Statement, Array, and command line argument. - Structure of Java Programming.		
Unit-2	**Programming in Java**	**16**	**18**
	- Classes, Objects and Methods. - Polymorphism: Method Overloading. - Constructor: Concept of Constructor, Types of Constructor, Constructor Overloading. - Garbage Collection, Finalize () Method. - The 'this' keyword. - 'static' and 'final' keyword. - Access Control: Public, Private, Protected, Default.		
Unit-3	**Inheritance and Packages**	**14**	**17**
	- Inheritance Basic, Types of Inheritance. - Uses of 'super' keyword. - Method Overriding. - Run Time Polymorphism: Dynamic Method Dispatch. - Abstract Method and Class. -'final' Keyword with Inheritance. - Defining Package, Understanding of CLASSPATH. - Importing Packages. - Access Protection		
Unit-4	**Interface , Exception Handling and Multi Threading Programming**	**14**	**17**

	Interfaces: Defining Interface, Implementing Interface. - Implementation of Multiple and Hybrid Inheritance using Interface. - Extending Interface - Exception Handling Fundamentals, Types of Exceptions. - Try…catch Keyword, Multiple Catch Statements. - Throw, Throws, Finally Keywords. - Concept of Multi Threading, Thread Life Cycle. - The main Thread. - Creating Thread, Multiple Thread - Thread Priorities.		

Reference Book

1. Complete Reference Java by Herbert Schildt Publisher:TMH
2. Programming in JAVA by E-Balagurusamy
3. Java Programming Reference by Grant Palmer.

B.C.A. **Course:** RDBMS using Oracle-II **Course No:** CC-605
Semester: 06 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation : 30 = 100
Credits: 04 **Teaching Hours:** 60

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
UNIT-1	**Basic PL/SQL Programming**	**16**	**18**
	- PL/SQL Block Structure - Control Structure - Implicit Cursor Programming - Explicit Cursor Programming - Parameterize Cursor and Cursor For loop		
UNIT-2	**Advance PL/SQL Programming**	**16**	**18**
	- Exception Handling - Stored Procedure and Function - Trigger - Data Concurrency and locking - Package		
UNIT-3	**INTRODUCTION TO DBA and DBA Activity**	**14**	**17**
	- Role of DBA. - Users: Creating a new user, grant command, deleting user. - Privileges: System privileges, object privileges, Assigning object privileges to a user, Viewing User & privileges, revoking a system & an object privileges. - Role: Creating a role, Granting privileges & roles to a role, granting role to a user, viewing the role of a user. - Database Backup and Recovery - Types of Failure - Data structure used for Database recovery Import and export		
UNIT-4	**Data warehousing and Data Mining**	**14**	**17**
	- Data ware housing Definition, usage and trends - DBMS vs. data warehouse, Data marts, Metadata - Data warehouse architecture - Design and construction of data warehouse - Introduction to data mining - Classification and Applications of data mining system		

REFERENCE BOOKS	
	1. Data Warehousing, Data Mining and OLTP; Alex Berson, 1997, McGraw Hill. 2. Learn Oracle 8i. By Jose A. Ramalho. Published by:BPB 3. SQL in 21-Days - Techmedia 4. PL/SQL in 21 Days - Techmedia 5. SQL, PL/SQL:THE PROGRAMMING LANGUAGE OF ORACLE By Evan Bayross

B.C.A. **Course:** Project Work **Course No:** CC-606
Semester: 06 **Type of Course** : Core Course
Marking Scheme: External Examination: 70 + Internal Evaluation: 30 = 100
Credits: 04 **Teaching Hours:** 60

Detailed Syllabus

The objectives of the project is to help the student develop the ability to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and small business solution.
Internal Evaluation scheme: 30 Marks
Submission of project proposal
Progress Report every month (3 Progress Report)
Term End Evaluation 70 Marks:
PROJECT REPORT EVALUATION – 30 MARKS
ACTUAL PROJECT EVALUATION AND VIVA – 40 MARKS

Preparing project report

Student have to prepare project report according given suggestive structure of project report.

Title page
Certificate of work
Acknowledgment
Table of content
Table of Figures

Chapter-1 (Introduction)
Background, Objective, purpose , scope , applicability
Chapter-2 (Requirement And Analysis)
Problem definition, Requirement specification, Hardware Software Requirement.
Planning and Scheduling
Chapter-3 System design
Over all System design using designing Tools
Data Dictionary
Input /Output Design
Chapter -4 Testing and implementation
Testing Approach used
Test cases
Implementation Approaches
Chapter-5
Conclusion
Limitation of system
Future Scope of system
Bibliography

Student have to prepare 2 – copies of report, 1st copy has to submit in college for evaluation (must be in hard binding) and 2nd copy for personal reference.

B.C.A.	**Course:** Practical	**Course No:** CC-607
Semester: 06	**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 Based on 602	60	50
Unit-2	Practical Based on 603	60	50