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

Structure for B.C.A. – CBCS Programme

Semester-I (FY)

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
BCA-EC-101	ELECTIVE	Environmental Science - I	02
BCA-FC-102	FOUNDATION	Introduction to English Language and Literature - I	02
BCA-CC-103	CORE	Fundamental of Computer Organization	03
BCA-CC-104	CORE	Introduction to Programming (C Language)	03
BCA-CC-105	CORE	RDBMS-I	03
BCA-CC-106	CORE	Mathematics	03
BCA-CC-107	CORE	Practical (Based on BCA-CC-104 & BCA-CC-105)	12
		TOTAL	28

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: BCA-CC-103, BCA-CC-104, BCA-CC-105, BCA-CC-106

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

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Natural resourses	06	20
	– Introduction – Types of natural resourses – a. Renewable b. non renewable resoueses – Natural resourses and associated problems. – Renewable resources -1 : Forest Forest types in India Deforestation Forest functions Threats to the forest in India		
Unit-2	Renewable resources-2: Water	06	20
	– Over-utilization and pollution of surface and Undergroundwater. – Effect of Global climate change on water managment. – Water for agriculture and power generation. – Sustainable water management.		
Unit-3	Renewable resources- 3: Energy	06	20
	– Hydroelectric power, Solar energy – Biomass energy, Wind power – Tidal and wave power – Nuclear power – Energy conservation		
Unit-4	Ecosystem	06	20
	– Producers consumers and decomposers – Foodchain food webs and ecological pyramids – Forest ecosystem – Desert ecosystem – Aquatic ecosystem – Fresh water and Marine ecosystem		
Unit-5	Biodiversity	06	20
	– Value of biodiversity – Consuptive use value – Productive use value – Social value – thical and moral values – Aesthatic value – Option value – India as a mega diversity nation – Threats to biodiversity		

Reference Book: Paryavaran Adhyayan – University Grants Commission Oriental longman private limited.

B.C.A.	Course: Introduction to English Language and Literature - I	Course No: BCA-FC-102
Semester: 01	Type of Course: Foundation Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 02	Theory Sessions per Week: 02	Teaching Hours: 30 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Study of Short Stories	06	20
	The Cherry Tree - Ruskin Bond Of Studies- Francis Bacon Five Kinds of Workers- Row and Wren (Short notes 2/3 each in 500 words approximately)		
Unit-2	Study of Poetry	06	20
	Beauty – John Masefield Old Familiar Faces – Charles Lamb To the Cuckoo – William Wordsworth (Short notes 2/3 each in 500 words approximately)		
Unit-3	Parts of Speech	06	20
	Jupp and Milne Grammar Book Chapter 1 only		
Unit-4	Tenses	06	20
	Introduction of Tenses Giving Personal Information		
Unit-5	Vocabulary	06	20
	antonyms, synonyms, prefix, suffix, one word substitute		

Reference Books

1. Bond Ruskin, 'Treasury of Stories for Children', Puffin Books, New Delhi, 2001
2. Bacon, Francis, 'English Essayists', (Ed)Sinha, Susanta, OUP, 1987
3. Language Through Literature, OUP, 1969
4. Palgrave, F. T.,'The Golden Treasury', Rupa & Co, 2001
5. 'Prism', Ed: Board of Editors, Orient Blackswan, 2011
6. Green, David, 'Contemporary English Grammar Structures and Composition', Mac Millan, 1971
7. Issac, Anish, 'Amazing English', Anish Issac's Publishing House, Kerala, 2006
8. Jupp, and Milne, 'English Sentence Structure', ELBS, 1984.

B.C.A.	Course: Fundamental of Computer Organization	Course No: BCA-CC-103
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Basics of Computer	09	14
	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 port	09	14
	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. Port: Parallel Port, Serial Port, USB Port and SCSI Port		
Unit-3	Data Representation and Number Systems	09	14
	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	Introduction to Storage Devices	09	14
	Magnetic storage & Hard Disk, Optical storage technology, CDs, DVDs. Flash memory, Memory stick (pen drive)		
Unit-5	Processors, Memory and Computer buses	09	14
	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 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. RajaRaman: Fundamentals of Computers
3. Alexis Leon, Mathews Leon: Information Technology

B.C.A.	Course: Introduction to Programming (C Language)	Course No: BCA-CC-104
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Programming Language Fundamentals	09	14
	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	09	14
	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 and sorting searching technique	09	14
	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)		
Unit-4	Character, String Handling and Built-in Function	09	14
	Declaration and initialization of string and character data Character and string operation Character and String handling Function Built-in Function: math's, input output function etc		
Unit-5	Functions	09	14
	Concept of modular programming Elements of function, Type of Function Declaration, Calling, and Defining a function. Passing Array and string as function argument		

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: BCA-CC-105
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit 1	Introduction to database	09	14
	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 in open office	09	14
	Creating a table, various data types, other properties of field Creating form and report using single table Modifying form and report layout		
Unit 3	Detailed look on Queries in open office	09	14
	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 4	Electronics Spreadsheet as database in open office	09	14
	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 5	Importing & Exporting Data in open office	09	14
	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: BCA-CC-106
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Sets and Functions	09	14
	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	Permutation & Combination	09	14
	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-3	Vectors	09	14
	Definition of Vector, Addition and Subtraction of Vectors, Magnitude of a Vector, Unit Vectors, Dot Product and Cross Product.		
Unit-4	Matrices	09	14
	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-5	Graph Theory	09	14
	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 Books

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: BCA-CC-107
Semester: 01	Type of Course: Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 12	Practical Sessions per Week: 12	Teaching Hours:180 Hours

Unit	Detailed Syllabus	Marks/ Weight
Unit-1	Practical Problem from BCA-CC-104	50
Unit-2	Practical Problem from BCA-CC-105	50

Structure for B.C.A. – CBCS Programme

Semester-II (FY)

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
BCA-EC-201	ELECTIVE	Environmental Science – II	02
BCA-FC-202	FOUNDATION	Introduction to English Language and Literature - II	02
BCA-CC-203	CORE	Information Technology in Business	03
BCA-CC-204	CORE	Web Designing	03
BCA-CC-205	CORE	Advanced C Programming	03
BCA-CC-206	CORE	Statistics	03
BCA-CC-207	CORE	Practical (Based on BCA-CC-204 & BCA-CC-205)	12
		TOTAL	28

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: BCA-CC-203, BCA-CC-204, BCA-CC-205, BCA-CC-206

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

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Climate change	06	20
	– Global worming – Case study of globalworming – Acid rain and Case study of Acid rain – Ozon layer depletion and Case study of Ozon layer depletion		
Unit-2	Pollution	06	20
	– Air pollution, Water pollution, Noise pollution – Pollution case study – Minamata disease – Ground water pollution, Pesticides pollution, River pollution in India.		
Unit-3	Disaster Management	06	20
	– Floods, Earthquake, Cyclones, Landslide		
Unit-4	Social issues and the environment	06	20
	– 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 calender of activities		
Unit-5	Population Growth and the Environment	06	20
	– Population growth variation among nation – Population explosion : family welfare programme – Methods of sterilisation – 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 scarecity diseases – Diarrhea – Cancer and the environment		

Reference book: Paryavaran Adhyayan – University Grants Commission Oriental longman private limited.

B.C.A.	Course: Introduction to English Language and Literature – II	Course No: BCA-FC-202
Semester: 02	Type of Course: Foundation Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 02	Theory Sessions per Week: 02	Teaching Hours: 30 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Study Poems and Prose	06	20
	Daybreak – Henry Longfellow Beautiful Things – Ellen P. Allerton The Sun and the Planets – C. Jones (Short notes 2/3 each in 500 words approximately)		
Unit-2	Study Poems and Prose	06	20
	Climbing Everest – B. Mathur Gold Frame – R. K. Narayan The Tiger Smiled – Jim Corbet (Short notes 2/3 each in 500 words approximately)		
Unit-3	Improve Business English	06	20
	Use of Internet Chapter 1 only from 50 Ways to Improve Business English Using the Internet Introduction of email		
Unit-4	Professionalism	06	20
	personal and Food Etiquette Professions and occupations		
Unit-5	Grammar	06	20
	Introduction of Verb Forms Introduction of Modal Auxiliary Verbs		

Reference Books

1. Practical English Prose and Verse (Ed) G. E. B. Coe, Orient Longman, 1981
2. Learning English, A Rama Krishna Rao, Orient Blackswan, 2008
3. Hundred Poems, Lok Milap Publication, Bhavnagar, 1994
4. Palgrave, F. T., 'The Golden Treasury', Rupa & Co, 2001
5. Modern Short Stories, (Ed) Khan, M. Q , OUP, 1999
6. Green, David, 'Contemporary English Grammar Structures and Composition', Mac Millan, 1971
7. Issac, Anish, 'Amazing English', Anish Issac's Publishing House, Kerala, 2006
8. Poetry for Pleasure, (Ed)Maung Kaung, OUP, New Delhi, 2005

B.C.A.	Course: Information Technology in Business	Course No: BCA-CC-203
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Information System	09	14
	- Information Systems and Technologies - Importance of Information Systems in Businesses - Components of an Information System - Information System Resources – people, hardware, software, data, network - Gaining strategic advantage through IT - Managerial Challenges of IT		
Unit-2	Functional Business System	09	14
	- Introduction to Information Systems: - Manufacturing, Marketing, Accounting, Human Resources Management, Financial Management, Inventory Management. - Introduction to Enterprise Resource Planning. - Enterprise Applications:-Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management		
Unit-3	Introduction to E-Commerce	09	14
	- Definition, communication perspective, Business Process Perspective, Service Perspective - Classification by nature of transaction : B2B, B2C, C2C, C2B, Non Business EC, Intra-Business EC - Classification of EC Applications: Electronic Market, Inter Organizational System, Customer Services - Benefits to Organizations, Consumers and Society - Limitations of EC, Framework of EC, Future of EC		
Unit-4	E-Commerce Business and Electronic Market Places	09	14
	- Introduction, Eight Key Ingredients of a Business Model, Major B2C and B2B Business Models, Introduction to M-Commerce. - Market space Components, Types of Electronic Markets (Electronic Storefronts, Electronic Malls, Types of Stores and Malls) - Portals and their types, Role of Intermediaries in E-markets, E-market Success Factors, Competitive Factors, Impact of E-Market on Organizations (Marketing, HR, Manufacturing, Finance and Accounting)		
Unit-5	Customer Relationship Management (CRM)	09	14
	- CRM : Meaning, types of CRM, Benefits and Limitations of CRM, Issues in CRM Implementation, Classifications of CRM, Applications, One-to-One Marketing (Personalization, Collaborative Filtering, Customer Loyalty, Trust)		

Reference Books

1. O'Brien J. : Management Information Systems, Tata McGraw-Hill, 2004
2. Jessup L., Valacich J. : Information Systems Today – Why IS Matters, Pearson Education, 2006
3. Electronic Commerce: A managerial Perspective Efraim Turban, Jae Lee, David King, H Michael Chung (Pearson Education.)
4. E-Commerce – Business, Technology, Society Kenneth C Laudon, Carol Guercio Traver (Pearson Education)

B.C.A.	Course: Web Designing	Course No: BCA-CC-204
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Internet Fundamental	09	14
	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	09	14
	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	09	14
	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	09	14
	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)		
Unit-5	CSS	09	14
	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: BCA-CC-205
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Structure and Union	09	14
	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	09	14
	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	09	14
	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	09	14
	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()		
Unit-5	Pre-processors and Bit-wise operators	09	14
	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, TMH Publication.

B.C.A.	Course: Statistics	Course No: BCA-CC-206
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100 Marks		
Credits: 03	Theory Sessions per Week: 03	Teaching Hours: 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Measure of Central Tendency	09	14
	Definition, Ungrouped Data, Grouped Data (Discrete and Continuous Grouped data). Mean: Arithmetic Mean, Geometric Mean and Harmonic Mean for ungrouped data, Combined Mean and Weighted Mean. Median, Quartiles, Deciles, Percentiles and Mode.		
Unit-2	Measure of Dispersion	09	14
	Definition, Different measure of dispersion. Quartile Deviation, Mean Deviation, Standard Deviation, Combined Standard Deviation, Coefficient of Variation.		
Unit-3	Correlation and Regression	09	14
	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-4	Probability	09	14
	Probability:-Random Experiment, Sample Space, Event, Mutually exclusive event, Exhaustive event, Equally likely event and probability Classical definition. (Simple examples of Probability).		
Unit-5	Probability Distribution	09	14
	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: BCA-CC-207
Semester: 02	Type of Course: Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 12	Practical Sessions per Week: 12	Teaching Hours: 180 Hours

Unit	Detailed Syllabus	Marks/ Weight
Unit-1	Practical Problem from **BCA-**CC-204	50
Unit-2	Practical Problem from **BCA-**CC-205	50

Academic Council: 30-05-2017, R.No. (02)

CHOICE BASED CREDIT SYSTEM

Credit and Semester System Syllabus

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

Structure for B.C.A. – CBCS Programme

Semester-III (SY)

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
BCA-EC-301	ELECTIVE	Disaster Management	02
BCA-FC-302	FOUNDATION	Business Communication – III	02
BCA-CC-303	CORE	Operating System	03
BCA-CC-304	CORE	Data and File Structure	03
BCA-CC-305	CORE	Object Oriented Programming with C++	03
BCA-CC-306	CORE	System Analysis and Design	03
BCA-CC-307	CORE	Practical (Based on BCA-CC-304 & BCA-CC-305)	12
		TOTAL	28

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: BCA-CC-303, BCA-CC-304, BCA-CC-305, BCA-CC-306

B.C.A.
SEMESTER – III

Paper EC: 301

Title of the Paper: **Disaster Management** Credits: **02**

Total Marks: **100 Marks**
Semester End Examination 70 Marks
Continuous Internal Evaluation: 30 Marks

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
1	**Introduction to Natural Disaster** **Introduction to Disaster Management.** Types, Trends, Causes, Consequences and Control of Disasters **Geological Disasters:** earthquakes, landslides, tsunami, mining **Hydro-Meteorological Disasters:** Floods, cyclones, lightning, thunder-storms, hail storms, avalanches, droughts, cold and heat waves. **Biological Disasters:** Epidemics, pest attacks, forest fire. **Technological Disasters:** Chemical, industrial, radiological, nuclear. **Man-made Disasters**: Building collapse, rural and urban fire, road and rail accidents, nuclear, radiological, chemicals and biological disasters. **Global Disaster Trends** – Emerging Risks of Disasters – Climate Change and Urban Disasters. **Earthquake** Introduction, Examples of Earthquake from the record, Precautions taken during Earthquake, Richter scale. Destruction caused by earthquake, Earthquake prone zone of India.	09	14
2	**Land slide** Causes of landslide, Types of landslide Sliding forces, Clues to land slides Prevention of landslides, Damage caused by land slide. **Tsunami** Introduction Tsunami in India, Precautions taken during Earthquake Destruction caused by tsunami	09	14
3	**Flood** Types of flood Causes of flood, Damage caused by flood Protective steps against flood, What to do after flood Organization involved in flood relief Major flood records in India **Rain Water Harvesting** Introduction Need for rain water harvesting, Method for rain water harvesting	09	14

4	**Cyclone** Introduction Cyclones of India, Cyclones prone areas of India Destruction caused by cyclones **Fire and Fire Prevention** Precaution for fire, What to do and not to do during fire. Fire safety Management.	09	14
5	**Drought** Introduction Types of drought, Causes of drought Impact of drought, Drought management **Disaster Management in India** Disaster Management Act 2005 – Institutional and Financial Mechanism National Policy on Disaster Management, National Guidelines and Plans on Disaster Management; Role of Government (local, state and national),Non-Government and Inter-Governmental Agencies	09	14

:: REFERENCE BOOK::

1. **Paryavaran Adhyayan** – University Grants Commission Oriental longman private limited.
2. **Paryavaran and Aapatti Vyavasthapan [Gujarati]**, Modi C D & others (2006). Swami prakashan, Patan-384265
3. **Paryavaran and disaster management [Gujarati]**, Patel J C (2006). Parshwa publication, Ahmedabad-380001
4. **Disaster Management**, K Ramana Murthi, 2004. Dominant Publishers and Distributors,New Delhi.
5. **Concept of Ecology**: N. Arumugam Saras publication.

B.C.A.
SEMESTER – III

Paper FC: 301
Title of the Paper: **Business Communication - III** Credits: **02**

Total Marks: **100 Marks**
Semester End Examination 70 Marks
Continuous Internal Evaluation: 30 Marks

UNIT	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit- 1	*ORAL PRESENTATION SKILLS.* Meaning & purpose of Oral Presentation. Structuring the Presentation. Preparation before Presentation. Key Elements of Presentation. Introduction to presentation. Patterns of Presentation. Main Body of the Presentation. Concluding Presentation. Basic guidelines for Designing the Presentation.	09	14+06
Unit -2	*Listening : A COMMUNICATION TOOL* Introduction. What is Listening? Common Faults of Listening. How to Improve Listening Skills? Approaches to Listening.	09	14+06
Unit-3	*Group Communication.* Introduction. What is Group? Group Personality. Types of Groups: Formal and Informal. Why Groups? The Role of Communication in the Small Group. Look at the features that a Group Discussion possesses. How to make Group Discussion effective? Advantages and Disadvantages of Group Discussion.	09	14+06
Unit-4	*Interview* Meaning and Definition of Interview. Purpose of Interview. Essential Features of Interview. Methods of Interview. Styles of Interview. Types of Interview. Preparation of the Candidate for the Interview. Success Tips for the Candidate. Guidelines for the Candidate.	09	14+06
Unit-5	*Job Application and Resume Writing.* Introduction. Definition of Job Application Letter. Features of Job Application Letter. Types of Job Application Letter. Tips for Drafting an Application Letter. RESUME Resume Vs Curriculum Vitae. Types of Resumes. Potential Errors with Resume Writing. Essential Parts of a Resume. Ten Keys Points in Writing Effective Resume.	09	14+06

Reference Books.

1 Business Communication. Sathya Swaroop Debasish & Bhagaban Das. PHI Learning Private Limited. New Delhi.
2 Business Communication and Organization & Management. Rohini Aggarawal Taxman Publisher. New Delhi.
3 Business and Managerial Communication. Sailesh Sengupta. PHI Learning Private Limited. New Delhi.

Recommended reading:

4 Business Communication - K. K. Sinha - Galgotia Publishing Company, New Delhi.
5 Media and Communication Management - C. S. Rayudu - Himalaya Publishing House, Bombay.
6 Essentials of Business Communication - Rajendra Pal and J. S. Korlhalli - Sultan Chand & Sons, New Delhi.
7 Business Communication – HomaiPradhan, Bhende D.S., Thakur Vijaya
8 Business Communication (Principles, Methods and Techniques) Nirmal Singh - Deep & Deep Publications Pvt. Ltd., New Delhi.
9 Business Communication - Dr. S.V. Kadvekar, Prin. Dr. C. N. Rawal and Prof. Ravindra Kothavade - Diamond Publications, Pune.
10 Business Correspondence and Report Writing - R. C. Sharma, Krishna Mohan - Tata McGraw-Hill Publishing Company Limited, New Delhi.
11 Business Communication and Organisational Management – RohiniAggrawal – Taxman
12 Business Communication Strategies – MonipallyMathukutty M.- Tata McGraw –Hill Publishing Company Limited, New Delhi.
13 Handbook of Communication – Narula Uma
14 A Handbook of Commercial Correspondence – A. Ashley – Oxford University Press
15 Business Communication and Organisationaland Management – C.B.Gupta
16 Comprehensive Business Communication – SarojKarnik, P.P.Mehta,- P.V.Kulkarni

B.C.A. **Course:** Operating System **Course No:** BCA-CC-303
Semester: 03 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Basic concept of an operating system**	**9**	**14**
	- 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**	**9**	**14**
	- 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**	**9**	**14**
	- 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 – I Basic Memory Management**	**9**	**14**
	- 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.		
Unit-5	**Memory Management – II Virtual Memory**	**9**	**14**
	- 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**: BCA-CC-304
Semester: 03 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction to Data Structure and Sorting Techniques**	**09**	**14**
	- 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 Linklist**	**09**	**14**
	- 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**	**09**	**14**
	- 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)		
Unit-4	**Linear Data Structure: Queue**	**09**	**14**
	- 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-5	**Non Linear Data Structure: Tree and Graph**	**09**	**14**
	- 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. Tenenbaum.
4. Data Structure through C: G.S.Baluja

B.C.A. **Course:** Object Oriented Programming with C++ **Course No:** BCA-CC-305
Semester: 03 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Principal Of Object Oriented Programming**		
	- 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	**09**	**14**
Unit-2	**Basic C++ Programming**		
	- Function – Member function, Inline function, Friend function - Constructor – Types of constructor, characteristics of constructor, constructor overloading. - Destructor - Input/output statements - Declaration & Creation of Class and Object	**09**	**14**
Unit-3	**Operator overloading and Type conversion**		
	- Basic of operator overloading - Types of operator overloading-Unary, Binary - Operator overloading using member function & friend function - Type conversion - Categories of type conversion	**09**	**14**
Unit-4	**Inheritance**		
	- Basic of inheritance- - Types of inheritance- Single level, multiple, multilevel, hierarchical and hybrid - Constructor in derived class - Concept of Abstract class - Nesting of classes	**09**	**14**
Unit-5	**Polymorphism**		
	- Basic of Polymorphism-Compile time & Runtime polymorphism - This pointer - Pointers to derived classes - Virtual and Pure virtual function - Virtual constructor and destructor	**09**	**14**

Reference Books

1. E-Balaguruswami: 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:** BCA-CC-306
Semester: 03 **Type of Course :** Core Course
Marking Scheme: External Examination**:** 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit 1	**System Concept**	**9**	**14**
	– 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**	**9**	**14**
	– Introduction to SDLC – Phases of SDLC – Application of SDLC Method – Limitation of SDLC Method – Introduction to SSADM		
Unit 3	**Structured System Analysis and Design Method**	**9**	**14**
	– Need of SSADM – System survey – Structured analysis – Structured design – Advantages of SSADM – System Prototype Method (SPM)		
Unit 4	**Input/ Output Design & Fact Finding Techniques**	**9**	**14**
	– Input – data capture objectives. – Data verification & Validation – Interactive screen – Output - Design of Output & its Objectives – FFT – Interview, Questionnaire, Record Inspection, Observations.		
Unit 5	**Analysis & Design Tools**	**9**	**14**
	– 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:** BCA-CC-307
Semester: 03	**Type of Course:** Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 12	**Practical Sessions per Week:** 12	**Teaching Hours:**180 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Practical Based on 304	90	50
Unit-2	Practical Based on 305	90	50

Structure for B.C.A. – CBCS Programme

Semester-IV (SY)

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
BCA-EC-401	ELECTIVE	Nano-Materials & Nano-Technology	02
BCA-FC-402	FOUNDATION	Business Communication – IV	02
BCA-CC-403	CORE	Advanced Operating System and Linux	03
BCA-CC-404	CORE	Application Development Using Vb.Net	03
BCA-CC-405	CORE	Web Application Development Using PHP	03
BCA-CC-406	CORE	Object Oriented Analysis and Design	03
BCA-CC-407	CORE	Practical (Based on BCA-CC-404 & BCA-CC-405)	12
		TOTAL	28

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: BCA-CC-403, BCA-CC-404, BCA-CC-405, BCA-CC-405

B.C.A.
SEMESTER – IV

BCA-EC-401: Nano-Materials & Nano-Technology **Credit: 02**

Total Marks: **100 Marks**
Semester End Examination 70 Marks
Continuous Internal Evaluation: 30 Marks

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
1	**Introduction and preparation** Introduction to Nanomaterials, Optical, magnetic and chemical properties of Nanomaterials, Preparation of Nanoparticles: Chemical Approaches: Chemical reduction: sonoehemical synthesis, Sol-Gel Synthesis, Self assembly. Physical Approaches, Aerosol, Laser vaporization and vapour deposition,sputtering.	09	20
2	**Nanostructured materials** Quantum dots, wells & wires, Carbon Nanotubes (CNTs), Singal walled carbon nanotubes (SENTs), Multiwalled carbon nanotubes (MWNTs), Graphencs. Fullerences. Metal Oxid nanoparticles (NPs), Nanorods, Nanotubes and Nanofibers, Semiconductor quantum dots Polymer NPs.	09	20
3	**Characterization Techniques for Nanomaterials-1:** Paricle size Analyser (Laser seattering), Optical Microscopy, Seanning Electron Mieroscopy (SEM), Transmission Electron Microscopy (TEM), Scanning Tunnel Microscopy (STM).	09	20
4	**Characterization Techniques for Nanomaterials-2:** Paricle size Analyser (Laser seattering), Optical Microscopy, Seanning Electron Mieroscopy (SEM), Transmission Electron Microscopy (TEM), Scanning Tunnel Microscopy (STM).X-ray Diffraction (XRD), Auger Emiissiom Spectroscopy, Electron Spectroscopy for Chemical analysis (ESCA)	09	20
5	**Application of Nanomaterials:** Application Solar energy conversion and catalysis, Polymer with a special architecture: Liquid crystalline systems, Application in displays and other devices, Advanced organic materials, data storage, Photonics, Chemical and biosensors, Nanomedicine and Nanobiotechnology.	09	20

:: REFERENCE BOOK ::

1. Introduction To Nanotechnology: Understanding The Essentials, By Risal Singh And Shipra Mital Gupta
2. Textbook of Nanoscience And Nanotechnology, Textbook By B.S. Murty, Baldev Raj, James Murday, And P. Shankar

B.C.A.
SEMESTER – IV

FOUNDATION COURSE:

BCA-FC-402: Business Communication – IV **Credit: 02**

Total Marks: **100 Marks**
Semester End Examination 70 Marks
Continuous Internal Evaluation: 30 Marks

UNIT	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit- 1	*Communication: An Overview.* Meaning & Definition of Communication. Nature & Attributes of Communication. Purpose of Communication. Types of Communication. Internal & External Communication. Channels of Communication. Verbal & Non Verbal Communication.	09	14+06
Unit -2	*Written Communication.* Introduction. Essentials of a Good Business Letter. Basis Considerations while Writing Business Letters. Parts of Business Letter. Styles & Layout of Business Letter.	09	14+06
Unit-3	*Corporate Communication.* Corporate & Communication. Defining Corporate Communication. Employee Relations & Communication. Crisis & Disaster: Managing & Communicating.	09	14+06
Unit-4	*Conflict and Negotiation in Organizations.* What is Conflict? Defining Conflict. Origins of Conflict. Guidelines for Effective Conflict Management. Guidelines for Effective Conflict Management. Conflict and Negotiations in Industrial Relations. Guidelines for successful Negotiations Rights & Wrong.	09	14+06
Unit-5	*Tenses* Introduction of Tenses. Verb Forms. Active & Passive Voice.	09	14+06

Reference Books

1 Business Communication. Sathya Swaroop Debasish & Bhagaban Das. PHI Learning Private Limited. New Delhi.
2 Business Communication and Organization & Management. Rohini Aggarawal Taxman Publisher. New Delhi.
3 Business and Managerial Communication. Sailesh Sengupta. PHI Learning Private Limited. New Delhi.
4 A Practical English Grammar. A.J. Thomson & A.V. Martinet. Oxford University Press. New Delhi.

Recommended reading:

1. Business Communication - K. K. Sinha - Galgotia Publishing Company, New Delhi.
2. Media and Communication Management - C. S. Rayudu - Himalaya Publishing House, Bombay.
3. Essentials of Business Communication - Rajendra Pal and J. S. Korlhalli - Sultan Chand & Sons, New Delhi.
4. Business Communication – HomaiPradhan, Bhende D.S., Thakur Vijaya
5. Business Communication (Principles, Methods and Techniques) Nirmal Singh - Deep & Deep Publications Pvt. Ltd., New Delhi.
6. Business Communication - Dr. S.V. Kadvekar, Prin. Dr. C. N. Rawal and Prof. Ravindra Kothavade - Diamond Publications, Pune.
7. Business Correspondence and Report Writing - R. C. Sharma, Krishna Mohan - Tata McGraw-Hill Publishing Company Limited, New Delhi.
8. Business Communication and Organisational Management – RohiniAggrawal – Taxman
9. Business Communication Strategies – MonipallyMathukutty M.- Tata McGraw –Hill Publishing Company Limited, New Delhi.
10. Handbook of Communication – Narula Uma
11. A Handbook of Commercial Correspondence – A. Ashley – Oxford University Press
12. Business Communication and Organisationaland Management – C.B.Gupta
13. Comprehensive Business Communication – SarojKarnik, P.P.Mehta,- P.V.Kulkarni

B.C.A. **Course:** Advanced Operating System and Linux **Course No:** BCA-CC-403
Semester: 04 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**File Management**	**9**	**14**
	– File format, Characteristics of file, File operations, File system structure, – File access methods: Sequential , direct and Index sequential.		
Unit-2	**Directory Management**	**9**	**14**
	– 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-3	**I/O Management**	**9**	**14**
	– 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-4	**Introduction to Unix and Linux Operating System (Open Source)**	**9**	**14**
	– 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-5	**File Structure and Linux Shells.**	**9**	**14**
	– 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 Programing, BPB Publication

B.C.A. **Course:** Application Development Using VB.NET **Course No:** BCA-CC-404
Semester: 04 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction**	**09**	**14**
	– .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, Datatype, Type Casting, control structure, looping statement, array, function & procedure, Exception Handling.		
Unit-2	**Basic Controls**	**09**	**14**
	– 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.		
Unit-3	**Advance Control**	**09**	**14**
	– MDI & SDI form, Main Menu Strip & Context Menu. – Rich text box, Picture box, Date time Picker. – Track bar, Notify Icon, Progress Bar, Tool tip – Built In Dialog box (Open File Dialog, Save File Dialog, Color Dialog, Font Dialog, Folder Browser Dialog)		
Unit-4	**Database Connectivity**	**09**	**14**
	– 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-5	**Object Oriented Programming**	**09**	**14**
	– 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:** BCA-CC-405
Semester: 04 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction**	**09**	**14**
	– Fundamental of webpage, website and apache server – Static and Dyanamic Website – Introduction of PHP-Features, Advantages and Limitations – Data Type, Variable, Constant – Operator in PHP		
Unit-2	**Basic of PHP**	**09**	**14**
	– Conditional Statement – Looping Statement – Array- Types of Array(Numeric, Associative, Multi-dimensional) – PHP Server variables – Built-in-functions: o **String** (print(), echo(), chr(), trim(), ltrim(), rtrim(), soundex(), str_word_count(), strcmp(), stristr(), strstr(), strlen(), strpos(), strrev(), substr(), strtoupper(), strtolower(), ucfirst(), ucword(), sucbstr_replace()) o **Mathematical** (abs(), sqrt(), log(), floor(), ceil(), pow(), max(), min()) o **Date/Time** (Date(), time(), getdate(), gettimeofday(), localtime(), checkdate())		
Unit-3	**Working with form**	**09**	**14**
	– Form elements- TextBox, TextArea, Password,RadioButton, Check Box, Combo Box, Image – Buttons – Submit and Reset – Uploading File to webserver – POST & GET method – PHP include and require statement		
Unit-4	**Cookie, Session and Error Handling**	**09**	**14**
	– Basic of Cookie-Setting Cookies, Accessing Cookies, Deleting Cookies. – Basic of Session- Starting a Session, Destroying a session. – Error Handling- Try, Catch and Throw block, die() function – Page redirection in PHP		
Unit-5	**Database Connectivity**	**09**	**14**
	– PHP-MySQL architecture – Database interaction –Creating and connecting database – Executing commands- Selecting, Inserting, Updating, Deleting – Small application development		

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:** BCA-CC-406
Semester: 04	**Type of Course :** Core Course		
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100			
Credits: 03	**Theory Sessions per Week:** 03		**Teaching Hours:** 45 Hours
Unit	**Detailed Syllabus**	**Teaching Hours**	**Marks/ Weight**
Unit-1	**SYSTEM DESIGN**	**9**	**14**
	- Introduction to database? - System development in database environment - Design of database – Normalization - Principles of Software Design		
Unit-2	**SYSTEM TESTING & IMPLEMENTATION**	**9**	**14**
	- System Testing - Testing Strategies - Types of system testing - Level of Testing - System conversion methods – parallel, direct cut over, pilot & phase-in method.		
Unit-3	**OBJECT ORIENTED MODEL**	**9**	**14**
	- 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-4	**OBJECT ORIENTED ANALYSIS & DESIGN**	**9**	**14**
	- 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-5	**MODELING & IMPLEMENTATION STRATEGIES**	**9**	**14**
	- 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:** BCA-CC-407
Semester: 04	**Type of Course:** Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 12	**Practical Sessions per Week:** 12	**Teaching Hours:**180 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Practical Based on 404	90	50
Unit-2	Practical Based on 405	90	50

Academic Council: 30-05-2017, R.No. (02)

CHOICE BASED CREDIT SYSTEM

Credit and Semester System Syllabus

Structure for B.C.A. – CBCS Programme

Semester-V (TY)

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
BCA-EC-501	ELECTIVE		02
BCA-FC-502	FOUNDATION		02
BCA-CC-503	CORE	Software Engineering	03
BCA-CC-504	CORE	Web Application Development Using Asp.Net	03
BCA-CC-505	CORE	RDBMS Using Oracle-I	03
BCA-CC-506	CORE	Data Communication and Networking	03
BCA-CC-507	CORE	Practical (Based on BCA-CC-504 & BCA-CC-505)	12
		TOTAL	28

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: BCA-CC-503, BCA-CC-504, BCA-CC-505, BCA-CC-506

B.C.A.	**Course:** Software Engineering	**Course No:** BCA-CC-503	
Semester: 05	**Type of Course :** Core Course		
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100			
Credits: 03	**Theory Sessions per Week:** 03	**Teaching Hours:** 45 Hours	

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction**	**9**	**14**
	– 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		
Unit-2	**Software Requirement Analysis & Specification**	**9**	**14**
	– Define Software Requirements – Need For SRS – Role of SRS – Requirement Process -Problem Analysis ,Requirement Specifications, Validation		
Unit-3	**Software Planning & Designing**	**9**	**14**
	– 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-4	**Coding & Testing**	**9**	**14**
	– Programming Practice – Testing Fundamentals (errors, fault & failure) – Levels of Testing – Testing Methods		
Unit-5	**UML**	**9**	**14**
	– 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, Techmedia 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:** BCA-CC-504
Semester: 05 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction**	**09**	**14**
	– 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.		
Unit-2	**Basic Controls**	**09**	**14**
	– Label, Button and Textbox. – List Controls:Dropdownlist, listbox, checkbox list, radiobutton list,BulletedList. – Radio button, checkbox. – File upload and Image control. – Hyperlink, table, panel and wizard		
Unit-3	**Advance controls**	**09**	**14**
	– Navigation controls using menu, treeview and sitemap path. – Validation Controls – Ad Rotator – Login Controls. – Master Page, Theme and CSS.		
Unit-4	**Working with Database**	**09**	**14**
	– 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-5	**AJAX & Web services**	**09**	**14**
	– Introduction of AJAX : History, Advantages, Application – AJAX architecture. – AJAX basic controls- ScriptManager, ScriptManagerProxy, UpdatePanel, UpdateProgress 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:** BCA-CC-505
Semester: 05 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**DBMS AND RDBMS CONCEPTS**	**09**	**14**
	– Overview of DBMS and RDBMS – Three schema Architecture – Data models: Hierarchical Model, Network model, Relational model.		
Unit-2	**INTRODUCTION TO ORACLE SERVER**	**09**	**14**
	– ORACLE Server & Instances – Database Structure & Space Management – Memory & Process Structure – Client Server Architecture – Distributed Database Processing – How Oracle Works		
Unit-3	**BASIC SQL*PLUS**	**09**	**14**
	– 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-4	**ADVANCE SQL*PLUS-I**	**09**	**14**
	– Data Constrains – Types of Data Constrains. – In Built Functions: Aggregate, Numeric, String, Data/Time, Conversion. – Grouping of Data		
Unit-5	**ADVANCE SQL*PLUS-II**	**09**	**14**
	– 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:** BCA-CC-506
Semester: 05 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Data Communication Fundamentals**	**09**	**14**
	- 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**	**09**	**14**
	- 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		
Unit-3	**Local Area Network Technology and Networking Devices**		
	- 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-4	**Network Model**	**09**	**14**
	- 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-5	**Network Applications**	**09**	**14**
	- 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:** BCA-CC-507
Semester: 05	**Type of Course:** Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 12	**Practical Sessions per Week:** 12	**Teaching Hours:**180 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Practical Based on 504	90	50
Unit-2	Practical Based on 505	90	50

Structure for B.C.A. – CBCS Programme

Semester-VI (TY)

COURSE NO.	COURSE TYPE	SUBJECT	CREDIT
BCA-EC-601	ELECTIVE		02
BCA-FC-602	FOUNDATION		02
BCA-CC-603	CORE	Network Security	03
BCA-CC-604	CORE	Core Java	03
BCA-CC-605	CORE	RDBMS Using Oracle –II	03
BCA-CC-606	CORE	Project Work	03
BCA-CC-607	CORE	Practical (Based on BCA-CC-604 & BCA-CC-605)	12
		TOTAL	28

Internal Continuous Evaluation:

1. There will be Internal Continuous Evaluation in Theory papers of Core Course.
2. There will be 30 marks for Assignments in Course No: BCA-CC-603, BCA-CC-604, BCA-CC-605

B.C.A. **Course:** Network Security **Course No:** BCA-CC-603
Semester: 06 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Network Security Fundamental.**	**09**	**14**
	- 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**	**09**	**14**
	- 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: Substitutuonal and Transposition Cipher.		
Unit-3	**Network Device Securities**	**09**	**14**
	- Switch. - Router. - Network Management System. - Administrative Practice. - Centralize Account Management.		
Unit-4	**E-Mail and IP Security**	**09**	**14**
	- E-mail Security: S/MIME. - IP Security Overview. - IP Security Architecture. - Application and Benefits of IP Security. - IP Security Services.		
Unit-5	**Firewall and IP Security**	**09**	**14**
	- 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:** BCA-CC-604
Semester: 06	**Type of Course :** Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100		
Credits: 03	**Theory Sessions per Week:** 03	**Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	**Introduction to Java**	**09**	**14**
	- 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**	**09**	**14**
	- 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**	**09**	**14**
	- 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.		
Unit-4	**Packages and Interface**	**09**	**14**
	- Defining Package, Understanding of CLASSPATH. - Importing Packages. - Access Protection - Interfaces: Defining Interface, Implementing Interface. - Implementation of Multiple and Hybrid Inheritance using Interface. - Extending Interface.		
Unit-5	**Exception Handling and Multi Threading Programming**	**09**	**14**
	- 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-Balaguruswami 3. Java Programming Reference by Grant Palmer.

B.C.A. **Course:** RDBMS using Oracle-II **Course No:** BCA-CC-605
Semester: 06 **Type of Course :** Core Course
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100
Credits: 03 **Theory Sessions per Week:** 03 **Teaching Hours:** 45 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
UNIT-1	**Basic PL/SQL Programming**	**09**	**14**
	- PL/SQL Block Structure - Control Structure - Implicit Cursor Programming - Explicit Cursor Programming - Parameterize Cursor and Cursor For loop		
UNIT-2	**Advance PL/SQL Programming**	**09**	**14**
	- Exception Handling - Stored Procedure and Function - Trigger - Data Concurrency and locking - Package		
UNIT-3	**INTRODUCTION TO DBA**	**09**	
	- 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.		
UNIT-4	**DBA Activity**	**09**	**14**
	- Database Backup and Recovery - Types of Failure - Data structure used for Database recovery - Import and export		
UNIT-5	**Datawarhousing and Data Mining**	**09**	**14**
	- Data ware housing Definition, usage and trends - DBMS vs. data warehouse, Data marts, Metadata - Data warehouse architecture - Design and construction of data warhouse - Introduction to data mining - Classification and Applications of data mining system		

REFERENCE BOOKS

1. Data Warehousing, Data Miniing 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:** BCA-CC-606
Semester: 06	**Type of Course** : Core Course	
Marking Scheme: External Examination: 70 + Internal Examination: 30 = 100		
Credits: 03		

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:** BCA-CC-607
Semester: 06	**Type of Course:** Core Course	
Marking Scheme: External Examination: 100 + Internal Examination: 00 = 100 Marks		
Credits: 12	**Practical Sessions per Week:** 12	**Teaching Hours:**180 Hours

Unit	Detailed Syllabus	Teaching Hours	Marks/ Weight
Unit-1	Practical Based on 604	90	50
Unit-2	Practical Based on 605	90	50