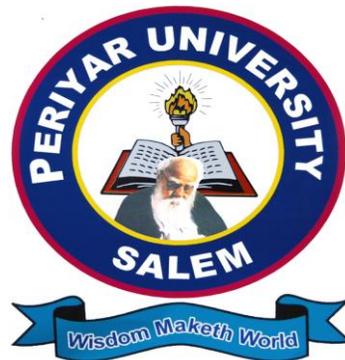


PERIYAR UNIVERSITY
PERIYAR PALKALAI NAGAR
SALEM – 636 011



**DEGREE OF BACHELOR OF
COMPUTER APPLICATION
CHOICE BASED CREDIT SYSTEM**

SYLLABUS FOR B.C.A

**FOR THE STUDENTS ADMITTED FROM THE
ACADEMIC YEAR 2012 – 2013 ONWARDS**

REGULATIONS FOR BCA (COMPUTER APPLICATIONS) DEGREE COURSE with Semester System

(Effective from the academic year 2012-2013)

REGULATIONS

1. ELIGIBILITY FOR ADMISSION

A candidate who has passed in Higher Secondary Examination with Mathematics or Business Mathematics or Computer Science or Statistics (Academic stream or Vocational stream) as one of the subject under Higher Secondary Board of Examination, Tamilnadu as per norms set by the Government of Tamilnadu or an Examination accepted as equivalent thereto by the syndicate, subject to such conditions as may be prescribed thereto are permitted to appear and qualify for the **Bachelor of Computer Application degree examination** of this university after a course of study of three academic years.

2. DURATION OF THE COURSE

The course shall extend over a period of three years comprising of six semesters with two semesters in one academic year. There shall not be less than 90 working days for each semester. Examination shall be conducted at the end of every semester for the respective subjects.

3. COURSE OF STUDY

The course of study shall comprise instruction in the following subjects according to the syllabus and books prescribed from time to time. The syllabus for various subjects shall be clearly demarcated into five viable UNIT s in each paper/subject. Part -I, Part-II, Part – III and Part – IV subjects are as prescribed in the scheme of examination.

4. Examinations

The theory examination shall be three hours duration to each paper at the end of each semester. The candidate failing in any subject(s) will be permitted to appear for each failed subject(s) in the subsequent examination. The practical examinations for UG course should be conducted at the end of the even semester.

4.(a) Submission of record note books for practical examinations

Candidates appearing for practical examinations should submit bonafide Record Note Books prescribed for practical examinations, otherwise the candidates will not be permitted to appear for the practical examinations. However, in genuine cases where the students, who could not submit the record note books, they may be permitted to appear for the practical examinations, provided the concerned Head of the department from the institution of the candidate certified that the candidate has performed the experiments prescribed for the course. For such candidates who do not submit Record Books, zero (0) marks will be awarded for record note books.

5. Revision of Regulations and Curriculum

The University may revise /amend/ change the Regulations and Scheme of Examinations, if found necessary.

6(a). Passing Minimum – Theory

The candidate shall be declared to have passed the examination if the candidate secure not less than 40 marks out of 100 (**CIA – 10 marks out of 25 and EA – 30 marks out of 75**) in the University examination in each theory paper.

6(b). Passing Minimum – Practical

The candidate shall be declared to have passed the examination if the candidate secure not less than 40 marks put together out of 100 (**CIA – 16 marks out of 40 and EA – 30 marks out of 60**) in the University examination in each practical paper.

7. Question Paper Pattern for B.Sc.(CS /B.Sc.(IS))/BCA Courses

7.1(a). *THEORY - Question Paper Pattern [EA] (Total Marks: 75)*

PART – A (10 x 2 = 20 Marks)

(Answer ALL questions), (Two questions from each UNIT)

PART – B (5 x 5 = 25 Marks)

(Answer ALL questions) & (One question from each UNIT with Internal Choice)

PART – C (3 x 10 = 30 Marks)

(Answer ANY THREE questions) & (Open Choice – 3 out of 5 questions)

7.1(b). *THEORY - Internal Marks Distribution[CIA] (Total Marks: 25)*

- Attendance :5 Marks
- Assignment :5 Marks
- Internal Examinations :15 Marks

7.2(a). **PRACTICAL – Marks Distribution & Question paper Pattern** (Max. Marks: 100)

[External [EA]: 60 Marks & Internal [CIA]: 40 Marks]

PRACTICAL - External Marks Distribution (Total Marks: 60)

For each practical question the marks should be awarded as follows (**External**):

- i) Algorithm / Flowchart - 20%
- ii) Writing the program in the main answer book - 30%
- iii) Test and debug the program - 30%
- iv) Printing the correct output - 20%

(Marks may be proportionately reduced for the errors committed in each of the above)

PRACTICAL - Internal Marks Distribution (Total Marks: 40)

- Record : 15 Marks
- Internal Practical examinations : 25 Marks

PRACTICAL Question Paper Pattern

- ✓ **Practical Exam must be conducted at end every Semester**
- ✓ **Practical - I to Practical –VI has same Patten**
- ✓ **Student may select any two questions out of four questions.**

8. Commencement of this Regulation:

These regulations shall take effect from the academic year 2012-13, i.e, for students who are to be admitted to the first year of the course during the academic year 2012-13 and thereafter.

Scheme of Examinations from the Academic Year 2012-2013
Credit Distribution as per the University Norms.

SEMESTER	I	II	III	IV	V	VI	Total
PART - I	3	3	-	-	-	-	6
PART - II	3	3	-	-	-	-	6
ALLIED	4	6	4	6	-	-	20
MAJOR	4	4	12	12	12	8	52
PRATICAL	4	4	4	4	4	4	24
ELECTIVE	-	-	-	-	5	10	15
SBEC	-	2	-	2	4	4	12
NMEC	-	-	2	2	-	-	4
EVS	-	2	-	-	-	-	2
VALUE EDU	2	-	-	-	-	-	2
Extn. Activity	-	-	-	-	-	1	1
Cumulative Total Credits	20	24	22	26	25	27	144

SEMESTER – I

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
I	I		Tamil - I	6	-	3	25	75	100
	II		English – I	6	-	3	25	75	100
	III		Programming in COBOL	5	-	4	25	75	100
			Practical - I (COBOL)	-	4	4	40	60	100
			Allied I : Paper – I	7	-	4	25	75	100
		Value Education	2	-	2	25	75	100	
			Total	26	4	20	165	435	600

SEMESTER – II

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
II	I		Tamil - II	6	-	3	25	75	100
	II		English – II	6	-	3	25	75	100
	III		Programming in C	4	-	4	25	75	100
			Practical – II (C)	-	3	4	40	60	100
			Allied I : Paper – II	4	-	3	25	75	100
		Allied I : Paper – III	4	-	3	25	75	100	
	IV		SBEC – I (Basics of Internet)	1	1	2	25	75	100
			Env. Studies	1	-	2	25	75	100
		Total	26	4	24	215	585	800	

SEMESTER – III

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
III	III		Data Structures and Algorithms	5	-	4	25	75	100
			Programming in C++	5	-	4	25	75	100
			Software Engineering	5	-	4	25	75	100
			Practical - III (C++)	-	5	4	40	60	100
			Allied II : Paper – I	5	-	4	25	75	100
			Allied II: Practical Lab - I		3	-			
	IV		Tamil/ Advanced Tamil (OR) Non –Major elective NMEC – I	2	-	2	25	75	100
		Total	22	8	22	165	435	600	

SEMESTER – IV

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
IV	III		Relational Database Management Systems	5	-	4	25	75	100
			Linux and Shell Programming	5	-	4	25	75	100
			Operating Systems	5	-	4	25	75	100
			Practical – IV (Linux)	-	3	4	40	60	100
			Allied II: Paper – II	5	-	4	25	75	100
			Allied II : Practical Lab - I	-	3	2	40	60	100
	IV		SBEC – II (Exploring on Word)	1	1	2	25	75	100
			Tamil/ Advanced Tamil (OR) Non –Major elective NMEC-II	2	-	2	25	75	100
			Total	23	7	26	230	570	800

SEMESTER – V

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
V	III		Programming in Java	5	-	4	25	75	100
			Computer Networks	5	-	4	25	75	100
			Computer Graphics	5	-	4	25	75	100
			Elective – I	6	-	5	25	75	100
			Practical - V(JAVA)	-	5	4	40	60	100
	IV		SBEC – III (Excel and PowerPoint)	1	1	2	25	75	100
			SBEC – IV (Java Script)	1	1	2	25	75	100
			Total	23	7	25	190	510	700

SEMESTER – VI

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
VI	III		Visual Programming	5	-	4	25	75	100
			PHP Scripting Language	5	-	4	25	75	100
			Elective – II	6	-	5	25	75	100
			Elective – III	6	-	5	25	75	100
			Practical - IV (VB Programming and PHP & MYSQL)	-	4	4	40	60	100
			SBEC – V (Soft Skills)	2	-	2	25	75	100
			SBEC – VI (VB Script)	1	1	2	25	75	100
			Extn. Act.	-	-	1	-	-	-
				Total	25	5	27	190	510

ELECTIVE SUBJECTS

Elective – I

Sem.	Part	Sub.Code	Subject
V	III		Multimedia Systems
			Client/Server Technology
			Management Information System

Elective – II

Sem.	Part	Sub. Code	Subjects
VI	III		Mobile Computing
			Compiler Design
			E-Commerce

Elective – III

Sem.	Part	Sub. Code	Subjects
VI	III		Software Project Management
			Artificial Intelligence and Expert System
			Data Mining and Ware housing

SBEC – Skill Based Elective Courses

Part	Sem.	Sub. Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
IV	II		SBEC – 1 : Basics on Internet	1	1	2	25	75	100
	IV		SBEC – II : Exploring on Word	1	1	2	25	75	100
	V		SBEC – III : Excel & Power Point	1	1	2	25	75	100
	V		SBEC - IV : Java Script & VB Script	1	1	2	25	75	100
	VI		SBEC - V : Soft Skills	2	-	2	25	75	100
	VI		SBEC-VI : Flash	1	1	2	25	75	100

ALLIED PAPERS

I - YEAR (Allied – I: First Option)

Part	Semester	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	I	Allied I : Paper – I: Algebra and Fourier series	6	-	4	25	75	100
	II	Allied I : Paper – II: Differential Equations and Laplace Transforms	4	-	3	25	75	100
	III	Allied I : Paper – III : Practical	4	-	3	40	60	100

I -YEAR (Allied – I: Second Option)

Sem	Part	Semester	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
I	III	I	Allied I : Paper – I: Discrete Mathematics	6	-	4	25	75	100
II		II	Allied I : Paper – II: Numerical Methods	4	-	3	25	75	100
II		II	Allied I : Paper – III : Graph Theory	4	-	3	25	75	100

I - Year / II-Year (Allied – I / II: Statistics - Third Option)

Part	Semester	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	I / III	Allied I : Paper – I: Allied Statistics –I	6	-	4	25	75	100
	II / IV	Allied I : Paper – II: Allied Statistics –II	4	-	3	25	75	100
	II / IV	Allied I : Paper – III : Allied Statistics –III	4	-	3	40	60	100

II - YEAR (Allied – II: COMMERCE - FIRST Option)

Part	SEMESTER	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	III	Allied II : Paper – I: Principles of Accounting	6	-	4	25	75	100
	IV	Allied II : Paper – II: Cost and Management Accounting	5	-	4	25	75	100
	III & IV	Allied II : Practical Lab -1: Allied Commerce Practical	2	-	2	40	60	100

II - YEAR (Allied – II: ELECTRONICS - SECOND Option)

Part	SEMESTER	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	III	Allied II : Paper – I: Applied Electronics-I	6	-	4	25	75	100
	IV	Allied II : Paper – II: Applied Electronics-II	5	-	4	25	75	100
	III & IV	Allied II : Practical Lab -1: Allied Electronics Lab –I	2	-	2	40	60	100

II - YEAR (Allied – II: PHYSICS - Third Option)

Part	SEMESTER	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	III	Allied II : Paper – I: Allied Physics – I	6	-	4	25	75	100
	IV	Allied II : Paper – II: Allied physics – II	5	-	4	25	75	100
	III & IV	Allied II : Practical Lab -1 Allied Physics Practical	2	-	2	40	60	100

Non Major Elective Course – (NMEC)

Extra Disciplinary Subjects offered by the Department of Computer Science/Applications

The department can offer any one of the subjects to the other major subject students in each semester.

Part	Sem.	Sub. Code	Subject	Lect. Hrs	Credit	Marks		
						CIA	EA	Total
IV	III		NMEC I: Fundamentals of Information Technology	2	2	25	75	100
			NMEC I: Basics of Computers and Office Automation	2	2	25	75	100
	IV		NMEC II: Introduction to Object Oriented Programming Language C++	2	2	25	75	100
			NMEC II: HTML and Web Design	2	2	25	75	100

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	DIGITAL COMPUTER FUNDAMENTALS AND COBOL	BCA Computer Applications
I Semester		Core: Theory
		Credit: 4

UNIT – I

Introduction: Application of Computer - Different types of Computer systems - Basic components of Digital Computer System - Programming Languages; Number Systems. Boolean Algebra and Gate Networks: Fundamentals concepts of Boolean Algebra – Logical Multiplication AND Gates, OR Gates, and Inverters – Evaluation of logical Expressions – Basic Law of Boolean Algebra – Simplification of expressions – De Morgan’s theorems – Basic Duality of Boolean Algebra - Derivation of a Boolean Expression.

UNIT – II

Interconnecting Gates – Sum of products (SOP) and Products of sums (POS) – Derivation of products of sums expressions – Derivation of three Input variable expression – NAND gates and NOR gates - The Map method for simplifying expressions – Sub cube and covering – product of sums expressions – Don’t cares.

UNIT - III

Introduction to Program Logic: Algorithm – Flowchart Symbols – Sample Flowcharts – Introduction to COBOL: History of COBOL – Coding Format for COBOL Programs – Structure of a COBOL Program – Character Set – COBOL Words – Data Names and Identifiers – Literals – Figurative Constants – Language Description Notation – Identification Division – Environment Division - Entries.

Data Division: Introduction – Level Structure – Data Description Entries – FILE SECTION – WORKING – STORAGE SECTION – Editing – Classes and Categories of Data – PROCEDURE DIVISION and Basic Verbs: Structure of the PROCEDURE DIVISION – Data Movement Verb: Move – Arithmetic Verb – Sequence Control Verbs – Input and Output Verbs – Conditional Verb: If – Categories of COBOL Statements.

UNIT IV

More about DATA DIVISION: Usage clause SYNCHRONIZED clause – JUSTIFIED clause, REDEFINES clause – RENAMES clause – Qualification of data names – SIGN clause - More about DATA movement verb - Elementary and group moves – CORRESPONDING option – ROUNDED option – ON SIZE ERROR option – COMPUTE verb.

Conditional and Sequence Control Verbs: Conditional Statement – GO TO with DEPENDING Phrase – ALTER Statement – PERFORMS Statement – EXIT Statement.

Table Handling: OCCURS clause and Subscripting – Assigning Values to Table Elements – Multidimensional Tables - PERFORM Verb and Table Handling – Indexed Tables and Indexing – SET verb – SEARCH Verb – OCCURS DEPENDING Clause – Storing a Table – Index Data Item – Use of Indexes and Index Data Items – Simple Programs.

UNIT V

Sequential Files: File Characteristic – File – Control Entries for Sequential Files – File Description – Fixed Length Records – Statements for Sequential Files – Examples of Sequential File Processing – Sequential Files with Variable – Length Records – Features for UNIT – Record File – Special Features for Magnetic – Tape Files – I-O- CONTROL Paragraph – Sorting and Merging of Files: The Simple Sort Verb – File Updation – Variations of Updation – Simple MERGE verb – INPUT and OUTPUT PROCEDURE In SORT Statement – MERGE Verb with OUTPUT - Simple Programs.

BOOKS FOR STUDY

1. "Digital Computer Fundamentals". Thomas C. Bartee, 6th Edition T.M.H Publisher, New Delhi, 1991.(UNIT I & II)
2. "Structured COBOL Programming", Shelly, Cashman, Foreman, 2nd Edition, Thomson Course Technology, 2007(UNIT III, IV, V)

BOOK FOR REFERENCES

1. "Understanding Computers- Today and Tomorrow", Deborah Morley, Charles S. Parker, 11th Edition, Thomson Course Technology, 2007

2. "COBOL Programming including MS-COBOL and COBOL-85", M.K.Roy & D.Ghosh Dastidar, 2nd Edition, T.M.H Publisher, New Delhi.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	Practical - I Programming in COBOL	BCA Computer Applications
I Semester		CORE PRACTICAL - I
		Credit: 4

COBOL programming list:

1. Finding sum of N natural numbers
2. Program to calculate the simple and compound interest
3. Program to sort n numbers in ascending/ descending order
4. Program to reverse a string
5. Program to add two matrices
6. Program to subtract two matrices
7. Program to multiply two matrices
8. Program to transpose a given matrix
9. Program for inventory control
10. Preparation of mark sheet/ exam result processing
11. Payroll and pay slips preparation
12. Preparation of student information system
13. Program for electricity bill preparation
14. Program for library information system – updating issues and receipts
15. Sequential files – sorting/merging

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	PROGRAMMING IN C	BCA Computer Applications
II Semester		Core: Theory
		Credit: 4

UNIT – I

Overview of C: History of C – Importance of C – Basic structure of C programs. Constants, variables and data types: Character set – C Tokens – Keywords and identifiers – Constants – Variables – Declaration of storage classes – Assigning values to variables- Defining symbolic constants. Operators and expression – Evaluation of expressions – Precedence of arithmetic operators – Type conversions in expressions – Operator precedence and associativity – Mathematical functions. Managing input and output operations: Reading and writing a character – Formatted input and output.

UNIT – II

Decision making and branching: Simple IF, IF-ELSE, Nesting of IF-ELSE, ELSE-IF ladder, Switch statements – GOTO statements. Decision making and looping: WHILE statement – DO statement – FOR statement – Jumps in loops. Arrays: Definition & Declaration – One dimensional – Two dimensional – Multi dimensional arrays - Dynamic arrays.

UNIT – III

Character arrays and strings: Introduction – Declaring and initializing string variables – Reading strings from terminal – Writing strings to screen – String handling functions – Table of strings. User – Defined functions: Introduction – Need for user – Defined function – A Multi- function program – Elements of user – Defined function – Definition of functions – Return values and their types – Function calls – Function declaration – All category of functions – Nesting of functions – Recursion – Passing arrays to functions – Passing strings to function.

UNIT – IV

Structures and Unions: Introduction – Defining a structure – Declaring structure variables – Accessing structure members – Structure initialization – Copying and comparing structure variables – Arrays of structures – Arrays within structures – Structures within structures – Structures and functions – Unions – Size of structures – Bit fields.

Pointers: Introduction – Understanding pointers – Accessing the address of a variable – Initializing of pointer variables. Chain of pointers – Pointer expressions – Pointers and arrays – Pointers and character strings – Arrays of pointers – Pointers as function arguments – Functions returning pointers – Pointers to functions – Pointer and structures.

UNIT – V

File Management: Introduction – Defining and opening a file – Closing a file – Input/Output operation on files – Error handling during I/O operations – Random access files – Command line arguments. The Preprocessor: Introduction – Macro substitution – File inclusion – Compiler control directives.

BOOK FOR STUDY

Programming in ANSI C, E. Balgurusamy Tata McGraw Hill, New Delhi, 5th Edition.

BOOKS FOR REFERENCE

1. “C: The complete Reference “, Herbert Schildt, Mc Graw Hill, New Delhi, 4th Edition
2. PROGRAMMING IN C, B.L.JUNEJA, Cengage Learning India

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	Practical - I Programming in C	BCA Computer Applications
II Semester		CORE PRACTICAL - II
		Credit: 4

C PROGRAMMING LIST

1. Write a program to find the largest number and smaller number by using if statement
2. Write a program to convert the decimal to binary conversion by using while statement.
3. Write a program to count the positive, negative & zero numbers.
4. Write a program to check whether a given number is a prime or not.
5. Write a program to display the Fibonacci series.
6. Write a program to concatenate two strings without using string library function.
7. Write a program to count the number of vowels, consonants, and digits in a line of Text.
8. Write a program to reverse a String.
9. Write a program to design the calculator functions as (i) Addition (ii) Subtraction & (iii) Multiplication function.
10. Write a program to find the factorial of a number using recursion.
11. Write a program for ascending order of given N Numbers.
12. Write a program to separate odd and even numbers using file.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	DATA STRUCTURES AND ALGORITHMS	BCA Computer Applications
III Semester		Core: Theory
		Credit: 4

UNIT I

Algorithms (Analysis and design): Problem solving – Procedure – Top-Down and Bottom-up approaches to algorithm design – Use of algorithms in problem solving: Developing an algorithm – Characteristics of algorithmic language - Design of algorithms – Implementation of algorithm – Verification of algorithm – Efficiency analysis of algorithms: Space, Time complexity, Frequency count – Simple algorithms. **Data Representation:** Abstract data type (ADT) – Fundamental and derived data types: Declaration – Representation – Primitive data structures: Symbol table – Recursion.

UNIT II

Arrays: Definition – Terminology – One dimensional array – Memory allocation, Operations, Application –Multidimensional Arrays: Two dimensional Arrays – Sparse matrices – Three dimensional and n-dimensional Arrays – Pointer Arrays.

UNIT III

Stacks: Introduction – Definition – Representation of stacks – Operations on stacks – Applications of stack. **Linked List:** Definition - Single Linked List: Representation, Operations – Circular Linked List – Double Linked List: Operations – Circular Double Linked List- Operations Application of Linked Lists: Sparse Matrix Manipulation – Polynomial Representation – Dynamic Storage Management – Memory Representation: Fixed, Variable block storage – Boundary tag system – Deallocation Strategy – Buddy System: Binary Buddy system .

UNIT IV

Queues: Introduction – Definition – Representation of Queues – using Arrays, Linked list. - Various Queue structures: Circular Queue – De-queue – Priority Queue – Applications of Queues. **Trees:** Concepts – Representation of Binary tree – Operations on Binary Tree – Types of Binary Trees. **Graphs:** Introduction – Graph terminologies – Representation of Graphs – Operations on Graphs – Application of Graph Structures.

UNIT V

Searching and Sorting: Searching – Sequential and Binary Search – Indexed Search – Hashing Schemes - Hashing functions: Division/ Remainder methods – Mid Square method – Folding method – Hash Collision: linear probing – Chaining - Bucketing – Sorting: Selection sort – Bubble sort – Insertion sort – Quick sort – Merge sort – Radix sort – Shell sort – Heap sort – Comparison of time complexity.

BOOKS FOR STUDY:

1. “Classic Data Structures”, D. Samanta, PHI Learning , New Delhi 2011
2. “Data Structure made simple”, Sathish Jain, Shashi Singh, BPB Publications, New Delhi 2006

BOOK FOR REFERENCE

1. Magnifying Data Structures, Aprita Gopal , First Edition , PHI Learning, New Delhi
2. Data Structures in C, Horowitz, Sahni, Anderson-Freed, Universities Press

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	PROGRAMMING IN C++	BCA Computer Applications
III Semester		Core: Theory
		Credit: 4

UNIT – I

Object-Oriented Programming: Principles – Benefits of OOP – Application of OOP – Tokens, Expression and Control Structures: Tokens – Keywords – Identifiers and Constants – Data types – Constants – Variables – Operators – Manipulators – Expressions – Control Structure.

UNIT – II

Functions – Prototyping – Call by Reference – Return by Reference – Inline Functions – Default Arguments – const Arguments – Function Overloading – Friend and Virtual Functions, Classes and Objects – Class – Member Functions – Arrays with in a Class – Memory Allocation for Objects – Static data members – Static member functions – Arrays of Objects – Objects as Function Arguments – Friendly Functions – Returning Objects – const Member Functions – Pointers to Members, Constructors and Destructors.

UNIT – III

Operator Overloading and Type Conversions, Inheritance: Extending Classes – Derived Classes – Single Inheritance – Multilevel Inheritance – Multiple Inheritance – Hierarchical Inheritance – Hybrid Inheritance – Virtual Base Classes – Abstract Classes, Pointers, Virtual Functions and Polymorphism: Pointers – Pointers to Objects –this Pointer – Pointers to Derived Classes – Virtual Functions – Pure Virtual Functions

UNIT – IV

Managing I/O Operations: C++ Streams – C++ Stream Classes – Unformatted I/O and Formatted I/O Operations – Managing Output with Manipulators, Working with Files: Classes for File Stream Operations – Opening and Closing a File – Detecting end-of-file – File Pointers and Their Manipulators – Sequential I/O Operations – Updating a File – Error Handling during File Operations – Command Line Arguments

UNIT – V

Templates: Class Templates – Class Templates with Multiple Parameters – Function Templates – Function Templates with Multiple Parameters – Overloading of Template Functions – Member Function Templates – Non-Type Template Arguments, Exception Handling: Basics - Exception Handling Mechanism – Throwing Mechanism – Catching Mechanism – Rethrowing an Exception – Specifying Exceptions

BOOKS FOR STUDY:

BOOK FOR STUDY

1. “Object Oriented Programming with C++”, 5th Edition, E.Balagurusamy, Tate McGraw Hill Pub. Ltd., New Delhi.
2. “Programming in C++”, M. T. Somashekara, Prentice Hall of India Private Limited, New Delhi, 2008

BOOKS FOR REFERENCE:

1. “Programming with C++” John Hubbard, Mc Graw Hill, New Delhi, 3th Edition
2. A Structured Approach Using C++, 2nd e, Behrouz A.Forouzan, Cengage Learning

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	SOFTWARE ENGINEERING	BCA Computer Applications
III Semester		Core: Theory
		Credit: 4

UNIT – I

Introduction – Software Engineering Discipline – Evolution and Impact – Programs Vs Software Products – Emergence of Software Engineering – Changes in Software Development Practices – Computer Systems Engineering.

Software Life Cycle Models: Use of a Life Cycle Models – Classical Waterfall Model – Iterative Waterfall Model – Prototyping Model – Evolutionary Model – Spiral Model.

Software Project Management: Responsibilities of a Software Project Manger – Project Planning – Metrics for Project Size Estimation – Project Estimation Techniques – COCOMO – A Heuristic Estimation Technique – Staff Level Estimation – Scheduling – Organization and Team Structures – Staffing – Risk Management – Software Configuration Management.

UNIT – II

Requirements Analysis and Specification: Requirements Gathering and Analysis – Software Requirements Specification (SRS) – Formal System Development Techniques.

Software Design: Characteristics of a Good Software Design – Cohesion and Coupling – Neat Arrangement – Software Design Approaches – Object-Oriented Vs Function – Oriented Design.

UNIT – III

Function-Oriented Software Design: Overview of SA/SD Methodology – Structured Analysis – Data Flow Diagrams(DFDs) – Structured Design - Detailed Design – Design Overview.

Object Modeling Using UML: Overview of Object-Oriented Concepts – UML – UML Diagrams – Use Case Model – Class Diagrams – Interaction Diagrams – Activity Diagrams – State Chart Diagram.-Object-Oriented Software Development: Design Patterns – Generalized OOAD Process.

UNIT – IV

User Interface Design: Characteristics of a User Interface – Basic Concepts – Types of User Interfaces – Component-Based GUI Development – User Interface Design Methodology.

Coding and Testing: Coding – Code Review – Testing – UNIT Testing – Black-Box Testing – White-Box Testing – Debugging – Program Analysis Tools – Integration Testing – System Testing

UNIT – V

Software Reliability and Quality Management: Software Reliability – Statistical Testing – Software Quality – Software Quality Management System – ISO 9000 – SEI Capability Maturity Model.

Computer Aided Software Engineering: CASE Environment – CASE support in Software Life Cycle – Characteristics of CASE Tools – Second Generation CASE Tool – Architecture of a CASE Environment.

Software Maintenance: Characteristics of Software Maintenance – Software Reverse Engineering – Software Maintenance Process Models – Estimation of Maintenance Cost.

Software Reuse: Introduction – Issues in any Reuse Program – Reuse Approach – Reuse at Organization Level.

BOOK FOR STUDY:

Fundamentals of Software Engineering RAJIB MALL, Prentice Hall of India Private Limited, 2008

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	Practical - III C++	BCA Computer Applications
III Semesters		CORE PRACTICAL - III
		Credit: 4

C++ PROGRAMMING LIST:

1. Implement Push and Pop Operations of a Stack using Array
2. Implement Add and Delete Operations on Queue using Pointer
3. Write a Program to Convert an Infix Expression to Postfix Expression using Arrays.
4. Write a Program to Add Two Polynomials using Pointers.
5. Perform Tree Traversals for a Binary Tree using Recursion.
6. Write a program to perform Binary Search.
7. Sort the given list of numbers using Heap Sort.
8. Sort the given list of numbers using Quick Sort

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	RELATIONAL DATABASE MANAGEMENT SYSTEM	BCA Computer Applications
IV Semester		Core: Theory
		Credit: 4

UNIT – I

Introduction: Database System Applications – Purpose of Database Systems – View of Data – Database Languages – Transaction Management – Database Architecture – Database users and Administrators.

Relational Model: Structure of Relational Databases – Database Design – ER Model – Overview of the Design Process – The Entity-relationship Model – Constraints – Entity Relationship Diagrams.

UNIT – II

Relational Algebra Operations – Relational Languages: The Tuple Relational Calculus – The Domain Relational Calculus – SQL: Background – Data Definition – Basic Structure of SQL Queries – Set Operations – Aggregate Functions – Null Values – Nested Sub-Queries – Views – Modification of the Database.

UNIT – III

Data Normalization: Pitfalls in Relational Database Design – Decomposition – Functional Dependencies – Normalization – First Normal Form – Second Normal Form – Third Normal Form – Boyce-Codd Normal Form – Fourth Normal Form – Fifth Normal Form – Denormalization – Database Security: Data Security Requirements – Protecting the Data within the Database – Granting and Revoking Privileges – Data Encryption.

UNIT -IV

PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. **Control Structures and Embedded SQL:** Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements. **PL/SQL Cursors and Exceptions:** Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.

UNIT -V

PL/SQL Composite Data Types: Records – Tables – Varrays. **Named Blocks:** Procedures – Functions – Packages –Triggers – Data Dictionary Views.

BOOK FOR STUDYS

1) “Database System Concepts”, Abraham Silberschatz, Henry F.Korth, S.Sudarshan , TMH
5th Edition (UNIT s - I, II,)

2) “Fundamentals of Database Management Systems”, Alexis Leon, Mathews Leon , Vijay
Nicole Imprints Private Limited. (UNIT – III)

3) “Database Systems Using Oracle” Nilesh Shah, 2nd edition, PHI.
UNIT -IV: Chapters 10 & 11 UNIT -V: Chapters 12, 13 & 14)

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	Linux Administration	BCA Computer Applications
IV Semester		Core: Theory
		Credit: 4

UNIT I

Linux Introduction and Installation: Linux-Advantages-Red Hat Linux-New Features- Installation procedures and Methods. Using Desktop-GNOME-KDE-Linux Commands Accessing and Running Applications

UNIT II

Installing Red Hat Linux Applications, Running Window Application, Running Window, DOS and Macintosh Applications –Tools for using Internet and Web.

UNIT III

Administration: Understanding System Administration: Root login-super user-GUI tools, commands and Log files-Configuring Hardware-File System and Disk Management-Monitoring performances.

UNIT IV

Setting Up and Supporting users: Creating user accounts – Setting user defaults –Creating Desktops-Modifying and Deleting Accounts.

UNIT V

Security Issues: Hacker versus Cracker-Password Protection- Protection from break-in- Filtering Network Access-Firewalls-Detecting Instructions – Encryption techniques

Book FOR STUDY

Christopher Negus “Red Hat Linux 9 Bible”, WILEY- Dreamtech India Pvt.Ltd,New Delhi, First Edition, 2003

BOOK FOR Reference

Thomas Schenk, “Red Hat Linux System Administration”, Techmedia, New Delhi,2003.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	OPERATING SYSTEMS	BCA Computer Applications
IV Semester		Core: Theory
		Credit: 4

UNIT – I

Operating system overview: Operating system objectives and functions-Evaluation of O.S – Major achievements process description and control: Process – Process states – Process description and control.

UNIT – II

Threads, Concurrency: Principles of concurrency – Mutual exclusion – Semaphores – Message passing. Deadlock: Principles of deadlock – Deadlock prevention – Deadlock avoidance – Deadlock detection.

UNIT – III

Memory management: Requirements – Memory partitioning – Paging – Segmentation. Virtual memory: Hardware and control structures – Operating system software.

UNIT – IV

Uniprocessor scheduling: Types of processor – Scheduling – Scheduling algorithm – Multiprocess scheduling. I/O management and disk scheduling: I/O Devices – Organization of the I/O function – I/O buffering – Disk scheduling.

UNIT – V

File management: Overview – File organization & Access – File directories – File sharing – Record Blocking – Secondary storage management. Case studies: Unix – Process management, Memory management, I/O management & File management.

BOOK FOR STUDY

1. “Operating Systems – Internals & Design Principles” William Stallings. Prentice – Hall of India P.Ltd, New Delhi – 110001. 5th Edition.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	Practical - IV LINUX	BCA Computer Applications
IV Semesters		CORE PRACTICAL – IV
		Credit: 4

Linux LAB

Write Shell Programs for the following using the Linux Operating System

- 1 Check whether the given number is prime or not.
- 2 Find the biggest of given two numbers
- 3 Write a program to check the given number is odd or even
- 4 Write a program to generate Fibonacci Series
5. Write a program to prepare electric bill for domestic consumers.

For first 100 UNIT s - Rs.0.75/ UNIT

For next 100 UNIT s - Rs.1.50/UNIT

Above 200 UNIT s - Rs.3.00/UNIT .

Prepare the bill for the following format:

Customer No. -----

Customer Name -----

Pre.Reading -----

Cur.Reading -----

UNIT s Consumed -----

Charge -----

Signature

6. Write a program to display the result PASS or FAIL using the information given below:

Student Name, Student Reg. No., Mark1, Mark2, Mark3, Mark4 . The minimum

pass for each subject is 50.

7 Write a program to prepare a Payroll with Basic Pay, DA, Allowances, PF and Gross Pay.

8 Using Case Statement, write a program to check the files ending with vowels.

9 Write a single program to sort the names and numbers in alphabetical, ascending and descending order.

10 Write a menu driven program to print Biodata for five persons.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	PROGRAMMING IN JAVA	BCA Computer Applications
V Semester		Core: Theory
		Credit: 4

UNIT – I

Introduction: Introduction to Java – Java and Internet – Byte codes – Features of Java – Java Development Environment – Java Character set – Operators – Control statements – Simple programs – Java History and Feature – Java Development Kit (JDK) – Java Tokens – Java Statements – Arrays and Vectors – Strings and StringBuffer.

UNIT – II

Classes, Interfaces and Packages: Classes – Objects – Wrapper Classes – Packages and Interfaces.

UNIT – III

Inheritance: Inheritance Extending classes – Abstract and Final classes – Interfaces and Inheritance

UNIT – IV

Exception Handling: Error Handling and Exception Handling – Exception Types and Hierarchy – Try Catch blocks – Use of Throw, Throws and Finally – Programmer Defined Exceptions.

UNIT – V

Applets and Graphics: Fundamentals of Applets – Graphics. **AWT and Event Handling:** AWT components and Event Handlers – AWT Controls and Event Handling Types and

Examples – Swing- Introduction. **Input and Output:** Files – Streams. **Multithreading and Networking:** Multiple Threads – Networking basics.

BOOK FOR STUDY

Programming with Java, 4th Edition, E. Balagurusamy, Tata McGraw Hill Pub. Ltd., New Delhi.

BOOKS FOR REFERENCE

“The Complete Reference” Java2, 3rd Edition, Patrick Naughton, Herbert Schildt, Tata McGraw Hill Pub. Ltd., New Delhi.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	COMPUTER NETWORKS	BCA Computer Applications
V Semester		Core: Theory
		Credit: 4

UNIT – I

Introduction: Uses of Computer Networks - Network Hardware – LAN, MAN and WAN - Network Software - **Physical Layer:** The Theoretical Basis For Data Communication - Guided Transmission media - Wireless Transmission - Communication Satellites- Public Switched Telephone Network

UNIT – II

Data Link Layer: Data Link Layer Design Issues - Error Detection and Correction – Elementary data link protocols - Sliding Window Protocols - Protocols Verification - **Network Layer:** Network Layer Design Issues- Routing Algorithms-Congestion Control Algorithms - Quality of Service – Internetworking

UNIT – III

Transport Layer: Transport Services – elements of transport protocols – simple transport protocols. **Application layers:** Domain name system – Electric mail – The World Wide Web.

UNIT – IV

Security: Introduction – needs – security attacks- Organizational policy and security - **Security infrastructure:** infrastructure components – goals of security infrastructure – design guidelines – security models

UNIT – V

Data encryption methods- cryptography algorithms – secret key cryptography – public key cryptography – speech cryptography - **Database security**: database security issue - database security - **Network security**: fundamental concepts – identification and authentication –model for network security – firewalls.

BOOK FOR STUDY:

“Computer Networks” Andrew S. Tanenbaum, Third edition, PHI private Ltd, New Delhi, 1999

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	COMPUTER GRAPHICS	BCA Computer Applications
V Semester		Core: Theory
		Credit: 4

UNIT -I

Output Primitives: Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms – Ellipse-generating algorithms. **Attributes of Output Primitives:** Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.

UNIT -II

2D Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. **2D Viewing:** The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation – 2D Viewing Functions – Clipping Operations – Point, Line, Polygon, Curve, Text and Exterior clippings.

UNIT -III

3D Concepts: 3D Display Methods – 3D Graphics Packages. **3D Object Representations:** Polygon Surfaces – Curved lines and Surfaces – Quadric Surfaces – Super quadrics – Blobby Objects – Spline representations. **3D Geometric Modeling and Transformations:** Translation – Rotation – Scaling – Other Transformations – Composite Transformations – 3D Transformation functions..

UNIT -IV

Visible-Surface Detection Methods: Classification of Visible-Surface algorithms – Back-Face Detection – Depth-Buffer Method – A-Buffer method- Scan- Line Method – Depth-Sorting Method – BSP-Tree Method – Area-Subdivision Method – Octree Methods – Ray-casting Methods – Curved surfaces – Wire frame Methods – Visibility-Detection functions.

UNIT -V

Illumination Models: Properties of Light – Standard Primaries ad the Chromaticity Diagram – Intuitive color Concepts – RGB Color Model – YIQ Color Model – CMY Color Model – HSV Color Model – Conversion between HSV and RGB models – Color selection ad Applications.

BOOK FOR STUDY:

COMPUTER GRAPHICS – Donald Hearn, M. Pauline Baker, 2nd edition, PHI.

2012-13 Onwards	PRACTICAL - IV (JAVA)	BCA Computer Application
V Semesters		Core: Practical-IV
		Credit: 4

JAVA LIST OF PROGRAMMS

1. Write a Program to create an account in a Bank and Deposit Rs.20,000 with a minimum Balance of Rs.500. Use switch case statement for Deposit, Withdrawal and for Balance enquiry.
2. Write a program to find the area of the square, rectangle and triangle using the method of overloading.
3. Write a program to display the book title, price and author name using the method of overriding.
4. Implement of the concept of multiple inheritances to develop pay slip and design a package
5. Write a program to illustrate the use of multithreads.
6. Create a try block that is likely to generate three types of exception and then incorporate necessary catch blocks to catch and handle them appropriately
7. Write a program to copy characters from one file to another file.
8. Develop a java applet, which shows your name and address within a window frame.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	VISUAL PROGRAMMING	BCA Computer Applications
V1 Semester		Core: Theory
		Credit: 4

UNIT – I

Welcome to Visual Basic – Creating an Application – IDE Forms and Controls – Variables in Visual Basic.

UNIT – II

Writing Code in Visual Basic – Working with File – Menus.

UNIT – III

Multiple Document Interface Applications – Debugging Tips – The Common Dialog Control.

UNIT – IV

Introduction to Database – Working with the Data Control – Data Access Objects.

UNIT – V

ActiveX Data Objects – Crystal and Data Report – Active X.

BOOK FOR STUDYS

Programming with Visual Basic 6.0, Mohammed Azam, Vikas Publishing House Pvt. Ltd., Chennai.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	PHP Scripting Language	BCA Computer Applications
VI Semester		Core : Theory
		Credit: 4

CONTENTS

UNIT – I

Introducing PHP – Basic development Concepts – Creating first PHP Scripts – Using Variable and Operators – Storing Data in variable – Understanding Data types – Setting and Checking variables Data types – Using Constants – Manipulating Variables with Operators.

UNIT – II

Controlling Program Flow: Writing Simple Conditional Statements - Writing More Complex Conditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.

UNIT – III

Working with Arrays: Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms - Working with Array Functions – Working with Dates and Times.

UNIT – IV

Using Functions and Classes: Creating User-Defined Functions - Creating Classes – Using Advanced OOP Concepts. Working with Files and Directories: Reading Files-Writing Files-Processing Directories.

UNIT – V

Working with Database and SQL : Introducing Database and SQL- Using MySQL-Adding and modifying Data-Handling Errors – Using SQLite Extension and PDO Extension. Introduction XML—Simple XML and DOM Extension.

BOOK FOR STUDY

“PHP A Beginner’s Guide “, VIKRAM VASWANI, Tata McGraw-Hill

BOOKS FOR REFERENCE

1. The PHP Complete Reference – Steven Holzner – Tata McGraw-Hill Edition.
2. Spring into PHP5 – Steven Holzer, Tata McCraw Hill Edition

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	Practical – VI Visual Programming and PHP Scripting Language	BCA Computer Applications
VI Semester		CORE PRACTICAL - VI
		Credit: 4

Programming in VISUAL BASIC Practical List

1. Develop a VB Project to Insert a Record in MS-ACCESS database using ADO.
2. Develop a VB Project to modify a record in MS-ACCESS database using ADO.
3. Construction of an Arithmetic Calculator (Simple)
4. Personal Information System (Using Tables)
5. Railways Reservation System (Using Tables)
6. Library Information System (Using Tables)

PHP Practical List

1. Write a program using controls and functions
2. Develop a program and check message passing mechanism between pages.
3. Design a program using String function and Arrays.
4. Develop a program using parsing functions (use Tokenizing)
5. Write a program and check Regular Expression, HTML functions, Hashing functions.
6. Develop a program and check File System functions, Network functions, Date and time functions.
7. Design a program using session
8. Develop a program using cookie and session

2012-13 Onwards	MULTIMEDIA SYSTEMS	BCA Computer Applications
V Semester		Elective Core: Theory
Elective – I		Credit: 5

UNIT I

Multimedia Definition – Use Of Multimedia – Delivering Multimedia – Text: About Fonts and Faces – Using Text in Multimedia – Computers and Text – Font Editing and Design Tools – Hypermedia and Hypertext.

UNIT II

Images: Plan Approach – Organize Tools – Configure Computer Workspace – Making Still Images – Color – Image File Formats. Sound: The Power of Sound – Digital Audio – Midi Audio – Midi vs. Digital Audio – Multimedia System Sounds – Audio File Formats – Vaughan’s Law of Multimedia Minimums – Adding Sound to Multimedia Project.

UNIT III

Animation: The Power of Motion – Principles of Animation – Animation by Computer – Making Animations that Work. Video: Using Video – Working with Video and Displays – Digital Video Containers – Obtaining Video Clips – Shooting and Editing Video.

UNIT IV

Making Multimedia: The Stage of Multimedia Project – The Intangible Needs – The Hardware Needs – The Software Needs – An Authoring Systems Needs. Multimedia Production Team.

UNIT V

Planning and Costing: The Process of Making Multimedia – Scheduling – Estimating – RFPs and Bid Proposals. Designing and Producing – Content and Talent: Acquiring Content – Ownership of Content Created for Project – Acquiring Talent

BOOK FOR STUDY:

“Multimedia: Making It Work” - Tay Vaughan(Eight Edition)

BOOK FOR REFERENCE

Ralf Steinmetz & Klara Nahrstedt – “Multimedia Computing, Communication & Applications “ Pearson Education

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	CLIENT/SERVER TECHNOLOGY	BCA Computer Application
V Semester		Elective Core : Theory
Elective – I		Credit: 5

UNIT-I

Client/Server Computing – Advantages of Client / Server Computing – Technology Revolution – Connectivity – Ways to improve Performance – How to reduce network Traffic

UNIT-II

Components of Client/Server Applications – The Client: Role of a Client – Client Services – Request for Service. **Components of Client/Server Applications – The Server:** The Role of a Server – Server Functionality in Detail – The Network Operating System – What are the Available Platforms – The Server Operating system.

UNIT-III

Components of Client/Server Applications – Connectivity: Open System Interconnect – Communications Interface Technology – Interprocess communication – WAN Technologies.

UNIT-IV

Components of Client/Server Applications–Software: Factors Driving demand for application software development – Rising Technology Staff costs – Need to improve Technology – Need for Common Interface across Platforms – Client/Server System Development Methodology. **Components of Client/Server Applications–Hardware:** Hardware/Network Acquisition – PC-Level Processing Units – Machintosh, notebooks, Pen – UNIX Workstation – x-terminals – Disk, Tape, Optical Disks, NIC and UPS.

UNIT-V

Components of Client/Server applications–Service and Support: System Administration.

The Future of Client/Server Computing: Enabling Technologies – Transformational Systems.

BOOK FOR STUDY

CLIENT/SERVER COMPUTING – Patrick Smith, Steve Guenferich , 2nd edition,
Prentice Hall of India Private Limited, New Delhi

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	MANAGEMENT INFORMATION SYSTEM	BCA Computer Applications
VI Semester		Elective Core: Theory
Elective – II		Credit: 5

UNIT – I

MIS Concept – Definition – Role of Management – Impact – MIS and the user – Role and Importance of Management – Process of Management: Planning – Organizing – Staffing – Coordinating and Directing – Controlling.

UNIT – II

Strategic management of business and planning – Decision making: Concepts – methods, tools and procedures – Organizational Decision making – Information.

UNIT – III

Development of MIS: Ascertaining, Determining the information requirement – Development and Implementation of the MIS – Organization for Development of the MIS – Information Technology.

UNIT – IV

Application of MIS in manufacturing sector – Decision support system – Enterprise Management System.

UNIT – V

Object-oriented Technology (OOT) – Client Server Architecture – Business process Re-engineering (BPR)

BOOK FOR STUDY:

Management Information System – W.S. Javadekar, TMH

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	MOBILE COMPUTING	BCA Computer Applications
VI Semester		Elective Core: Theory
Elective – II		Credit: 5

UNIT – I

Introduction: Applications – A Simplified Reference Mode. **Wireless Transmission:** Cellular System. **Medium Access Control :** Motivation for a Specialized MAC : Hidden and exposed terminals – Near and far terminals – SDMA – FDMA – TDMA : Fixed TDM – Classical Aloha – Slotted Aloha – Carrier Sense Multiple Access – Demand assigned Multiple Access – PRMA Packet Reservation Multiple Access – Reservation TDMA – Multiple Access With Collision Avoidance – Polling – Inhibit Sense Multiple Access. CDMA: Spread Aloha multiple access.

UNIT – II

Telecommunication Systems: GSM: Mobile Services – System Architecture – Radio Interface – Protocols - Localization And Calling – Handover – Security – New Data Services. DECT: System Architecture – Protocol Architecture - TETRA.

Unit – III

UMTS and IMT 2000: UMTS Releases and Standardization – UMTS System Architecture - UMTS Radio Interface – UTRAN – Core Network – Handover. **Satellite System:** History – Applications – Basics: GEO – LEO – MEO . Routing – Localization – Handover.

Broadcast Systems: Overview – Cyclical Repetition Of Data – Digital Audio Broadcasting – Digital Video Broadcasting – Convergence of Broadcasting and Mobile Communication.

UNIT – IV

Wireless LAN: Infra Red Vs Radio Transmission – Infrastructure and Ad-Hoc Network – IEEE 802.11: System Architecture – Protocol Architecture – Physical Layer – Medium Access Control Layer – MAC Management – HIPERLAN: HIPERLAN1 -WATM – BRAN

– HiperLAN2. Bluetooth: User scenarios – Architecture – Radio layer – Base band layer – Link manager protocol.

UNIT – V

Mobile Network Layer: Mobile IP – Dynamic Host Configuration Protocol – Mobile Ad-Hoc Networks. **Mobile Transport Layer:** Traditional TCP-Classical TCP Improvement-TCP Over 2.5/3G Wireless Networks – Performance Enhancing Proxies.

BOOK FOR STUDY

“**Mobile Communications**”, Jochen Schiller ,Pearson Education.,Second Edition.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	COMPILER DESIGN	BCA Computer Applications
VI Semester		Elective Core: Theory
Elective – II		Credit:5

UNIT – I

Introduction to Compilers: Compilers and Translator – Need of Translator – The structure of a Compiler – Lexical analysis – Syntax analysis – Intermediate code generation – optimization – code generation – Compiler – writing tools. **Finite automata and lexical Analysis:** The role of the lexical analysis – A simple approach to the design of lexical analyzers- Regular expressions to finite automata – Minimizing the number of states of a DFA.

UNIT – II

The Syntactic specification of programming languages: context free grammars – derivations and parse trees – capabilities of context free grammars. **Basic parsing techniques:** Parsers – shift – reduce parsing – operator – precedence parsing – top down parsing – predictive parsers.

UNIT – III

Syntax – directed translation: syntax – directed translation schemes – implementation of syntax – directed translators – intermediate code – postfix notation – parse trees and syntax trees – 3 address code – quadruples and triples – translation of assignment statements – Boolean expressions – statements that alter the flow of control. **Symbol tables:** the contents of a symbol table – data structures for symbol table – representing scope information.

UNIT – IV

Run time storage administration: Implementation of a simple stack allocation scheme – implementation of block-structured languages – storage allocation in block structured languages. **Error deduction and recovery:** errors – lexical phase errors – syntactic phase errors – semantic errors.

UNIT – V

Introduction of code optimization: The principle sources of optimization – loop optimization – the DAG representation of basic blocks – value numbers and algebraic laws – Global data flow analysis. **Code generation:** Object programs – problems in code generation – a machine model – a simple code generator – register allocation and assignment – code generation from DAG's – peepholes optimization.

BOOK FOR STUDY

“Principles of Compiler Design” by Alfred V.Aho, Jeffrey D.Ullman , Narosa Pub House.

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	E-COMMERCE	BCA Computer Applications
V1 Semester		Elective Core: Theory
Elective – II		Credit: 5

UNIT I

History of E-commerce and Indian Business Context : E-Commerce –Emergence of the Internet – Emergence of the WWW – Advantages of E-Commerce – Transition to E-Commerce in India – The Internet and India – E-transition Challenges for Indian Corporates.

Business Models for E-commerce: Business Model – E-business Models Based on the Relationship of Transaction Parties - E-business Models Based on the Relationship of Transaction Types.

UNIT II

Enabling Technologies of the World Wide Web: World Wide Web – Internet Client-Server Applications – Networks and Internets – Software Agents – Internet Standards and Specifications – ISP. **e-Marketing :** Traditional Marketing – Identifying Web Presence Goals – Online Marketing – E-advertising – E-branding.

UNIT III

e-Security : Information system Security – Security on the Internet – E-business Risk Management Issues – Information Security Environment in India.

Legal and Ethical Issues : Cyberstalking – Privacy is at Risk in the Internet Age – Phishing – Application Fraud – Skimming – Copyright – Internet Gambling – Threats to Children.

UNIT IV

e-Payment Systems: Main Concerns in Internet Banking – Digital Payment Requirements – Digital Token-based e-payment Systems – Classification of New Payment Systems – Properties of Electronic Cash – Cheque Payment Systems on the Internet – Risk and e-Payment Systems – Designing e-payment Systems – Digital Signature – Online Financial Services in India - Online Stock Trading.

UNIT V

Information systems for Mobile Commerce: What is Mobile Commerce? – Wireless Applications – Cellular Network – Wireless Spectrum – Technologies for Mobile Commerce – Wireless Technologies – Different Generations in Wireless Communication – Security Issues Pertaining to Cellular Technology. **Portals for E-Business:** Portals – Human Resource Management – Various HRIS Modules.

BOOK FOR STUDY

E-Commerce - An Indian Perspective, P.T.Joseph, S.J., Fourth Edition, PHI 2012.

BOOK FOR REFERENCE

E-Commerce Strategy, Technologies and Applications David Whiteley Tata Mc-Graw-Hill

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	SOFTWARE PROJECT MANAGEMENT	BCA Computer Applications
VI Semester		Elective Core: Theory
Elective - III		Credit: 5

UNIT - I

Introduction to software project management – Project evaluation and Programme Management – An overview of Project Planning.

UNIT - II

Selection of an appropriate project approach – Software effort estimation – Activity planning

UNIT - III

Risk management - Resource allocation.

UNIT - IV

Monitoring and control - Managing contracts.

UNIT - V

Managing people in Software Environments – Working in Teams - Software quality.

BOOK FOR STUDY

“Software Project Management” by Bob Hughes and Mike Cotterell, Tata McGraw-Hill 5th Edition

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	ARTIFICIAL	BCA Computer Applications
VI Semester	INTELLIGENCE AND	Elective Core: Theory
Elective - III	EXPERT SYSTEMS	Credit: 5

UNIT – I

Overview of Artificial Intelligence – Introduction – History of AI – Application of AI – Objectives of AI – Future of AI - **Symbolic Logic:** Normal Forms in Propositional Logic – Logical Consequences – Resolution Principal – Predicate Calculus – Well Formed Formulas – Clausal Form – Rules of Inference – Unification – Resolution – Rule-Based Expert Systems

UNIT – II

Knowledge Acquisition and Representation: Knowledge Engineering – Producer for Knowledge Acquisition – Knowledge Representation – Network Representation Schemes
Reasoning and (KRR) Systems – Reasoning - Knowledge Representation and Reasoning (KRR) System - Knowledge Representation Languages – Domain Modeling – Semantic Nets (Association Network) Reasoning System.

UNIT – III

Uncertainty: Introduction – Non-Monotonic and Monotonic Reasoning – Confidence Factor – Bayes Theorem – Dempster and Shafer’s Theory of Evidence – Non classical Logics
Search Techniques – Problem Representation – Problem Solving In Ai – Blind Search Techniques – Heuristic Search Techniques – Game Searches

UNIT – IV

AI Technologies – Computer Vision – Natural Languages Processing – Speech Recognition
Expert Systems: Introduction - Basic Character of an Expert System - Knowledge Engineering – Inferencing – Expert System tools – Applications.

UNIT – V

Natural Network: Introduction – Difference between Human and Machine Intelligence – Features of Biological Neural Network – Human neurons to artificial neurons- Learning Algorithms – Difference Network Architectures and their applications – Comparisons of Neural Networks and rule based Methods - – Comparisons of Neural Networks and Expert System – Benefits of Neural Computing – Limitations of Neural Computing.

Book for Study:

Introduction to Artificial Intelligence , Rajendra Akerkar, PHI

PERIYAR UNIVERSITY, SALEM – 636 011

2012-13 Onwards	DATA MINING AND WARE HOUSING	BCA Computer Applications
V1 Semester		Elective Core: Theory
Elective – III		Credit: 5

UNIT – I

Introduction: Data mining application – data mining techniques – data mining case studies- the future of data mining – data mining software - **Association rules mining: Introduction-** basics- task and a naïve algorithm- apriori algorithm – improve the efficient of the apriori algorithm – mining frequent pattern without candidate generation (FP-growth) – performance evaluation of algorithms.

UNIT – II

Classification : Introduction – decision tree – over fitting and pruning - DT rules-- naïve bayes method- estimation predictive accuracy of classification methods - other evaluation criteria for classification method – classification software

UNIT – III

Cluster analysis: cluster analysis – types of data – computing distances-types of cluster analysis methods - partitioned methods – hierarchical methods – density based methods – dealing with large databases – quality and validity of cluster analysis methods - cluster analysis software.

UNIT – IV

Web data mining: Introduction- web terminology and characteristics- locality and hierarchy in the web- web content mining-web usage mining- web structure mining – web mining software - **Search engines:** Search engines functionality- search engines architecture – ranking of web pages.

UNIT – V

Data Warehousing: Introduction – Operational data sources- data warehousing - Data warehousing design – Guidelines for data warehousing implementation - Data warehousing

metadata - **Online analytical processing (OLAP):** Introduction – OLAP characteristics of OLAP system – Multidimensional view and data cube - Data cube implementation - Data cube operations OLAP implementation guidelines

BOOK FOR STUDY:

“Introduction to Data mining with case studies”, G.K. Gupta, PHI Private limited, New Delhi, 2008. 2nd Edition, PHI , 2011

BOOK FOR REFERENCE

Data Mining Techniques, Arun K Pujari , University Press

PERIYAR UNIVERSITY, SALEM – 636 011

SBEC-1: Basics on Internet	
Course	Common for B.Sc(CS) & BCA
Effective from	2012 - 2013and Onwards
Semester	II
SBEC	SKILLED BASED ELECTIVE COURSE – I

UNIT I

What is Internet? The Internet's underlying Architecture

UNIT II

Connecting to the Internet – Communicating on the Internet

UNIT III

How the World Wide Web works. Common Internet tools

UNIT IV

Multimedia on the Internet – Intranet and shopping on the Internet

UNIT V

Safeguarding the Internet

Text Book:

How the Internet works – Techmedia – Preston Gralla Millennium Edition, fourth Edition

PERIYAR UNIVERSITY, SALEM – 636 011

SBEC-II: Exploring on Word	
Course	Common for B.Sc(CS) & BCA
Effective from	2012 - 2013and Onwards
Semester	IV
SBEC	SKILLED BASED ELECTIVE COURSE – II

UNIT I

Exploring word 2007: Working in the Word Environment - Opening, Moving Around in, and Closing a Document – Displaying Different Views of a Document – Creating and Saving a Document - Previewing and Printing a Document.

UNIT II

Editing and Proofreading Documents: Make Changes to a Document – Insert Saved Text – Find the Most Appropriate word – Reorganize a Document Outline – Find and Replace Text.

UNIT III

Error Corrections: Correct Spelling and Grammatical Errors – Finalize a Document. - Changing the Look: Quickly Format Text and Paragraphs – Manually Change the Look of Characters. – Manually Change the Look of Paragraphs.

UNIT IV

Bulleted and Numbered Lists: - Create and Modify Lists - Presenting Information in Columns. Creating Table: Creating a Table: Create a Tabular List – Present Information in a Table.

UNIT V

Formatting a Table: Format Table Information – Perform Calculation in a Table – Use a Table to Control Page Layout.

BOOK FOR STUDY

Step by Step 2007 Microsoft Office System Joyce Cox & Team , PHI Learning Private limited, New Delhi, 2009

PERIYAR UNIVERSITY, SALEM – 636 011

SBEC - III: Excel & PowerPoint	
Course	BCA
Effective from	2012 - 2013and Onwards
Semester	V
SBEC	SKILLED BASED ELECTIVE COURSE - III

UNIT I:

Setting Up a Workbook: Creating Workbooks – Modifying Workbooks – Modifying Worksheets – Customizing the Excel 200 Program Window – Arranging Multiple Workbook Windows. Working with Data and Data Tables: Entering and Revising Data – Moving Data within a Workbook – Finding and Replacing Data – Defining a Table. Performing

UNIT II:

Calculations on Data: Naming Groups of Data – Creating Formulas to Calculate Values – Finding and Correcting Errors in Calculations. Changing Document Appearance: Formatting Cells – Defining Styles – Applying Workbook Themes and Table Styles – Making Numbers Easier to Read – Adding Images to a Document.

UNIT III:

Starting a New Presentation: Quickly Creating a Presentation – Creating a Presentation Based on a Ready-Made design – Converting an Outline to a Presentation. Working with Slide Text: Entering Text – Editing Text – Adding and Manipulating Text Boxes – Correcting and Sizing Text While Typing – Checking Spelling and Choosing the Best Words.

UNIT IV:

Adjusting the Slide Layout, Order, and Look: Changing the Layout of a Slide – Rearranging Slides in a Presentation – Applying a Theme – Switching to a Different Color Scheme – Using Colors That Are Not Part of the Scheme – Adding Shading and Texture to the Background of a Slide.

UNIT V:

Delivering a Presentation Electronically: Adapting a Presentation for Different Audiences – Rehearsing a Presentation – Preparing a Presentation – Preparing Speaker Notes and Handouts – Preparing a Presentation for Travel.

BOOK FOR STUDY

Step by Step 2007 Microsoft Office System Joyce Cox & Team , PHI Learning Private limited, New Delhi, 2009

PERIYAR UNIVERSITY, SALEM – 636 011

SBEC-IV : Web Programming (Java script and VB script)	
Course	BCA
Effective from	2012 – 2013 and Onwards
Semester	V
SBEC	SKILLED BASED ELECTIVE COURSE - IV

UNIT – I

Java script: Introduction to Scripting: Introduction – memory concepts – arithmetic – decision-making – java script Internet & www resources. Java script Arrays: Passing arrays to functions – Multi Subscripted array.

UNIT – II

Java Script Control Structures – Selection Structure: If – If Else, Repetition Structure: While – For – Do While – Logical operators.

UNIT – III

Java Script Functions: Introduction – program modules in java script programmer defined functions – Function Definition: Duration of identifiers – scope rules – recursion – java script global functions

UNIT – IV

Java Script Objects: Introduction – Thinking about objects – Math, Strings, Date, Boolean and Number Objects.

UNIT – V

VB Script: Introduction- Operators – Data Type and Control Structures – VB Script Functions – Array – String Manipulation – Classes and Objects – Operator Precedence Chart- The MsgBox functions – input boxes – controlling the flow of code -Simple Program

BOOK FOR STUDY

Web Technology – A Developer’s Perspective, N.P. Gopalan, J. Akilandeswari,
PHI Learning Private Limited, New Delhi,, New Delhi.

PERIYAR UNIVERSITY, SALEM – 636 011

SBEC – V : SOFT SKILLS	
Course	BCA
Effective from	2012 - 2013 and Onwards
Semester	VI
SBEC	SKILLED BASED ELECTIVE COURSE - V

UNIT I

Nature of technical communication: Stages of communication – Channels of communication – Nature of technical communication – Importance and need for technical communication – Technical communication skills.

UNIT II

The Listening process: Types of listening – Listening with a purpose – Barriers to listening – The speech process – Conversion and oral skills – Body language.

UNIT III

Job interviews: Pre – interview preparation techniques – Interview questions – Answering strategies – Frequently asked interview questions – Projecting a positive image – Alternative interview formats.

UNIT IV

Group Discussion: Nature of group discussion – Characteristics of successful group discussions – Selection group discussion – Group discussion strategies – Techniques for individual contribution – Group interaction strategies.

UNIT V

Presentation Skills: Planning the presentation – Preparing the presentation – Organizing your presentation – Rehearsing the presentation – Improving delivery

BOOK FOR STUDY

Effective Technical Communication , M. Ashraf Rizvi, Tata McGraw – Hill Publishing Company Limited , New Delhi.

PERIYAR UNIVERSITY, SALEM – 636 011

SBEC - VI : FLASH	
Course	Common for B.Sc(CS) & BCA
Effective from	2012 – 2013 and Onwards
Semester	VI
SBEC	SKILLED BASED ELECTIVE COURSE - VI

UNIT – I

Introducing Flash: How Flash works – Uses of Flash – Obtaining Flash – Installing Flash – The Flash Environment- Getting Started: The Timeline – The Stage – Tools and toolbars –

UNIT – II

The Menu bar – Properties Inspector – Panels – Viewing options – Quick Start templates – Accessibility Creating Objects: Stage and overlay objects – Tools panel. Editing Objects : Grouping objects – Free Transform tool – Reshaping objects – Aligning objects

UNIT – III

Pixel snapping – Stacking order – Cut aways – Paste in place. Color and Text: Standard Color palette – Adding solid colors – Adding gradients – Fill Transform tool – More color options – Selecting colors – Adding, Formatting and Manipulating text.

UNIT – IV

Symbols and Instances: Definitions – The Library – Converting objects to symbols – Creating a new symbol – Symbol Editing Mode – Editing symbols – Editing Instances.

Sound and Video: Using sound – Importing sound – Editing sounds, Adding video – Manipulating video.

UNIT – V

Frames and Layers: Working with frames – Adding frames – Deleting and copying frames – Frame properties – Working with layers – Inserting layers – Deleting and copying layers – Animation: Elements of animation – Scenes – Frame-by-frame animation – Motion tweening – Motion guides – Shape tweening – Animating text – Distribute text to layers – Movie clips.

BOOK FOR STUDY:

1. “FLASH MX in easy steps” - NICK VANDOME, Dreamtech, New Delhi

PERIYAR UNIVERSITY, SALEM – 636 011

NMEC - I : Fundamentals of Information Technology	
Course	Offered to other department Students (Other than CA Departments)
Effective from	2012 – 2013 and Onwards
Semester	III
NMEC	Non Major Elective Course

UNIT - I

Introduction to Information Technology: Information Technology – Understanding the Digital Domain – Representing Numbers and text in Binary- binary codes

UNIT - II

Fundamentals of Computers: Computer Hardware – Software – system software- application software- Translators- Computer languages-MLL-HLL-ALL

UNIT - III

Transmission of Information: Fundamentals of Communications – Fiber Optics – Wireless Communications -ISDN

UNIT - IV

Computer Networking: Goals – Topologies - Local Area Networks – Wide Area Networks – Communication Protocols-

UNIT - V

Internet: Internet Architecture -- Types-Network Security-Internet applications- Internet address- domain name- E-mail

BOOK FOR STUDY:

1. Introduction to Information Technology Pelin Aksoy, Laura DeNardis, Cengage Learning India Private Limited, First Indian Reprint 2008.

PERIYAR UNIVERSITY, SALEM – 636 011

NMEC-I : Basics of Computers and Office Automation	
Course	Offered to other department Students (Other than CA Departments)
Effective from	2012 – 2013 and Onwards
Semester	III
NMEC	Non Major Elective Course

UNIT – I

Introduction to Computers – Five Generations of Modern Computers – Classification of Digital Computer Systems – Anatomy of a Digital Computer – Memory UNIT s – Input and Output Devices – Auxiliary Storage Devices.

UNIT – II

Getting Started: Starting a Program – Identifying Common Screen Elements – Choosing Commands – Finding Common Ways to Work – Getting Help with Office

UNIT – III

MS-WORD: Learning Word Basics – Formatting a Word Document – Working with Longer Document.

UNIT – IV

MS-EXCEL: Creating a Simple Spreadsheet – Editing a Spreadsheet – Working with Functions and Formula – Formatting Worksheets – Completing Your Spreadsheet – Creating Charts

UNIT – V

MS-POWERPOINT: Creating and Viewing Presentations – Editing a Presentation – Working with Presentation Special Effects

BOOK FOR STUDY:

1. Introduction to Computers – Alex Leon, Mathew Leon (UNIT – I)
2. Microsoft Office XP – fast & easy (UNIT II, III, IV & V)
Author: DIANE KOERS
Publisher: Prentice Hall of India Private Limited, New Delhi, 2001

PERIYAR UNIVERSITY, SALEM – 636 011

NMEC-II : Introduction to Object Oriented Programming Language C++	
Course	Offered to other department Students (Other than CA Departments)
Effective from	2012 – 2013 and Onwards
Semester	IV
NMEC	Non Major Elective Course

UNIT – I

Overview of C++ Language: Object Oriented Concepts – Characteristics- Advantages- Keywords and Identifiers-Constants-Variables-Data types- Operators and Expressions

UNIT – II

Program structure –Conditional Statements: If Statement – Switch statement – Goto Statement.

Looping Statements: while Loop-For Loop Do-While Loop-Jumps in Loops – Break – Continue statements

UNIT – III

Functions: Advantages of Functions-Classification of Functions-Inline Functions-Function Overloading –Reference Variables – Storage Classes -Arrays: Definition of an Arrays-Arrays and Functions- Simple programs

UNIT – IV

Classes and Objects- Passing Objects as arguments – Returning an object from functions – Arrays of objects – Members of classes – Static member data – Static member functions - Simple programs

UNIT – V

Constructors and Destructors-Types of Constructors-Destructor and its Characteristics, Inheritance- Simple programs Types of **Inheritance** –Simple programs

BOOK FOR STUDY:

“Programming in C++”, M. T. Somashekara, Prentice Hall of India Private Limited, New Delhi, 2008

PERIYAR UNIVERSITY, SALEM – 636 011

NMEC-II : HTML and Web Design	
Course	Offered to other department Students (Other than CA Departments)
Effective from	2012 – 2013 and Onwards
Semester	IV
NMEC	Non Major Elective Course

UNIT – I

World Wide Web: Introduction the web defined – web browser details – web writing styles – web presentation outline, design ,and management – registering web pages. Searching the World Wide Web: introduction – directories, search engines and meta search engines – search fundamentals – search strategies – how does a search engine works. Telnet and FTP : introduction – telnet and remote login – File transfer – Computer Viruses .

UNIT – II

HTML Basics: Understanding HTML – Setting Up the Document Structure – Formatting Text by Using Tags – Using Lists and Backgrounds – Creating Hyperlinks and Anchors
Style Sheets and Graphics: Introduction to Style sheets

UNIT – III

Graphics: Selecting a Graphics Format – Preparing Graphics for Web Use – Inserting Graphics – Arranging Elements on the Page – Controlling Image Size and Padding

UNIT – IV

Hyper linking from Graphics – Utilizing Thumbnail Graphics – Including Alternate Text for Graphics- Navigation: Creating Navigational Aids – Creating Tables – Formatting Tables

UNIT – V

Layouts: Creating Division-Based Layouts – Creating User Forms – Using Frames for Layout – Incorporating Audio and Video

BOOK FOR STUDY:

1. Microsoft Step by Step – HTML and XH, Faithe Wempen, Prentice Hall of India Private Limited, New Delhi, 2006

BOOK FOR REFERENCE:

1. C.Xavier , “ World Wide Web Design with HTML”, TMH 2007