KONGUNADU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
COIMBATORE - 641 029.

B.Sc. COMPUTER SCIENCE

Curriculum and Scheme of Examination under CBCS

(APPLICABLE TO STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2016-2017 & Onwards)

Semester	Part	Subject code	Title of the Paper	Instruction Hours / Cycle	Exam. Marks CIA	Exam. Marks ESE	Exam. Marks Total	Duration of Exam.(hours)	Credits
I	I	16TML1A1	Language 1@	6	25	75	100	3	3
	II	15ENG101	English I	6	25	75	100	3	3
	III	16UCS101	**C.P.1** – COBOL Programming	4	25	75	100	3	4
		16UCS1CL	**C.Pr.1** – COBOL Programming - Lab	6	40	60	100	3	2
		15UCS1A1	**Allied 1**–Discrete Mathematics and Statistics	6	25	75	100	3	5
	IV	**15EVS101**	**Environmental Studies ****	**2**	**-**	**50**	**50**	**3**	**2**
II	I	15TML2A2	Language II@	6	25	75	100	3	3
	II	15ENG202	English II	6	25	75	100	3	3
		16UCS202	**C.P.2 -** C Programming	4	25	75	100	3	4
		16UCS2CM	**C.Pr.2** – C Programming - Lab	6	40	60	100	3	2
		15UCS2A2	**Allied 2**–Operations Research	6	25	75	100	3	5
	IV	**15VED201**	**Value Education – Moral and Ethics ****	**2**	**-**	**50**	**50**	**3**	**2**
III	III	16UCS303	**C.P.3** - Computer Organization and Architecture	5	25	75	100	3	4
		16UCS304	**C.P.4 –** Database Management System	5	25	75	100	3	4
		16UCS305	**C.P.5** -Object Oriented Programming with C++	5	25	75	100	3	5
		16UCS3CN	**C.Pr.3 –** Object Oriented Programming with C++ **-** Lab	6	40	60	100	3	2
		15UCS3A3	**Allied 3**–Business Accounting	5	25	75	100	3	5
	IV	15UCS3S1	Skill Based Subject 1- (Web Programming - HTML, CSS, XML)	2	25	75	100	3	3
		15TBT301 / 15TAT301 / 15UHR3N1	**Basic Tamil */ Advanced Tamil **/ Non-Major Elective 1****	**2**	**__**	**75**	**75**	**3**	**2**
IV		16UCS406	**C.P.6** – Operating Systems	5	25	75	100	3	4

		15UCS407	**C.P.7** – Data Structures	5	25	75	100	3	4
	III	16UCS408	**C.P.8** – Visual Basic and Oracle	5	25	75	100	3	5
		15UCS4CO	**C.Pr.4** – Visual Basic and Oracle Lab	6	40	60	100	3	2
		16UCS4A4	**Allied 4**–Microprocessors, PC – Hardware and Interfacing	5	25	75	100	3	5
	IV	15UCS4SL	Skill Based Subject 2 - (Web Programming Lab - HTML, CSS, XML)	2	40	60	100	3	3
		15T BT402 / 15T AT402 / 15UWR4N2	**Basic Tamil*/ Advanced Tamil** / Non-Major Elective 2****	**2**	___	**75**	**75**	**3**	**2**
V		16UCS509	**C.P.9** – Software Engineering and Testing	6	25	75	100	3	4
	III	15UCS510	**C.P.10** – Java Programming	4	25	75	100	3	5
		15UCS5CP	**C.Pr.5** – Java Programming -Lab	6	40	60	100	3	2
		15UCS511	**C.P.11 –** Computer Networks	6	25	75	100	3	4
		16UCS5E1	**Major Elective I**	**6**	**25**	**75**	**100**	**3**	**5**
	IV	16UCS5S2	Skill Based Subject 3 – (Web Programming – Java Script, VB Script and ASP)	2	25	75	100	3	3
VI		15UCS612	**C.P.12**– Software Project Management	4	25	75	100	3	4
	III	16UCS613	**C.P.13** – Python Programming	4	25	75	100	3	5
		16UCS6CQ	**C.Pr.6** – Python Programming Lab	6	40	60	100	3	2
		15UCS614	**C.P.14** – Information Security	5	25	75	100	3	5
		16UCS6E2	**Major Elective II**	5	25	75	100	3	5
		15UCS6Z1	Project Work and Viva-Voce ***	4	20	80	100	3	4
	IV	16UCS6SM	Skill Based Subject 4 – (Web Programming Lab – Java Script, VB Script and ASP)	2	40	60	100	3	3
Part V		15NCC/NSS/ YRC/PYE101	Extension Activities * *	-	50	-	50	-	1
			TOTAL				**3800**		**140**

@ Hindi/Malayalam/French/Sanskrit-12HIN/13MLM/12FRN/12SAN101-202
* No End-Of-Semester Examinations. Only Continuous Internal Assessment(CIA)
** No Continuous Internal Assessment(CIA). Only End-Of-Semester Examinations
*** Project Report – 60 marks; Viva Voce -20 marks; Internal – 20 marks

Note: In core/ allied subjects, no. of papers both theory and practical are included wherever applicable. However, the total credits and marks for core/allied subjects remain the same as stated below.

Tally Table:

S.No.	Part	Subject	Marks	Credits
1.	I	Language – Tamil/Hindi/Malayalam/ French/ Sanskrit	200	6
2.	II	English	200	6
3.	III	Core – Theory/Practical/Project	2100	77
		Allied	400	20
		Electives	200	10
4.	IV	Basic Tamil / Advanced Tamil (OR) Non-major elective	150	4
		Skill Based subject	400	12
		Environmental Studies	50	2
		Value Education	50	2
5.	V	Extension Activities	50	1
		Total	**3800**	**140**

Note :

CBCS – Choice Based Credit system
CIA   – Continuous Internal Assessment
ESE   – End of Semester Examinations

25 % CIA is applicable to all subjects except JOC, COP and Diploma Courses, which are considered as extra credit courses.

ELECTIVE PAPERS:

1. Systems Software
2. Soft Computing
3. Client/Server Techniques
4. Cloud Computing
5. Artificial Intelligence
6. Data Mining and Warehousing

Any two papers will be selected by the students - one in V semester and one in VI semester.

NON-MAJOR ELECTIVE:

1. Human Rights

2. Women's Rights

UCS 1

B.Sc. COMPUTER SCIENCE

SEMESTER–I

16UCS101

C.P.1 - COBOL PROGRAMMING

Objective:

Business applications are so vital in any programming environment. This paper COBOL Programming introduces a business oriented language specifically designed for business applications to the students. The course imparts the skills to design, develop and implement programs. More specifically it lays a strong foundation in understanding file oriented concepts.

UNIT I [13 Hours]

Introduction to COBOL - Character set - Constants and Variables - Arithmetic Operations - Layout of COBOL program –Divisions of COBOL- IDENTIFICATION DIVISION , ENVIRONMENT DIVISION, DATA DIVISION, PROCEDURE DIVISION- Code Characters – Edit Characters - Level numbers used in COBOL – Language Description notation.

UNIT II

Arithmetic Verbs- ADD, SUBTRACT, MULTIPLY, DIVIDE, COMPUTE- Data movement Verb MOVE - On Size Error and Rounded Options - IF statement - GOTO, GOTO DEPENDING ON Statements – Condition names (88 Level number)-   Simple COBOL Programs.

UNIT III [12 Hours]

Perform statements – Simple Perform, Perform … Thru, Perform …Times, Perform … Until, Perform … varying – Renames Clause – Redefines Clause – Simple programs illustrating the use of the above verbs and clauses

UNIT IV

Table handling – Syntax and rules of Occurs Clause –SORT verb syntax and rules – **Merge verb syntax and rules *** - Simple programs to demonstrate the applications of the Occurs clause and Sort/Merge Verbs.

UNIT V

File Concepts – OPEN, CLOSE, READ, WRITE, AT END for Sequential file handling – STRING and UNSTRING verbs - Screen Section features – Simple business application programs like Pay Slip preparation, Electricity Bill preparation using Sequential file concepts.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book:
1. M.K.Roy & G.Dastidar**," COBOL Programming"** Second Edition 1989, TMH Publishers.

Reference Books:
1. V.Rajaraman, **" COBOL Programming"** Sixth Edition 1997, Prentice Hall of India.
2. Stern and Stern **"COBOL Programming",** Seventh Reprint 1994, Tata McGraw Hill.

UCS 2

B.Sc. COMPUTER SCIENCE

SEMESTER–I

16UCS1CL

C.Pr.1 – COBOL PROGRAMMING - LAB

LIST OF PRACTICAL PROBLEMS

1. Write a program to explain the use of z,* edit characters. Read values through the keyboard and display both the unedited and edited data.

2. Write a program to find the biggest number among the three given numbers using IF statement of COBOL.

3. Write a program to convert the temperature given in Fahrenheit to Centigrade and vice versa using GO TO.. Depending ON option.

4. Write a program to calculate the factorial value of a given number using Perform … until option of COBOL.

5. Write a program to calculate the Simple Interest for the money deposited in a bank.

6. Write a program to read the roll number, name and mark of 3 students using Occurs clause and display the details that are entered .

7. Write a program to demonstrate the Redefines Clause. Assume necessary data .

8. Write a program to demonstrate the Renames Clause. Assume necessary data.

9. Write a program to create a Sequential File for student details. Assume that a record of a student has the fields roll number, name and mark.

10. Write a program to demonstrate the use of SORT verb. Assume necessary data.

11. Write a program to demonstrate the use of MERGE verb. Assume necessary data.

12. A file contains the following records about a class.

Fields	columns
Serial number	1 - 4
Roll number	5 - 10
Name	11 - 30
Age	31 - 32
Sex	33
Year in the college	34

Select the record with the following characteristics and write them in two files.

File-1 : records of all male students over 18 years of age , who are in the third year in the college.

File –2 : records of all the female students under 19 of age, in the fourth year of the college.

Use conditions name for the sex and year in the college.

13. An electricity company supplies electricity to four types of customer coded 1,2,3&4. The rate schedule for customers is shown in one table as

customer code	1	2	2	3	3	4
consumption	all	below 1000	above 1000	below 5000	above 5000	all & above
rate/unit	0.50	0.40	0.50	0.30	0.50	0.30

The customer record is :
col. 1-5   customer number
col. 6-30   name & address
col. 31-37   consumption in units
col. 38   customer code

Read a customer record and print a bill using GOTO DEPENDING ON statement.

14.Create a sequential file with the following record layout using the SCREEN SECTION

Fields	Pictures
Order number	9(6)
Customer number	9(5)
Salesman number	9(4)
Date	9(6)
Number of items	9
Product code	x(6)
Quantity	9(5)v99

15. Print the words of a given sentence one word per line. Display the first letter of all the words together as a single word at the end. The words in the sentence may be separated by 1 or more spaces.

Guidelines to the distribution of marks for Practical Examinations:

Two Questions will be given for each student. (3 Hours/60 marks)

Record   : **10 Marks**

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	10	10
Program Coding	10	10
Execution & Modifications	5	5

B.Sc. COMPUTER SCIENCE
SEMESTER-II

16UCS202

C.P.2 -   C – PROGRAMMING

Objective:

To enable the students to learn the basic functions, syntaxes etc and using them in programs.

UNIT I   **[12 Hours]**

Introduction to C – Overview of Compilers and Interpreters – Structure of C Program-Programming Rules- Character Set – Keywords – Variables – Data types – Type Conversion – Constant and Volatile Variables. Operators and Expressions : Priority of operators –   Arithmetic, Relational,   Logical,   Assignment, Increment / Decrement, Conditional, Bitwise   and Special Operators. I/O in C : Formatted ,Unformatted , Library Functions.

UNIT II   **[12 Hours]**

Decision Statements: if, if/else, switch, break, continue, goto. Loop Control Statements : Introduction – for, nested for loops- while, do-while statements.

UNIT III   **[13 Hours]**

Arrays: Introduction – Definition – 1D, 2D, 3D or Multi Dimensional Arrays. Strings: Standard Functions – Application of Strings. Pointers: Features – Declaration – Pointer and Arrays – Array of Pointers – Pointers to Pointers – Pointers and Strings – Void Pointers.

UNIT IV   **[12 Hours]**

Functions: Definition- Declaration – Types of Functions – Call by Value – Call by reference – Recursion – Pointer to Function. Storage Class: Automatic, External, Static, Register variables. **Preprocessor Directives: Macros - Conditional Compilation – Predefined Macros *.**

UNIT V   **[11 Hours]**

Structure and Union: Introduction – Declaration and initialization – Union. Files: Streams and File Types – File I/O – Structured Read and Write – Other File Function – Command Line Arguments – Application of Command Line Arguments.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book:

1. Ashok N Kamthane **,** "**Programming with ANSI and Turbo C"**, Pearson Education Publications, 1st Edition, 2002.

Reference books :

1. E .Balagurusamy , **"Programming in ANSI C",** TMH publications,1998.
 2. Henry Mullish & Herbert L Cooper**, "The Spirit of C",** Jaico Publication House,1996.

UCS 5

SEMESTER-II

C.Pr.2 –   C – PROGRAMMING - LAB

LIST OF PRACTICAL PROBLEMS

1. Write a program to find the sum, average, standard deviation for a given set of numbers.

2. Write a program to generate 'n' prime numbers.

3. Write a program to find the biggest number among a set of numbers.

4. Write a program to arrange a set of numbers in ASCENDING ORDER using BUBBLE SORT.

5. Write a program to merge a set of numbers available in Two Array into a Single Array.

6. Write a program to calculate a sine value and compare it with built-in function.
   [$x - x^3/3! + x^5/5!$ ……]

7. Write a Recursive function to calculate factorial value which compute nCr value.

8. Write a program to find the number of palindromes in a given sentence.

9. Write a function to perform
   i) String Copy
   ii) String Concatenation
   iii) String Reverse.

10. Write a program to implement LINEAR SEARCH to find a particular name in a list of names.

11. Write functions for following STACK operations
    i) PUSH
    ii) POP
    iii) LIST STACK

12. Write a generalized program to perform Matrix Addition.

13. Write a program to print the student's marksheet assuming rno, name, marks in 5 subjects in a structure. Create an array of structures and print the marksheet in the university pattern.

14. Write a program to display the content of an array using pointers.

15. Write a program which takes a file as command line argument and copy it to another file.

UCS 6

Guidelines to the distribution of marks for Practical Examinations:

Two Questions will be given for each student. (3 Hours/60 marks)

Record   : **10 Marks**

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	**10**	**10**
Program Coding	**10**	**10**
Execution & Modifications	**5**	**5**

UCS 7

B.Sc. COMPUTER SCIENCE

SEMESTER-III

16UCS303

C.P.3 –COMPUTER ORGANIZATION AND ARCHITECTURE

Objective:

The objective of this course is to cover the basic concepts of digital design in a clear, and concise manner. The basic building blocks needed for the design of a micro processor are covered

UNIT- I [15 Hours]

Representation of Information: Number System and Codes - Binary to Decimal Conversion – Decimal to Binary conversion – Octal Numbers – Hexadecimal Numbers –ASCII Code – Excess – 3 Code – Gray Code.

UNIT- II [14 Hours]

Logic circuits **:** Gates – AND, OR, NOT, NAND and NOR gates – Truth Tables – Boolean Algebra – Karnaugh maps – Product of Sums method – Sum of Product Method – Don't Care Conditions – Multiplexers - Demultiplexers – Flip flops – RS,JK,D,T Flip-Flops- Decoders.

UNIT – III [15 Hours]

Register transfer & Micro Operations: Register Transfer – Arithmetic Micro Operations – Logic Micro Operations – Shift Micro Operations – Arithmetic Logic Shift Unit. Central Processing Unit – Stack Organization – Instruction Formats.

UNIT – IV [17 Hours]

Input – Output Organization: Input-Output Interface – Asynchronous Data Transfer (strobe control & handshaking) – Priority Interrupt – Direct Memory Access – Input – Output Processor.

UNIT –V [14 Hours]

Memory Organization**: *Memory Hierarchy – Main Memory* –** Associative Memory – Cache Memory – Virtual Memory.

* -Self Study and Questions for Examinations may be taken from the self study portions also.

Text Books:

1. Albert Malvino, Donald P.Leach **" Digital Principles and Applications"** ,McGraw Hill Company , Third Edition, 1995 .[Unit I, II]
2. M.MORRIS MANO, **"Computer system Architecture "**, Pearson Education Publications, 3rd Edition, 1999.[Unit III, IV,V]

Reference Books:

1. T.C .Bartee , **" Digital computer Fundamentals "** , Tata McGraw Hill, 2003, Sixth Edition
2. Salivaganan & S.Arivazhagan , **" Digital Circuits and Design "** Vikas Publ, 2001
3. John P.Hayes **"Computer Architecture and Organization "**, Tata McGraw Hill Publishers Pvt Ltd, Third Edition, 1998.

B.Sc. COMPUTER SCIENCE

SEMESTER-III

16UCS304

<u>**C.P.4- DATABASE MANAGEMENT SYSTEM**</u>

Objective:
    To enable the students to learn the data base systems, relational algebra and calculus, normal forms, PL/SQL Programming. On successful completion of the course the students should have understood the designing of the data base and concepts of data base management system.

UNIT I   **[14 Hours]**
    Introduction: Purpose of Database Systems - View of Data - Data Models - Database Languages - Transaction Management - Storage Management Database Administrator - Database Users – Overall System Structure.
    Entity Relationship Model: Basic concepts - Keys - Entity Relationship Diagram, Weak Entity sets, Extended E-R Features : Specialization, generalization.

UNIT II   **[17 Hours]**
    Relational Model: Relational Algebra - Views. SQL: Background - Basic Structure - Set Operations - Aggregate Functions - Null values - Derived Relations - Views - Modification of the database - Joined Relations - Data Definition Language.

UNIT III   **[15 Hours]**
    Integrity Constraints: Domain Constraints - Referential Integrity - Assertions - Triggers. Functional Dependencies – Relational Database Design: Pitfalls – Decomposition- Normalization using Functional Dependencies.

UNIT IV   **[15 Hours]**
    Object Oriented Databases: New Database Applications - Object Oriented Data Model - Object Oriented Languages - Persistent Programming Languages. Database   System Architecture: Centralized systems- Client/ Server systems – Parallel Systems- Distributed systems- Network types.

UNIT V   **[14 Hours]**
    New Applications: Decision Support Systems - Data Analysis - Data Mining - Data Warehousing - Spatial and Geographic Databases – **Multimedia Databases - Mobility and Personal Databases *** - Information-Retrieval Systems - Distributed Information Systems .

* - Self Study and questions for examinations may be taken from the self study portions also.

<u>**Text Book:**</u>
1. Abraham   Silberschatz,   Henry   F.   Korth,   S.   Sudharshan, **"DATABASE   SYSTEM CONCEPTS",** Tata McGraw Hill International Editions, Third Edition- 1997.

<u>**Reference Books:**</u>
1. Alexis Leon And Mathews Leon ,"Database Management Systems" , Vikas pub-1999
2. Elmasri Navathe, "Database Management Systems", Pearson Education pub Fourth Edition-2006.

B.Sc. COMPUTER SCIENCE

SEMESTER- III

16UCS305

C.P.5- OBJECT ORIENTED PROGRAMMING WITH C++

Objective:

This paper introduces the need and importance of object oriented programming. It highlights the various concepts like classes, operator overloading and polymorphism apart from file concepts under object oriented programming.

UNIT I   **[14 Hours]**

Introduction to C++ - Key concepts of OOP – advantages – OOlanguages –I/O in C++.C++ declarations. Control structures : Decision making statements : if..Else, jump, goto, break, continue, Switch case statements. **Loops in C++: for, while, do..while loops*-** Functions in C++- inline Functions- function overloading.

UNIT II   **[16 Hours]**

Classes and Objects : Declaring objects – defining member functions- static member variables and functions – array of objects – friend functions – overloading member functions – constructors and destructors –characteristics –calling constructors and destructors .

UNIT III   **[15 Hours]**

Operator overloading: overloading unary, binary operators – overloading friend function- type conversion . Inheritance: Types of Inheritances – Single, multilevel, multiple, hierarchical, hybrid, Multipath inheritance- virtual base classes – abstract classes.

UNIT IV   **[16 Hours]**

Pointers-Declaration-Pointer to class, object-this pointer – Pointer to derived classes and base classes- Arrays- characteristics – arrays of classes –Binding ,Polymorphism and Virtual Functions.

UNIT V   **[14 Hours]**

Files – File Stream classes – File modes – Sequential File Read/Write operations – Templates – Exception handling – **Strings and   String Functions *.**

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book :

1. Ashok N Kamthane**, "Object oriented Programming with Ansi and Turbo C++",** Pearson Education Publication, 1st Edition, 2003.

Reference Books:

1. E.Balagurusamy, **"Object oriented programming with C++",** TMH Publication, 1998.
2. Maria Litvin & Gary Litvin, **"C++ for you",** Vikas Publication, 2002.
3. John R Hubbard **"Programming with C++",** 2nd Edition,TMH Publication, 2002.

B.Sc. COMPUTER SCIENCE

SEMESTER- III

16UCS3CN

C.Pr.3 – <u>**OBJECT ORIENTED PROGRAMMING WITH C++ - LAB**</u>

<u>**LIST OF PRACTICAL PROBLEMS**</u>

1.Create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the stack to 0. Write a member function PUSH( ) to insert an element and a member function POP( ) to delete an element. Check for overflow and underflow conditions.

2.Create a class ARITH which consists of a FLOAT and an INTEGER variable . Write member functions ADD( ) , SUB( ) , MUL( ) , DIV( ) , MOD( ) to perform addition ,multiplication, division and modulus respectively. Write member functions to get and display values.

3.Create a class MAT has a 2-Dmatrix and R & C represents the rows and columns of the matrix . Overload the operators +,-,* to add, subtract and multiply two matrices .Write member functions to get and display MAT object values.

4. Write a program to define Class A, B and C. The Class C is derived from A and B. Define count() member function in all the classes as virtual, count number of objects   created.

5. Define a Class to represent a Bank Account. Include the following members:
   1. Name of the depositor.
   2. Account number.
   3. Type of account.
   4. Balance amount.
   Member functions:
   1. To assign initial values .
   2. To deposit an amount.
   3. To withdraw an amount after checking balance.
   4. To display name and balance.
   Write a main program to test the program.

6.Write a program to implement Destructors.

7.Write a program to implement multilevel inheritance.

8. Write a program to overload member functions in base and derived class.

9.Create a class STRING. Write member functions to initialize , get and display strings . Overload the operator + to concatenate two strings, == to compare 2 strings and a member function to find the length of the string.

10.Create a class which consists of EMPLOYEE detail like eno, ename, dept, basic salary, grade. Write member functions to get and display them. Derive a class PAY from the above class and write a member function to calculate da, hara, pf, depending on the grade and display the Payslip in a neat format using console I/O.

11.Creat as class SHAPE which consist of two VIRTUAL FUNCTIONS Cal_Area( ) and Cal_PERI to calculate Area and Perimeter of various figures. Derive three classes SQUARE, RECTANGLE and TRIANGLE from the class SHAPE and calculate Area and Perimeter of each class separately and display the result.

12.Create two classes which consists of two private variables, one Integer and one Float variable in each class. Write member functions to get and display them. Write a FRIEND function common to arguments and the Integer and Float values of both the objects separately and display the result.

13.Write a user defined function USERFUN( ) which has the formatting commands like setw( ), showpoint, showpos, precision( ). Write a program which prints an multiplication table and uses USERFUN( ) for formatting.

14.Write a program to demonstrate the concept function with default arguments .

15..Write a program which takes a file as argument and copies in to another file with line numbers using Command Line Arguments.

Guidelines to the distribution of marks for Practical Examinations:

Two Questions will be given for each student. (3 Hours/60 marks)

Record   : **10 Marks**

Particulars	Program1 (Marks)	Program2 (Marks)
Algorithm	10	10
Program Coding	10	10
Execution & Modifications	5	5

B.Sc. COMPUTER SCIENCE

SEMESTER-IV

16UCS406

C.P.6 - OPERATING SYSTEMS

Objective:
To enable the students to learn the basics of operating system, threads, deadlock, scheduling and file management.

UNIT I   **[14 Hours]**
Introduction and Definition of OS – Process Concept : Definition of Process – Process States - Process State Transition - Interrupt Processing - Interrupt Classes – Context Switching

Deadlock: Introduction – Deadlock Prevention – Deadlock Avoidance - Deadlock Detection - Deadlock Recovery – Indefinite Postponement.

UNIT II   **[16 Hours]**
Storage Management Real Storage: Real Storage Management Strategies ‑ Contiguous Vs Non-Contiguous Storage Allocation ‑ Single User Contiguous Storage Allocation ‑ Fixed Partition Multiprogramming -Variable Partition Multiprogramming, Multiprogramming with Storage Swapping.

Virtual Storage: Virtual Storage Management Strategies- Page Replacement Strategies.

UNIT III   **[15 Hours]**
Processor Management Job and Processor Scheduling: Preemptive Vs Non-Preemptive Scheduling - Priorities -Deadline Scheduling - FIFO ‑ RR ‑ Quantum Size ‑ SJF - SRT ‑ HRN.

Distributed Computing: Classification of Sequential and Parallel Processing ‑ Array Processors ‑ Dataflow Computers -Multiprocessing ‑ Fault Tolerance.

UNIT IV   **[15 Hours]**
Device and Information Management Disk Performance Optimization: Operation of Moving Head Disk Storage ‑ Need for Disk Scheduling - Seek Optimization ‑ FCFS ‑ SSTF ‑ SCAN ‑ RAM Disks ‑ Optical Disks.

File and Database Systems: File System ‑ Functions ‑ Organization ‑ Allocating and Freeing Space ‑ File Descriptor ‑ Access Control Matrix.

UNIT V   **[15 Hours]**
Case Studies MS-DOS: Introduction – Early History of MS-DOS -**User's View of MS-DOS** *- Systems View of MS-DOS – The Future of MS-DOS.

UNIX: Introduction – History – The Shell – The Kernel – File System – Process Management – **Memory Management** *– The Input/Output System .

* - Self Study and questions for examinations may be taken from the self study portions also.

UCS 13

Text Book:

1. H.M.Deitel,**"Operating Systems",** Second Edition,Pearson Education Publ, 2003.

Reference Books:

1. Achyut S Godbole, **"Operating Systems",** TMH Publ,2002.
2. Andrew S.Tanenbaum, "**Modern Operating System",** Prentice Hall of India Pvt. Ltd., Delhi, 1999.

B.Sc. COMPUTER SCIENCE

SEMESTER-IV

15UCS407

C.P.7 - DATA STRUCTURES

Objective:
This subject presents fundamentals of algorithms, linked lists, stacks, queues, trees, graphs and sorting and searching techniques which are essential for developing various applications.

UNIT I   **[13 Hours]**
Introduction ‑ overview - **How to create programs and analyze them** *. Arrays ‑ structures ‑ ordered lists ‑ representation of arrays ‑ simple applications

UNIT II   **[15 Hours]**
Stacks and queues ‑ Fundamentals – structure-operations ‑Multiple stacks and queues. Applications Evaluation of Expressions.

UNIT III   **[16 Hours]**
Linked lists ‑ single linked lists ‑ Linked stacks and queues ‑ The storage pool - Applications ‑Polynomial addition, Sparse matrices. Double Linked Lists ‑ Dynamic storage management ‑ Garbage collection and compaction.

UNIT IV   **[16 Hours]**
Searching and sorting: Binary, sequential, and Fibonacci ‑ Internal sorting Insertion, quick, merge, heap, radix sorts ‑ External sorting ‑ Sorting with disks ‑ K-way merging‑ sorting with tapes ‑ Balanced merge - Polyphase merge.
Symbol tables ‑ Static tree ‑ Dynamic tree ‑ Hash tables.

UNIT V   **[15 Hours]**
Files ‑ **queries and sequential organizations** * ‑ Index Techniques.File organizations Sequential, Random, Linked Organizations - Inverted files ‑ Cellular partitions

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book:

1. Ellis Horowitz & Sartaj Sahani **"Fundamentals of Data Structures"** , Galgotia book source, 1999.

Reference Books:

1. Ashok N Kamthane, **"Programming and Data Structures",** Pearson Education,2004.
2. Robert Kruse, C.L.Jondo, Bruse Leung, **"Data Structures and Program Design in C",** Pearson Education, Asia, Second Edition.

B.Sc. COMPUTER SCIENCE

SEMESTER-IV

16UCS408

C.P.8 - VISUAL BASIC AND ORACLE

Objective:
To understand the concepts associated with RDBMS and the Programming Languages VB, SQL and PL/SQL. This will enable the students to carry out the project work using the techniques available.

UNIT I   **[14 Hours]**
Introduction – Integrated Development Environment: Menu Bar, Tool Bar, Project Explorer Window, Property Window, Form Layout Window, Code Window – Properties, Methods, Events – Working With Forms – Declaring Data Types And Variables – **Built-In Functions** *-Procedures And Control Statements – Arrays.

UNIT II   **[13 Hours]**
Working with Controls – Classification of Controls – Text Box – Labels – Command Buttons – Check Box- Combo Box – List Box- Option Buttons – Frames – Timer Control – Scroll Bars – Menus & Dialog Box – Graphics Controls – SDI – MDI – Control Arrays.

UNIT III   **[16 Hours]**
ODBC – DAO: Creating a Database, Creating a Record Set, Types of Record Set, Opening a Database, Add, Edit, Update and Delete Records, Moving to First, Last, Next and Previous Records in a Record Set, Searching a Record Set, Sorting a Record Set – Data Environment and Data Reports.

UNIT IV   **[16 Hours]**
Basic database concepts, characteristics of relational DBMS model *, CODD's Law, ORACLE Tools.
Interactive SQL : Invoking SQL * Plus, Data Manipulation in DBMS – The Oracle data types – insertion, updating, deletion, modification – Select Command – Removing, Deleting, Dropping tables, Data Constraints, Arithmetic, Logical Operators, Oracle Functions, Grouping Data from Tables - Manipulating Dates.

UNIT V   **[16 Hours]**
Joins, Sub Queries – Union, Intersect and Minus Clause, Granting Permissions.
PL/SQL: Introduction, PL/SQL Syntax, Understanding PL/SQL Block Structure, Oracle Transactions.

* - Self Study and questions for examinations may be taken from the self study portions also.

UCS 16

Text Books:

1. Gray Cornell, **"Visual Basic 6 from ground up"** TMH, New Delhi, 1st Edition, 2003. (Unit I,II & III)
2. Ivan Bayross, **"Commercial Application Development Using ORACLE Developer 2000"**, BPB Publication, 1st Edition, 1997.   (Unit IV and V)

Reference Books:

1. Deitel and Deitel, T.R.Nieto, **"Visual Basic 6 - How to Program",** Pearson Education. Fourth Edition.

2. Dr.P.S.Deshpande, **"SQL and PL/SQL for Oracle Lock Black Book"**, Dream Tech. Press, 2007 Edition.

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B.Sc. COMPUTER SCIENCE

SEMESTER-IV

15UCS4CO

C.Pr.4 – VISUAL BASIC AND ORACLE - LAB

LIST OF PRACTICAL PROBLEMS

1. Write a code for the following:

Scroll the text "Visual Programming Lab" from left to right and right to left on client area.

2. Divide the client area into 8 * 8 cells and while moving the mouse on these cells, the shape of cursor should change in every cell.

3. Using mouse down event, write a visual basic application to identify whether the right button or the left button was clicked

4. Write code to develop calculator program, which includes basic mathematical functions like addition, subtraction, multiplication and division.

5. Write a program to maintain the following information in a business database:
   - Supplier address

   - Customer address

   - Types of business

   - Stock level of business

Execute the program with suitable data and show the results in a NEAT format.

6. Use the circle method to draw several ellipse and circles so that they have the appearance of a pair of eyes.

7. Create a designer with basic primitives like circle, square, rectangle, ellipse and fill the same.

8. Design an application using the common dialog control to display the Font, Save and open dialog box without using the action property of the control.

9. Draw points on a form at random with red, blue and green colors.

10. Using the Flex Grid control write a program that calculates addition subtraction, multiplication, and division of numbers ranging from 1 to 12.

11. Develop a simple project on automated system for Railway Reservation

12. Develop a simple project on automated system for Payroll.

13. Develop a simple project on automated system for attendance maintenance.

14. Develop a simple project on automated system for students mark list preparation.

15. Develop a simple project on automated system for telephone billing.

Guidelines to the distribution of marks for Practical Examinations:

Two Questions will be given for each student. (3 Hours/60 marks)

Record   : **10 marks**

	Program1 (marks)	Program2 (marks)
Algorithm	10	10
Program Coding	10	10
Execution	5	5

B.Sc. COMPUTER SCIENCE

SEMESTER-V

16UCS509

C.P.9 -- SOFTWARE ENGINEERING & TESTING

Objective:

Upon successful completion of this course, students will have a basic understanding of the principles of software engineering and testing and the various activities it involves. Students will gain hands-on experience with design, problem-solving, communication, testing and teamwork.

UNIT I   **[16 Hours]**

Introduction – The Evolving Role of Software – Software Crisis – Software Myths – Software Engineering Technology – Software Process Models – Prototyping Model- Requirements Engineering – System Modeling.

UNIT II   **[19 Hours]**

Requirements Analysis and Elicitation for Software – Software Prototyping – Specification – Mechanics of Structured Analysis – Data Dictionary –Elements of Analysis Model- Functional Modeling and Information Flow - Transform Mapping – Transaction Mapping.

UNIT III   **[18 Hours]**

Object Oriented Design – Design for Object-Oriented Systems - System Design Process. Introduction: Quality, Quality Assurance and Quality Control - Testing, Verification and Validation. Types of Testing: White-Box Testing- Black-Box Testing.

UNIT IV   **[19 Hours]**

Integration Testing: What is Integration Testing-Integration Testing as a Type of Testing-Integration Testing as a Phase Testing - Scenario testing - System and Acceptance Testing: Functional versus Non-functional Testing - Functional Testing – Nonfunctional Testing – Acceptance Testing.

UNIT V   **[18 Hours]**

Performance Testing: Introduction - Factors Governing Performance Testing- Methodology for Performance Testing- Regression Testing: What is Regression Testing- Types of Regression Testing - **Test Planning*, Execution and Reporting***.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text books:
1. Roger S Pressman, **"Software Engineering"**, 5th Edition, 2001, TMH Publishers[Unit I,II&III].
2. Srinivasan Desikan & Gopalswamy Ramesh ,"**Software Testing Principles and Practices"**, 2006, Pearson Education. [unit IV & V]

Reference Books:
1. Ian Somerville**, "Software Engineering",** 6th Edition, Pearson Education Publication, 2001.
2. William E.Perry, **"Effective Methods of Software Testing"**, 3rd Edition, Wiley, India.

B.Sc. COMPUTER SCIENCE

SEMESTER-V

15UCS510

C.P.10 - JAVA PROGRAMMING

Objective:

To enable the students to learn the Object oriented programming, Functions, Threads, Applets, Principles of programming techniques of java language.

UNIT I   [12 Hours]

JAVA Evolution : History – Features – How Java differs from C and C++ - Java and Internet- Java and WWW – Web Browsers.Overview of Java Language : Introduction – Simple Java program – Structure – javaTokens – Statements-Java virtual Machine.

UNIT –II   [12 Hours]

Constants- variables – Data types – Operators and Expressions. Decision Making and Branching: If,If..else,else..if ladder,Switch, ?: operator Decision Making and Looping : While,do,for – jumps in loops-labelled loops. Classes,Objects and Methods.

UNIT –III   [13 Hours]

Arrays,Strings and Vectors- Interfaces:Multiple Inheritance-**Packages :Putting classes together *** – Multi Threaded Programming.

UNIT – IV   [11 Hours]

Managing Erros and Exceptions–Applet programming–**Graphics programming** *.

UNIT –V   [12 Hours]

Files : Introduction – concept of streams – Stream classes – Using streams –
I/O classes- File class – I/O Exceptions – creation of files- Reading/Writing characters /Bytes-Handling primitive data types – Random Access Files.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book :

1. E.Balagurusamy **"Programming with Java – A Primer"**, TMH Publications, 2nd Edition, 2000.

Reference Books:

1. Patrick Naughton and Herbert Schildt **"The Complete Reference Java 2"**, 3rd Edition, TMH Publications, 2000.
2. C.Xavier **"Programming with Java 2",** Scitech Publications, 2000.

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B.Sc. COMPUTER SCIENCE

SEMESTER-V

15UCS5CP

C.Pr.5 – JAVA PROGRAMMING - LAB

LIST OF PRACTICAL PROBLEMS

1. Write a program, which creates and displays a message on the window.

2. Write a program to draw several shapes in the created window.

3. Write a program to create an applet and draw grid lines.

4. Write a java program to create a frame with two buttons called father and mother. When we click the father button the name of the father, his age and designation must appear. When we click mother similar details of mother appear.

5. Write a java program to create four text fields for the name, street, city and pincode with suitable labels. Also add a button called my details, when you click the button your name, street, city and pincode must appear in the text fields.

6. Write a Java program to create a frame with three text fields for name, age and qualification and a text field of multiple line for address.

7. Write a Java program to demonstrate the multiple selection list box.

8. Write Java program to create a menu bar and pull down menus.

9. Write a Java program to create a window when we press M or m the window displays Good Morning **A** or a the window displays Good Afternoon E or e the window displays Good Evening N or n the window displays Good Night.

10. Write a program to move different shapes(Circle, Ellipse, Square, Rectangle) according to the arrow key pressed.

11. Write a program to draw circle, ellipse, square, rectangle at the mouse click position.

12. Write a program to handle the divide by zero exception

13. Write a program to create an exception called payoutofbounds and throw the exception.

14. Write a program to explain the multithreading with the use of multiplication tables. Three threads must be defined. and each one must create one multiplication table; they are 5 tables, 7 tables and 13 table

15. Write a program to illustrate thread priority. Create three threads and assign three different priorities.

<u>Guidelines to the distribution of marks for Practical Examinations:</u>

Two Questions will be given for each student. (3 Hours/60 marks)

Record   : **10 marks**

	Program1 (marks)	**Program2 (marks)**
Algorithm	10	10
Program Coding	10	10
Execution	5	5

B.Sc. COMPUTER SCIENCE

SEMESTER-V

15UCS511

C.P.11 – COMPUTER NETWORKS

Objective:

To enable the students to learn the basics of computer networks, layers and network security.

UNIT I [17 Hours]

Introduction: Uses of computer networks-Network Hardware – Network Software-Reference Models.

UNIT II [19 Hours]

The Physical layer : Guided transmission media – **Communication satellites** * – The Public Switched telephone network : **Structure of the telephone system** * – The local loop : modems, wireless local loops – Switching.

UNIT III [20 Hours]

The Data link layer: Data link layer design issues – error detection and correction. The Medium access control sublayer: The channel allocation problem – Multiple access protocols: Carrier sense multiple access protocols, collision-free protocols, Limited-Contention protocols – Bluetooth : Bluetooth Architecture, Bluetooth applications. Data link layer switching: repeaters, hubs, bridges, switches, routers and gateways.

UNIT IV [19 Hours]

The Network layer: Network layer design issues – Routing algorithms: The optimality principle, shortest path routing, flooding, distance vector routing, routing for mobile hosts. The Transport layer: The Transport service: Services provided to the upper layers, transport service primitives, Berkeley sockets – Elements of Transport protocols.

UNIT V [15 Hours]

The Application layer: DNS – The Domain Name System – Electronic mail: Architecture and services, the user agent. Network Security: Cryptography – Symmetric-Key algorithm: DES – Public-Key algorithms – Digital Signatures: Symmetric-Key Signatures, Public-Key signatures.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book:

1. Andrew S. Tanenbaum, **"Computer Networks"**, 4th Edition, 2003, Pearson Education Publications.

Reference Books:

1. Miller, **"Data And Network Communications"**, Vikas Publication, 2001.
2. William A Shay, **"Understanding Data Communications and Networks"**, 2nd Edition, Vikas Publication, 2001.

B.Sc. COMPUTER SCIENCE

SEMESTER-VI

15UCS612

C.P.12 – SOFTWARE PROJECT MANAGEMENT

Objective:
To understand the various aspects associated with software project and to know how efficiently one can use techniques for managing the software project in a scientific manner.

UNIT I   **[17 Hours]**
Product Life cycle: Introduction. Conventional Software Management: The waterfall model, Prototype Model, Rapid application development model and Spiral model. Evolution of Software Economics : Software Economics, pragmatic software cost estimation.

UNIT II   **[20 Hours]**
Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections. The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT III   **[17 Hours]**
Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases. Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT IV   **[17 Hours]**
Model based software architectures: A Management perspective and technical perspective.
Work Flows of the process: Software process workflows, **Iteration workflows*.**

UNIT V   **[19 Hours]**
Checkpoints of the process: Major mile stones, Minor milestones, Periodic status assessments. Iterative process planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning. Project control and Process instrumentation: **The seven core Metrics***, pragmatic software Metrics, Metrics automation.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book :
1. Walker Royce, **"Software Project Management"**, Pearson Education, 2005.

Reference Books:
1. Bob Hughes and Mike Cotterell, **" Software Project Management",** Tata McGraw-Hill Edition.
2. Gobalswamy Ramesh, **"Managing Global Software Projects",** Tata McGraw Hill Publishing Company, 2003.

B.Sc. COMPUTER SCIENCE

SEMESTER-VI

16UCS613

C.P.13 – PYTHON PROGRAMMING

Objective:

To introduce the fundamentals of Python Programming

Unit I [13 Hours]

Introduction to Python: Introduction-Python Overview-Getting started with python-Comments-Python Identifiers-Reserved Keywords-Variables-Standard data types. Operators-Statement and expressions-String operations- Boolean expressions- Control statements- Iteration-While statement-Input from keyboard.

Unit II [12 Hours]

Built-in functions- Composition of functions - User defined functions-Parameters and arguments-Function calls-The return statement-Python recursive function. Strings-Compound data types- Len function- String slices- Strings are immutable- Strings traversal-Escape characters- String formatting operators-String formatting functions.

Unit III [13 Hours]

Lists - values and accessing elements - Lists and mutable - Deleting elements from list-Built-in list operations - Built-in list methods. Tuples - Creating tuples – Accessing values in tuples – tuples are Immutable – Tuple assignment- Tuples as return values- Variable length argument tuples- Basic Tuple operations. Built-in tuple functions.

Unit IV [10 Hours]

Dictionaries – Creating a dictionary - Accessing values in a dictionary – Updating dictionary – Deleting elements from dictionary - Properties of dictionary keys – Operations in dictionary – Built-in dictionary methods.
Classes and Objects: Overview of OOP - Class Definition - Creating Objects - Objects as arguments - Objects as Return Values - Built-in class attribute - Inheritance – Method Overriding - Data Encapsulation - Data Hiding.

Unit V [12 Hours]

Files: Text files: Opening a file – Closing a file – The file object attributes- Writing to a file – Reading from a file - Renaming a file – Deleting a file – Files related methods.
Directories: mkdir() , chdir(). Exception: Built-in exceptions – Handling exceptions – Exception with arguments – User defined exceptions.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book:

1. E. Balagurusamy (2017), "**Problem Solving and Python Programming"**, McGraw-Hill, First Edition.

Reference Book:

1. Ashok Namdev Kamthane, Amit Ashok Kamthane (2017), "**Programming and Problem Solving with Python"**, McGraw-Hill, First Edition.
2. **Martin Jones** (2015), **"Python for Complete Beginners"**, Createspace Independent Publisher, First Edition.

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B.Sc. COMPUTER SCIENCE

SEMESTER-VI

16UCS6CQ

C.Pr.6 – PYTHON PROGRAMMING LAB

LIST OF PRACTICAL PROBLEMS

1. Write a program to solve quadratic equation.

2. Write a program to convert temperature in Celsius to Fahrenheit and Fahrenheit to Celsius.

3. Write a program to generate prime numbers u to a given number.

4. Write a program to multiply two matrices.

5. Write a program to create a simple calculator using functions.

6. Write a program to accept 5 subject marks and to calculate the total, average and grade of a student.

7. Write a program to generate an electricity bill.

8. Write a program to count the number of each vowel in a string.

9. Write a program to perform binary search for a given set of numbers.

10. Write a program to demonstrate tuples functions and operations

11. Write a program to demonstrate dictionaries functions and operations

12. Write a python program to demonstrate File Input and Output operations.

13. Write a program to demonstrate Multiple Inheritance.

14. Write a program to demonstrate Exception Handling

15. Write a program to demonstrate Classes and their Attributes.

Guidelines to the distribution of marks for practical Examinations:

Two Questions will be given for each student. (3 Hours/60 marks)
Record: **10 marks**

	Program1 (marks)	Program2 (marks)
Algorithm	10	10
Program Coding	10	10
Execution	5	5

B.Sc. COMPUTER SCIENCE

SEMESTER-VI   *15UCS614*

C.P.14 – INFORMATION SECURITY

Objective:

This course aims on introducing the theory and practice of designing and building secure computer systems that protect information and resist attacks. The main objective of this course is to train and equip the students with all the required knowledge to become information security professionals for the high-end jobs in security. This course covers all aspects of cyber security including network security, computer security and information security.

UNIT I   **[17 Hours]**

Is there Security Problem in Computing? : What does Security mean? –Attacks-The Meaning of Computer Security-Computer Criminals.   Protection in general purpose operating systems :   Protected Objects and Methods of Protection-Memory and Address Protection-Control of Access to General Objects-File Protection Mechanoisms-User Authentication.

UNIT II   **[19 Hours]**

Program Security: Secure Programs- Nonmalicious Program Errors – Viruses and other Malicious Code - Targeted Malicious Code - Controls against Program Threats.

UNIT III   **[18 Hours]**

Database and Data Mining Security: Intoduction to Databases- Security Requirements-Reliability and Integrity - **Multilevel Databases*** – Proposals for Multilevel Security- Data Mining.

UNIT IV   **[17 Hours]**

Security in Networks: **Network Concepts***-Threats in Networks-Firewalls-Intrusion Detection Systems.

UNIT V   **[19 Hours]**

Legal and Ethical Issues in Computer Security: Protecting Programs and Data-Information and the Law-Computer Crime- Ethical Issues in Computer Security.

Text Book:

1. Charles P Pfleeger and Shai Lawrence Pfleeger, **"Security in Computing",**Fourth Edition, Prentice Hall, 2007.

Reference Books:

1. Ross J.Anderson and Ross Anderson ,**"Security Engineering: A Guide to Building Dependable Distributed Systems"**, Wiley, 2001.
2. Debby Russell and Sr.G.T.Gangemi**,"Computer Security Basics (Paperback)"**,Second edition, O'Reilly Media, 2006.
3. Thomas R.Peltier, Justin Peltier and John Blackley, **"Information Security Fundamentals"**, 2nd Edition, Prentice Hall, 2001 Reprint.

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B.Sc. COMPUTER SCIENCE

SEMESTER -VI

15UCS6Z1

PROJECT WORK AND VIVA-VOCE

MARK DISTRIBUTION :

	Marks
CIA	**20**
Viva – Voce *	**20**
Project Record *	**60**

* Both Internal & External Examiners shall evaluate Project & Viva-Voce jointly.

ALLIED SUBJECTS

B.Sc. COMPUTER SCIENCE

SEMESTER-IV

16UCS4A4

ALLIED 4 - MICROPROCESSORS,PC HARDWARE AND INTERFACING

Objective:

To introduce assembly language and thereby familiarize the student with architecture of microprocessors.

UNIT I   **[16 Hours]**

8086 Microprocessor: Introduction – general organization of a Microcomputer - 8086 internal Architecture- Instructions-DataTransfer,Arithmetic, Bit Manipulation,String. The 8086 based system design: Pins and Signals-Pin Configuration, Signals, Interfacing memory-Memory Devices - Interrupts.

UNIT II   **[16 Hours]**

Peripheral Devices: Introduction- Programmable Peripheral Interface (8255A)-Inernal blocks of 8255A -Priority Interrupt Controller (8259A)-Internal Block Diagram - Direct Memory Access Controller (8237)-Oraganisation of 8237-The Programmable Interval Timer (8254)-Internal Block Diagram-Universal Asynchronous Receiver Transmitter(UART)-Inernal Block Diagram.

UNIT III   **[14 Hours]**

Advanced Microprocessors: 80386-Internal Block Diagram , Internal Registers, 80486-Internal Blocks and signals , Internal Registers,Pentium - Internal Blocks and Signals, Pentium MMX, Pentium Pro, Pentium-II Microprocessor. Motherboard of IBM PC: Introduction, Motherboard Components

UNIT IV   **[14 Hours]**

Drives: Introduction – Principles of Magnetic Storage – **Floppy Disk Drive – Hard disk drive-CD –ROM Drive** *. Peripherals: Video display system-Keyboard-Printer

UNIT V   **[15 Hours]**

Parallel & Serial Ports: Parallel port – Standard Parallel port (SPP)- Enhanced Parallel port (EPP) –Serial Port: -Pins and Signals of serial port –BIOS serial port services. Universal Serial Bus: Introduction – Features of USB – USB System – USB Transfer – USB Controller

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book:
1. N. Mathivanan – **"Microprocessors, PC Hardware And Interfacing"**- PHI Publications, New Delhi 2003.

Reference Books:
1. Ramesh S. Gaonkar – **"Microprocessor Architecture Programming and Applications with 8085"** - Penram International 3rd Edition, 1997.
2. A.P. Mathur – **"Introduction to Microprocessors"** - Tata McGraw Hill Publishing Company, 1998.

ELECTIVE SUBJECTS

B.Sc. COMPUTER SCIENCE

ELECTIVES FOR FIFTH OR SIXTH SEMESTER
ELECTIVE PAPER   -   SYSTEMS SOFTWARE

Objective:
To enable the students to understand the design and functions of the Systems Software that supports the implementation of the application software.

UNIT I   **[18 Hours]**
Language Processors : Introduction – Language Processing activities – Fundamentals of language processing – Fundamentals of language specification – Language processor development tools.

UNIT II   **[18 Hours]**
Assemblers : Elements of assembly language programming – A simple assembly scheme – Pass structure of assemblers – Design of a two pass assembler – Pass I of the assembler – Pass II of the assembler.

UNIT III   **[18 Hours]**
Macros and Macro Processor : Macro definition and call – Macro expansion – Nested macro calls – Advanced macro facilities – Design of a macro preprocessor – Design of a macro assembler .

UNIT IV   **[19 Hours]**
Compliers and Interpreters : Aspects of compilation – Memory allocation – Compilation of expressions – A toy code generator for expressions – Intermediate code for expressions -Compilation of control structures – Code optimization – optimizing transformations – Local optimization – Global optimization – Interpreters.

UNIT V   **[17 Hours]**
Linkers : Relocation and linking concepts – Design of a linker – Self-relocating programs – Linking for overlays – Loaders.
Software Tools : Software tools for program development – **Editors – Debug monitors *** – Programming environments – User interfaces.

* - Self Study and questions for examinations may be taken from the self study   portions also.

Text Book:

1. D.M. Dhamdere ,"**Systems Programming And Operating Systems**" Tata McGraw-Hill Publishing Company Limited -Second Revised Edition – 2002.

Reference Books:

1. Leland.L.Beck, "**An Introduction to System Programming**", Addison Wesley, Third Edition.
2. John J.Donovan ,"**System Programming** ", MCGraw Hill, 1st Edition.

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B.Sc COMPUTER SCIENCE

ELECTIVES FOR FIFTH OR SIXTH SEMESTER

ELECTIVE PAPER   -   SOFT COMPUTING

Objectives:

To enable the students to gain knowledge in different models of networks used for soft computing.

UNIT I [19 Hours]
Introduction - History of artificial neural networks – Knowledge based information processing – Neural information processing – Hybrid intelligence.Basic neural computational models:Basic concepts of neural networks – Inference and learning – classification models .

UNIT II [17 Hours]
Association Models – Optimization Models – Self Organization Models.Learning – Supervised and Unsupervised – Introduction – Statistical Learning.

UNIT III [19 Hours]
AI Learning – Neural Network Learning – Genetic Algorithms – Knowledge Based Neural Networks : Introduction – Rule based Neural Networks – Network Training.

UNIT IV [19 Hours]
Mathematical Modelling – The Application of Neural Networks – Neural Networks as Mathematical Models – Knowledge Based Approaches – Complex Domains – **Expert System Heuristics ***.

UNIT V [16 Hours]
Hierarchical Models   - Parallel Models – Differentiation Models – Control Networks.Discovery – Introduction – Symbolic Methods – Neural Network Methods – **Structures and Sequences** ***.**

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book:

1. LiMin Fu, **"Neural Networks in Computer Intelligence"**, Tata McGraw-Hill, 1st edition, 2003.ISBN 0-07-053282-6.

Reference Books:
1. Satish Kumar**,"Neural network – A class Room Approach",** Tata McGraw-Hill,1st edition, 2008.
2. James.A.Freeman,David M.Skapura,**"Neural Network – Algorithms applications and programming techniques",**Pearson education, 1st edition, 2008.

B.Sc. COMPUTER SCIENCE

ELECTIVES FOR FIFTH OR SIXTH SEMESTER
ELECTIVE PAPER -   CLIENT / SERVER TECHNIQUES

Objective:
To understand the concept of Client/Server computing, Client/Server transaction processing and databases.

UNIT I [18 Hours]
Client Server computing - What is Client/Server - File servers, Database servers, Transaction servers, Group ware servers, Object servers, Web servers - **FAT servers or FAT clients** * - client / server Building blocks .

UNIT II [16 Hours]
Client/Servers and operating systems - Needs of Client/server from an OS - server scalability - Client Anatomy - Client server hybrids .

NOS : Creating the single system image - Peer-to-peer communications − Sockets- Remote procedure calls(RPC) - Messaging and Queuing: The MOM Middleware - MOM VS RPC.

UNIT III [13 Hours]
SQL Database Servers - What does a Database server do - Stored procedures, Triggers and rules.
Data ware houses - OTP (Online Transaction Processing) Decision Support systems (DSS)- Executive Information System (EIS) -The Data ware house - EIS/DSS : From Queries, to OLAP (OnLine Analytical Processing), Data mining.

UNIT IV [14 Hours]
Client/Server Transaction Processing - the ACID properties - Transaction Models - TP Monitors - Client/server groupware - importance of groupware - The components of groupware - 3-Tier Client/server, object style - Distributed objects, CORBA style Object management Architecture - CORBA 2.0.CORBA Object - CORBA common facilities - CORBA Business objects.

UNIT V [14 Hours]
Web client/Server - What is URL? - Shortest HTML tutorial - HTTP-3 tier client/server, Web style - HTML Web based forms - CGI: The server side of the Web - Web Security - **The Internet and the Intranets** * - The DCOM/OLE object Web - The CORBA Object Web.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book:
1. Robert Orfali, Dan Harkey, Jeru Edwards, "**The Essential Client / Server Survival Guide**", Galgotia Publications Pvt. Ltd, 2nd Edition, 1997.

Reference Books:
1. Dawna Travis Dewire , **"Client / Server Computing"** , McGraw-Hill,INC Publications**.**
2. Joe Salemi **, "Guide to Client / Server Database",** BPB Publications.

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B.Sc. COMPUTER SCIENCE

ELECTIVES FOR FIFTH OR SIXTH SEMESTER

ELECTIVE PAPER - CLOUD COMPUTING

UNIT-I   **[14 Hours]**

Cloud Computing Basics: Cloud Computing Overview – Applications – Intranets and the Cloud. Hardware and Infrastructure: Clients– Security – Network - Services.

UNIT-II   **[15 Hours]**

Cloud Computing Architecture: Introduction - Cloud Reference Model – Types of Clouds – Organizational aspects.

UNIT – III   **[16 Hours]**

Accessing the Cloud : Platforms – Web Applications – Web Browsers. Cloud Storage: Overview – Cloud Storage Providers.

UNIT – IV   **[15 Hours]**

Cloud Applications: Scientific Applications: Healthcare, Geosciences – Business and Consumer Applications: CRM and ERP, **Media Applications***, **Multiplayer Online Gaming*.**

UNIT – V   **[15 Hours]**

Standards: Application – Client – Infrastructure – Service. Software as a Service: Overview – Driving Forces - Industries – Healthcare, Banking.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Books:
1.Anthony T.Velte ,Toby J.Velte, Robert Elsenpeter , **"Cloud Computing – A Practical Approach"** 2010 TMH.(UNIT I, UNIT III, UNIT V)
2. Rajkumar Buyya, Christian vecchiola , Thamarai selvi, **"Mastering Cloud computing"**, Mc Gram Hill Edu, 2013. (UNIT II, UNIT IV)

Reference Books:
1. Haley Beard**, "Cloud Computing Best Practices for measuring processes for on demand computing, Applications and data centers in the cloud with SLA's "**, July 2008.
2. Judith Hurwitz, Robin Bloon**," Cloud Computing for Dummies"**, 2009
3. Michael Miller **, " Cloud computing – Web based application "** , Pearson Edu Inc, First Impression 2009.

B.Sc. COMPUTER SCIENCE

ELECTIVES FOR FIFTH OR SIXTH SEMESTER

ELECTIVE PAPER - ARTIFICIAL INTELLIGENCE

Objective:

The concept of intelligence has transformed from a small- scale laboratory science into a technological and industrial success. The research in AI has expanded enormously. This paper "Artificial Intelligence" introduces the basic concepts and techniques of AI.

UNIT I [15 Hours]

Introduction: AI Problems - AI techniques - Criteria for success. Problems, Problem Spaces, Search: State space search - Production Systems - Problem Characteristics - Issues in design of Search.

UNIT II [13 Hours]

Heuristic Search techniques: Generate and Test - Hill Climbing- Best-First Search – OR Graphs – A* Algorithm - Problem Reduction – AND-OR Graph – AO* Algorithm, Constraint Satisfaction, Means-ends analysis.

UNIT III [16 Hours]

Knowledge representation issues: Representations and mappings -Approaches to Knowledge representations -Issues in Knowledge representations - Frame Problem.

UNIT IV [16 Hours]

Using Predicate logic: Representing simple facts in logic - Representing Instance and Isa relationships - Computable functions and predicates - Resolution - Natural deduction.

UNIT V [15 Hours]

Representing knowledge using rules: Procedural Vs Declarative knowledge – **Logic programming – Forward Vs Backward reasoning** * – Matching – Control knowledge.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book:

1. Elaine Rich and Kelvin Knight,**" Artificial Intelligence"**, Tata McGraw Hill Publishers company Pvt Ltd, Second Edition, 1991. (chapters 1-6 only).

Reference Books :

1. George F Luger, **"Artificial Intelligence"**,4th Edition, Pearson Education Publ,2002.
2. V.S.Janakiraman and K.Sarukesi. "**Foundations of AI and Expert System**", Mac Milan India Ltd. 2001

UCS 36

B.Sc. COMPUTER SCIENCE

ELECTIVES FOR FIFTH OR SIXTH SEMESTER

ELECTIVE PAPER - DATA MINING AND WAREHOUSING

Objective:
To understand the methods available for retrieving relevant data from the expanding universe of data.

UNIT I [13 Hours]
Expanding of Universe of Data – Production Factor – Data Mining – Data Mining versus Query Tools – Data Mining in marketing – Practical Applications. Learning – Self-Learning Computer Systems – Machine Learning and Methodology of Science – Concept Learning. Knowledge Discovery process: Data Selection – Cleaning – Enrichment – Coding – Data Mining –– Reporting.

UNIT II [12 Hours]
Preliminary Analysis of the data set using Relational Query tools – Visualization Techniques – Likelihood and Distance – OLAP tools – K-Nearest Neighbor – Decision Trees –Association Rules * – Neural Networks – Genetic Algorithms–Different forms of Knowledge – Ten Golden Rules.

UNIT III [11 Hours]
Customer Profiling – Predicting Bid Behavior of Pilots – Discovering Foreign Key Relationships – Learning as Compression of data sets –Content of Message – Noise and Redundancy – Significance of Noise –Fuzzy Databases – The traditional theory of the relational database – From Relations to Tables – Denormalization – Data Mining Primitives.

UNIT IV [12 Hours]
Data warehousing: Introduction –characteristics of a data warehouse -data marts - other aspects of data mart. Online analytical processing: Introduction - OLTP & OLAP systems – data modeling- star schema for multidimensional view - data modeling - multifact star schema or snow flake schema - OLAP TOOLS - **State of the market: Cognos Powerplay***   OLAP TOOLS and the internet.

UNIT V [12 Hours]
Developing a Data warehouse: Why and how to build a data warehouse - **data warehouse architectural strategies and organization issues** * - design consideration - data content - metadata distribution of data - tools for data warehousing – Application of data warehousing in e-government.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Books:

1.Pieter Adrians, Dolf Zantinge, **"Data Mining**", Addison Wesley, 1998 (Units I,II & III).
2.C.S.R.Prabhu, **"Data Warehousing – Concepts, Techniques, Products and Applications",** PHI, Second Edition, 2007. (Units IV & V).

Reference Books :

1.Alex Berson, Stephen J. Smith, **" Data Warehousing, Data Mining & OLAP",** Tata McGraw-Hill Edition, Tenth Reprint, 2007 (for Unit V).
2. C.S.R Prabhu,**"Data Mining Introductory and Advanced Topics"**, Pearson education, 2003.

SKILL BASED SUBJECTS

B.Sc. COMPUTER SCIENCE

SEMESTER-III

15UCS3S1

SKILL BASED SUBJECT 1 - WEB PROGRAMMING (HTML, CSS, XML)

Objective:
    To enhance the creativity of the students by using HTML, CSS and XML.

UNIT I   **[5 Hours]**
    Introduction to Internet: Features of Internet – World wide web – www resources – Application of web – types of browsers – using the browser –URL – Internet Addressing – Over view of web page and home page.

UNITII   **[7 Hours]**
    HTML : Introduction – markup language – editing HTML – common tags – headers – meta Elements – text styling – linking - Internal Linking - images – creating & using Image maps- formatting text with Special characters – **horizontal rules and More line breaks***.

UNIT III   **[6 Hours]**
    Intermediate HTML: Introduction – unordered list – nested and **ordered list*** – Basic HTML Tables – Intermediate HTML table and Formatting – basic HTML Forms and Formatting – More Complex HTML Forms – Frameset Element – Nested Framesets.

UNIT IV   **[5 Hours]**
    Cascading Style Sheet (CSS): Creation of CSS – Border, margin, text and paragraph Style sheet – website design and management. Simple applications of web site, web pages and home pages.

UNIT V   **[7 Hours]**
    Active XML : Introduction – structuring data – XML name space – DTDs and schemas – XML vocabularies – document object model (DOM) – DOM methods – Simple API for XML – Extensible Style Sheet
Language (XSL) – Simple object access protocol (SOAP) – web services.

* - Self Study and questions for examinations may be taken from the self study portions also.

Text Book :

1. Deitel, Neito, **" Internet and World wide Web – How to program "**, Pearson Education Asia, 2003.

Reference Books:
1. Maureen Adams, Sherry Boneli, **"Internet Complete "**, BPB Publication, 1ˢᵗ Edition , 1998
2. Thomas A.Powell, **" The Complete Reference HTML and XHTML",** fourth Edition, Tata McGraw Hill pub. Company Ltd, New Delhi, 2004

B.Sc. COMPUTER SCIENCE

SEMESTER –IV

15UCS4SL

SKILL BASED SUBJECT 2 - WEB PROGRAMMING LAB (HTML, CSS, XML)

LIST OF PRACTICAL PROBLEMS

1. Design a web page for a company using HTML Formatting Tags
2. Design a web page for library system using HTML Tags
3. Design a web page for your Department using HTML Tags
4. Design a web page with the following components
   a. Image b. Hyperlink
5. Design a web page which shows your resume using CSS
6. Design a web page to advertise a product using style sheets
7. Design a web page for a company using CSS
8. Create XML document to store information about books and create the DTD files
9. Use Microsoft DSO to connect HTML form or VB form with the book's XML document and display the information.
10. Create a web service for currency conversion (at five currencies) with the appropriate client program.

Guidelines to the distribution of marks for Practical Examinations:

Two Questions will be given for each student. (3 Hours/60 marks)

Record   : **10 marks**

	Program1 (marks)	Program2 (marks)
Algorithm	10	10
Program Coding	10	10
Execution	5	5

B.Sc. COMPUTER SCIENCE

SEMESTER-V

16UCS5S2

SKILL BASED SUBJECT 3 - WEB PROGRAMMING (JAVA SCRIPT, VBSCRIPT, ASP)

Objective:

To enrich the creativity of the students by using JAVASCRIPT, VBSCRIPT and ASP.

UNIT I   **[7 Hours]**

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

UNIT II   **[6 Hours]**

Java script Functions : Introduction – program modules in java script programmer defined functions – Function Definition : Duration of identifiers – scope rules – recursion – java script global functions.
Java Script Objects : Introduction – Thinking about objects – Math, Strings, Date**, Boolean and Number Objects***.

UNIT III   **[4 Hours]**

VB Script : Introduction – Operators – Data Type and Control Structures – VB Script Functions – Arrays – String Manipulation – Classes and Objects - **Operator Precedence Chart***.

UNIT IV   **[8 Hours]**

Dynamic HTML : Object Model and Collections : Introduction – Object Referencing – Collection all and Children – Dynamic Styles – Dynamic Positioning – Using the Frame Collection – navigator Object.

Dynamic HTML : Event Model : Introduction – event ON CLICK – event ON LOAD – error handling with ON ERROR – Tracking the mouse with event ONMOUSEMOVE – Rollovers with ONMOUSEOVER and ONMOUSEOUT – Form Processing with ONFOCUS and ONBLUR – More Form Processing with ON SUBMIT and ON RESET – Event Bubbling – More DHTML Events.

UNIT V   **[5 Hours]**

Active Server Pages (ASP) : Introduction – How ASP works – Client side scripting versus server side scripting – Using personnel web server or Internet Information Server – Server Side activeX Components – File System Objects – session Tracking and cookies – accessing a database from an ASP .

* - Self Study and questions for examinations may be taken from the self study portions also.

<u>**Text Book :**</u>

1. Deitel, Neito, **" Internet and World wide Web – How to program ",** Pearson Education Asia, 2003.

<u>**Reference Books :**</u>

1. Achyut S.Godbole, Atul Kahate, **"Web Technologies – TCP/IP to Internet Application Architectures"**,Tata McGraw Hill Pub.Company Ltd.2003
2. Thomas A.Powell, **" The Complete Reference HTML and XHTML",** fourth Edition, Tata McGraw Hill pub. Company Ltd, New Delhi, 2004

B.Sc. COMPUTER SCIENCE

SEMESTER-VI

16UCS6SM

SKILL BASED SUBJECT 4 - WEB PROGRAMMING LAB (JAVA SCRIPT, VBSCRIPT, ASP)
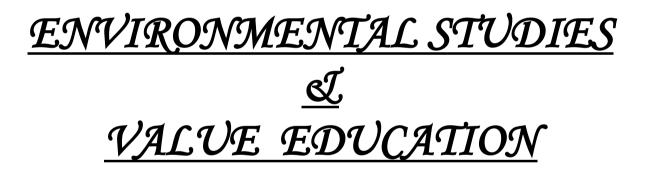
LIST OF PRACTICAL PROBLEMS

1. Design a web page for creating email id using java script
2. Design a web page for computing payroll processing using java script
3. Design a web page for creating online quiz using java Script
4. Design a web page for computing Electricity Bill Preparation using VB script
5. Design a web page for computing student mark list using VBScript
6. Write a VBScript to design a Calculator.
7. Design & develop web site for any business application.(ASP)
8. Develop a web page for landing of a new product.(ASP)
9. Write a program in ASP to Delete and Modify data in database table.
10 Create ASP applications for voting facility

Guidelines to the distribution of marks for practical Examinations:

Two questions will be given for each student (3 Hours / 60 Marks)

Record   : **10 marks**

	Program1 (marks)	**Program2 (marks)**
Algorithm	10	10
Program Coding	10	10
Execution	5	5

ENVIRONMENTAL STUDIES
&
VALUE EDUCATION

UCS 43

B.Sc. COMPUTER SCIENCE

SEMESTER-I

15EVS101

(PART IV - ENVIRONMENTAL STUDIES)

Total Hours   : 30

Objective:

To inculcate knowledge and create awareness about ecological and environmental concepts, issues and solutions to environmental problems. To shape students into good "ecocitizens", thereby catering to global environmental needs.

UNIT I MULTIDISCIPLINARY NATURE OF ENVIRONMENT

1.1   Definition : **scope and importance***

1.2   Need for public awareness

1.3   Natural resources

1.3.1   Types of resources

Forest Resources – Water Resources – Mineral Resources – Food Resources – Energy Resources – Land Resources.

UNIT II ECOSYSTEMS

2.1   Concept of an ecosystem*

2.2   Structure and functions of an ecosystem

2.3   Producers, consumers and decomposers

2.4   Energy flow in the ecosystem

2.5   Ecological succession

2.6   Food chains, food web and ecological pyramids

2.7   Structure and function of the following ecosystem

Forest Ecosystem – Grassland Ecosystem – Desert Ecosystem – Aquatic Ecosystem.

UNIT III BIODIVERSITY AND ITS CONSERVATION

3.1   Introduction – Definition – Genetic – Species and ecosystem diversity

3.2   Biogeographical classification of India

3.3   Value of biodiversity

3.4   Biodiversity at global, national and local levels

3.5   India as a mega – diversity Nation

3.6   Hot spot of biodiversity

3.7   Threats to biodiversity

3.8   Endangered and endemic species of India

3.9   Conservation of Biodiversity

        insitu Conservation of Biodiversity – *exsitu* Conservation of Biodiversity

UNIT IV ENVIRONMENTAL POLLUTION

4.1   Definition

4.2   Causes, effects and control measures of: Air Pollution – Water Pollution – Soil Pollution – Marine Pollution – Noise Pollution – Thermal Pollution – Nuclear Pollution.

4.3   Solid Waste Managements: causes, effects, control measures of urban and industrial wastes.

4.4   Role of individual in prevention of pollution.

4.5   Pollution case studies – domestic waste water, effluent from paper mill and dyeing, cement pollution.

4.6   Disaster Management – Flood, Drought, Earthquake, Tsunami, Cyclone and Landslide.

UNIT V SOCIAL ISSUES AND THE ENVIRONMENT

5.1   Sustainable Development

5.2   Urban problems related to energy

5.3   Water Conservation : Rain Water Harvesting and Watershed Management

5.4   Resettlement and rehabilitation of people, its problems and concerns, case studies – Narmatha Valley Project.

5.5   Environmental ethics, issues and possible solutions.

5.6   Climatic change, global warming, ozone layer depletion, acid rain, nuclear accidents and holocaust, case studies – Hiroshima and Nagasaki, Chernobyl.

5.7   Consumerism and waste products

5.8   Environmental Protection Act

5.9   Air Pollution Act (Prevention and Control)

5.10   Water Pollution Act (Prevention and Control)

5.11   Wild Life Protection Act

5.12   Forest Conservation Act

5.13   Issues involved in enforcement of environmental legislation

5.14   Public awareness

5.15   Human population and the environment

5.15.1 Population Growth and Distribution

5.15.2 Population Explosion – Family Welfare Programme

5.15.3 Environment and Human Health

5.15.4 Human Rights

5.15.5 Value Education

5.15.6 HIV / AIDS

5.15.7 Women and Child Welfare

5.15.8 Role of Information Technology in Environment and Human Health.

Text Book:

1. P.Arul, "**A Text Book of Environmental Studies**", Environmental Agency, No 27, Nattarstreet, Velacherry main road, Velacheery, Chennai – 42, First Edition, Nov. 2004.

Reference Books:

1. Purohit Shammi Agarwal, **"A Text Book of Environmental Sciences"**, Publisher Mrs. Saraswati Prohit, Student Edition, Behind Naswan Cinema Chopansi Road, Jodhpur.
2. Dr.Suresh and K.Dhameja, "**Environmental Sciences and Engineering**", Publisher S.K.Kataria & Sons, 424/6, Guru Nanak Street, Vaisarak, Delhi – 110 006.
3. J.Glynn Henry and Gary W.Heinke, "**Environmental Science and Engineering**", Prentice Hall of India Private Ltd., New Delhi – 110 001.

* Self Study (Questions may be asked from these portions also)

B.Sc. COMPUTER SCIENCE

SEMESTER-II

15VED201

(PART IV – VALUE EDUCATION)

Total Hours : 30

UNIT I   **(6 Hours)**

Introduction to Moral and Ethics; Aim of Education

UNIT II   **(6 Hours)**

Ethics and Culture

UNIT III   **(6 Hours)**

Early Life of Swami Vivekananda

UNIT IV   **(6 Hours)**

The Parliament of Religions

UNIT V   **(6 Hours)**

Teachings of Swami Vivekananda

Text Book:

1. Value Based Education - Kongunadu Arts and Science College, Coimbatore,

   First Edition, 2014.

Reference books :

1. **"Moral and Ethics"** - Published by Dr.M.Aruchami, Secretary and Director, Kongunadu Arts and Science College, Coimbatore, First Edition, June 2007.

2. **"Vivekananda A Biography"** - Swami Nikilananda, 29th Reprint, January 2013, Published by Swami Bodhasarananda, Adhyaksha, Advaita Ashrama, Mayavati, Champawat, Uttarakhand, Himalayas.

NON-MAJOR ELECTIVE SUBJECTS

B.Sc. COMPUTER SCIENCE

Part IV – III Semester

15UHR3N1

NON-MAJOR ELECTIVE 1 – HUMAN RIGHTS

(2 hours per week)

Objective:

To impart knowledge of human values, ethics and human rights to the students. To reinforce positive personality traits and enhance physical, mental, social ethical and spiritual well-being of the students.

UNIT – I : Concept of Human Values, Value Education towards Personal Development

Aim of education and value education; Evolution of value-oriented education; Concept of human values; types of values; Components of value education.

Personal Development :

Self-analysis and introspection; sensitization towards gender equality, physically-challenged, intellectually-challenged. Respect to - age, experience, maturity, family members, neighbours, co-workers.

Character Formation towards Positive Personality:

Truthfulness, Constructivity, Sacrifice, Sincerity, Self-Control, Altruism, Tolerance, Scientific vision**.**

UNIT – II : Value Education towards National and Global Development

National and International Values:

Constitutional or national values - Democracy, socialism, secularism, equality, justice, liberty, freedom and fraternity.
Social Values - Pity and probity, self-control, universal brotherhood.

Professional Values - Knowledge thirst, sincerity in profession, regularity, punctuality and faith.

Religious Values - Tolerance, wisdom, character.

Aesthetic Values - Love and appreciation of literature and fine arts and respect for the same.

National Integration and international understanding.

UNIT – III : Impact of Global Development on Ethics and Values

Conflict of cross-cultural influences, mass media, cross-border education, materialistic values, professional challenges and compromise.
Modern challenges of adolescent emotions and behaviour; sex and spirituality: comparison and competition; positive and negative thoughts.
Adolescent emotions, arrogance, anger, sexual instability, selfishness, defiance.

UNIT- IV : Therapeutic Measures

Control of the mind through
a. Simplified physical exercise
b. Meditation – objectives, types, effect on body, mind and soul
c. Yoga – objectives, types, Asanas
d. Activities:
   (i) Moralisation of Desires
   (ii) Neutralisation of Anger
   (iii) Eradication of Worries
   (iv) Benefits of Blessings

UNIT- V : Human Rights

1. Concept of Human Rights – Indian and International Perspectives
    a. Evolution of Human Rights
    b. Definitions under Indian and International documents
2. Broad classification of Human Rights and Relevant Constitutional Provisions.
    a. Right to Life, Liberty and Dignity
    b. Right to Equality
    c. Right against Exploitation
    d. Cultural and Educational Rights
    e. Economic Rights
    f. Political Rights
    g. Social Rights
3. Human Rights of Women and Children
    a. Social Practice and Constitutional Safeguards
        (i)   Female Foeticide and Infanticide
        (ii)   Physical assault and harassment
        (iii)   Domestic violence
        (iv)   Conditions of working women
4. Institutions for Implementation
    a. Human Rights Commission
    b. Judiciary
5. Violations and Redressal
    a. Violation by State
    b. Violation by Individuals
    c. Nuclear weapons and terrorism
    d. Safeguards

Text Book :

1. Human Rights, Compiled by Bharathiar University, Coimbatore - 46

B.Sc. COMPUTER SCIENCE

Part IV – IV Semester

15UWR4N2

NON-MAJOR ELECTIVE 1 – WOMEN'S RIGHTS

(2 hours per week)

Objective:

To impart specific and up-to-date information about national and International laws related to the welfare of women. To create awareness about crimes against women, legal rights of women in the country and access to justice.

UNIT I

Laws, Legal Systems and Change

Definition - Constitutional law, CEDAW and International Human Rights – Laws and Norms – Laws and Social Context – Constitutional and Legal Framework.

UNIT II
Politics of land and gender in India

Introduction – Faces of Poverty – Land as Productive Resources – Locating Identities – Women's Claims to Land – Right to Property - Case Studies.

UNIT III
Women's Rights: Access to Justice

Introduction – Criminal Law – Crime Against Women – Domestic Violence – Dowry Related Harassment and Dowry Deaths – Molestation – Sexual Abuse and Rape – Loopholes in Practice – Law Enforcement Agency.

UNIT IV
Women's Rights

Violence Against Women – Domestic Violence - The Protection of Women from Domestic Violence Act, 2005 - The Marriage Validation Act, 1982 - The Hindu Widow Re-marriage Act, 1856 - The Dowry Prohibition Act, 1961.

UNIT V
Special Women Welfare Laws

Sexual Harassment at Work Places – Rape and Indecent Representation – The Indecent Representation (Prohibition) Act, 1986 - Immoral Trafficking – The Immoral Traffic (Prevention) Act, 1956 - Acts Enacted for Women Development and Empowerment - Role of Rape Crisis Centers.

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Text Book :

1. Women's Rights Compiled by Kongunadu Arts and Science College, Coimbatore-29.

References :

1. Nitya Rao **"Good Women do not Inherit Land"** Social Science Press and Orient Blackswan, 2008
2. International Solidarity Network **"Knowing Our Rights"** An imprint of Kali for Women, 2006
3. P.D. Kaushik **"Women Rights"** Bookwell Publication, 2007
4. Aruna Goal **"Violence Protective Measures for Women Development and Empowerment"** Deep and Deep Publications Pvt., 2004
5. Monica Chawla **"Gender Justice"** Deep and Deep Publications Pvt. Ltd.2006
6. Preeti Mishra **"Domestic Violence Against Women"** Deep and Deep Publications Pvt. 2007
7. Clair M. Renzetti, Jeffrey L. Edleson, Raquel Kennedy Bergen, Source Book on **"Violence Against Women"** Sage Publications, 2001.

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B.Sc. COMPUTER SCIENCE

Guidelines to the distribution of marks for practical Examinations:

	Marks
Model Examination	25
Observation	10
Attendance	5
Total	**40**

Kongunadu Arts and Science College (Autonomous)
Coimbatore – 641029

END SEMESTER EXAMINATIONS QUESTION PAPER PATTERN
(For the candidates admitted from the academic year 2015 – 2016 & onwards)

B.Sc COMPUTER SCIENCE

TIME: 3 Hours   Max. marks: 75

SECTION A

10 Questions   10 * 1 = 10 marks

(Two questions from each unit. Questions shall be in the form of Multiple-choice, True or False and Fill in the blanks type.)

SECTION B

5 Questions – either / or type   5 * 5 = 25 marks
(One question from each unit)

SECTION C

5 Questions – either / or type   5 * 8 = 40 marks
(One question from each unit)
                                                    _____
                                                        75 marks
                                                    _____