KONGUNADU ARTS AND SCIENCE COLLEGE [AUTONOMOUS]

COIMBATORE - 641 029

B.Sc INFORMATION TECHNOLOGY [BSC IT]

CURRICULUM & SCHEME OF EXAMINATION UNDER CBCS

[APPLICABLE TO THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2017-2018 & ONWARDS]

Semester	Part	Subject code	Title of the Paper	Instruction Hours / Cycle	Exam. Marks			Duration of Exam (hrs)	Credits
					CIA	ESE	Total		
I	I	17TML1A1	Language I@	6	25	75	100	3	3
	II	15ENG101	English - I	6	25	75	100	3	3
	III	16UIT101	Core I – C Programming	5	25	75	100	3	5
		15UIT1CL	Core Practical I – Programming Lab - C	5	40	60	100	3	2
		15UIT1A1	Allied I - Mathematical Foundations for Computer Science	6	25	75	100	3	5
	IV	**15EVS101**	**Environmental Studies ****	**2**	**-**	**50**	**50**	**3**	**2**
II	I	17TML2A2	Language II@	6	25	75	100	3	3
	II	15ENG202	Language - English II	6	25	75	100	3	3
	III	16UIT202	Core II - Computer Organization and Architecture	4	25	75	100	3	4
		15UIT203	Core III - Object Oriented Programming with C++	3	25	75	100	3	5
		15UIT2CM	Core Practical II - Programming Lab -C++	3	40	60	100	3	2
		15UIT2A2	Allied II- Computer Oriented Numerical and Statistical Methods	6	25	75	100	3	5
	IV	**16VED201**	**Value Education - Moral and Ethics ****	**2**	**-**	**50**	**50**	**3**	**2**
III	III	15UIT304	Core IV – Data Structures and Algorithms	5	25	75	100	3	4
		15UIT305	Core V – Relational Database Management System and ORACLE	5	25	75	100	3	4
		15UIT306	Core VI – JAVA Programming	5	25	75	100	3	5
		15UIT3CN	Core Practical III - Programming Lab – JAVA & ORACLE	5	40	60	100	3	2
		15UIT3A3	Allied III - Business Accounting	6	25	75	100	3	5
	IV	**17UIT3S1**	**Skill Based Subject 1 – Python Programming I**	**2**	**25**	**75**	**100**	**3**	**3**
		17TBT301/ 17TAT301/ 15UHR3N1	**Basic Tamil * / Advanced Tamil **/ Non-Major Elective – I ** (Human Rights)**	**2**	**-**	**75**	**75**	**3**	**2**

IV	III	15UIT407	Core VII – Operating Systems	5	25	75	100	3	4
		17UIT408	Core VIII – Visual Basic .NET	5	25	75	100	3	5
		15UIT409	Core IX – Principles of Data Communications and Network	5	25	75	100	3	4
		17UIT4CO	Core Practical IV – Programming Lab – VB.Net	5	40	60	100	3	2
		15UIT4A4	Allied IV – Microprocessors, PC Hardware and Interfacing	6	25	75	100	3	5
	IV	**17UIT4SL**	**Skill Based Subject 2 (Practical) Python Programming Lab I**	**2**	**40**	**60**	**100**	**3**	**3**
		17TBT402/ 17TAT402/ 15UWR4N2	**Basic Tamil */ Advanced Tamil **/ Non-Major Elective – II ** (Women's Rights)**	**2**	**-**	**75**	**75**	**3**	**2**
V	III	15UIT510	Core X – Client/Server Computing	6	25	75	100	3	4
		15UIT511	Core XI – Software Engineering	6	25	75	100	3	4
		15UIT512	Core XII – Mobile Computing	6	25	75	100	3	4
		15UIT5CP	Core Practical V – Software Testing Lab	5	40	60	100	3	2
		17UIT5E1	**Major Elective I**	**5**	**25**	**75**	**100**	**3**	**5**
	IV	**17UIT5S2**	**Skill Based Subject 3-Python Programming II**	**2**	**25**	**75**	**100**	**3**	**3**
VI	III	17UIT613	Core XIII – Open Source Tools	6	25	75	100	3	5
		17UIT614	Core XIV **-** Information Security	6	25	75	100	3	4
		17UIT6CQ	Core Practical VI – Programming Lab PHP	5	40	60	100	3	2
		17UIT6E2	**Major Elective II**	**5**	**25**	**75**	**100**	**3**	**5**
		15UIT6Z1	**Project*** **	**6**	**20**	**80**	**100**	**3**	**4**
	IV	**17UIT6SM**	**Skill Based Subject 4 (Practical) Python Programming Lab II**	**2**	**40**	**60**	**100**	**3**	**3**
Part V		**$$**	**Extension Activities ***	**-**	**50**	**-**	**50**	**-**	**1**

@ Hindi/Malayalam/ French/ Sanskrit – 15HIN/MLM/FRN/SAN101 - 202
* No End-of-Semester Examinations. Only Continuous Internal Assessment (CIA)
** No Continuous Internal Assessment (CIA). Only End-of-Semester Examinations (ESE)
*** Project Report – 60 marks; Viva voce – 20 marks; Internal-20 marks

Major Elective Papers

Elective I

1. **Embedded Systems**
2. **Network Security & Administration**
3. **Object Oriented Analysis And Design(using UML)**

Elective II

1. **E-Commerce**
2. **Cloud Computing**
3. **Data Mining**

Non - Major Elective Papers

1. **Human Rights**
2. **Women's Rights**

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/French/Malayalam/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 / Non – Major elective	150	4
		Skill Based Subject	400	12
		Environmental Studies	50	2
		Value Education	50	2
5.	V	Extension Activities (NSS/NCC/Sports/YRC)	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.

1. <u>Break up Marks for CIA of Theory</u>

CIA Exam	-	15
Assignment	-	5
Attendance	-	5
Total		25

2. **<u>Components of Practical:</u>**

Break up Marks for CIA of Practical

CIA Practical Exam	-	25
Observation Notebook	-	10
Attendance	-	5
Total		40

Break up Marks for ESE of Practical

Experiment	-	50
Record	-	10
Total	-	60

3. **<u>Component for Project:</u>**

CIA / ESE	Particulars	Project Out of 100 Marks (UG)
CIA	Project Review	15
	Regularity	5
	Total Internal Marks	**20**
***ESE**	Project Report Present	60
	Viva Voce	20
	Total External Marks	**80**
Total Marks(CIA+ESE)		**100**

*** Project report and Viva voce will be evaluated jointly by both the Project Supervisor (faculty of the Department) and an External Examiner.**

QUESTION PAPER PATTERN for CIA and ESE

B.Sc Information Technology

Theory

Max Marks: 75 **Time: 3Hrs**

Section A (10 x 1 = 10 marks)

Q.No. 1 to 10 : Multiple choice type alone with four distractors each.

Section B (5 x 5 = 25 marks)

Q.No. 11 to 15 : Either or / short notes type questions (one question 'a' or 'b' from each unit).

Section C (5 x 8 = 40 marks)

Q.No. 16 to 20 : Either or / essay type questions (one question 'a' or 'b' from each unit).

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UIT 1

Semester-I **16UIT101**

Core I - C PROGRAMMING

Credit Points: 5 **Total Hours: 75**

Objectives: Toprovide anin –depth knowledge on Computer fundamentals and theconceptsof Cprogramming language.

UNIT I **(15 Hours)**

Overview of C :History of C – Importance of C- Sample programs – Basic Structure of C programs – Programming style. Character set - C tokens - keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators - Arithmetic Expressions - Evaluation of expression - precedence of arithmetic operators - Type conversion in expression – operator precedence & associativity - Mathematical functions - Reading & Writing a character - Formatted input and output.

UNIT II **(15Hours)**

Decision Making and Branching : Introduction – If , If….Else, nesting of If …Else statements- Else If ladder – The Switch statement, The ?: Operator – The GoTo Statement. Decision Making and Looping : Introduction- The While statement- the do statement – the for statement-jumps in loops.

UNIT III **(16 Hours)**

Arrays – Character Arrays and Strings.User-Defined Functions: Introduction – Need and Elements of User-Defined Functions- Definition-Return Values and their types - Function Calls – Declarations – Category of Functions- Nesting of Functions - Recursion – Passing Arrays and Strings to Functions - **The Scope, Visibility and Lifetime of Variables ***

UIT 2

UNIT IV **(13 Hours)**

Pointers: Introduction-Understanding pointers-Accessing the address of a variable-Declaration and Initialization of pointer Variable – Accessing a variable through its pointer-Chain of pointers- Pointer Expressions – Pointer Increments and Scale factor- Pointers and Arrays- Pointers and Strings – Array of pointers – Pointers as Function Arguments- Functions returning pointers.

UNIT V **(16 Hours)**

Structures and Unions: Introduction – Defining a Structure – Declaring Structure variables – Structure Initialization –Array of Structures-Arrays within Structures-Structures within Structures- Pointers and Structures - Unions. File Management in C: Defining and Opening a File – Closing a File – Input/Output Operations on Files – Command Line Arguments. The Preprocessor : Macro Substitution – File Inclusion - **Compiler Control Directives ***.

* Self-Study And Questions For Examinations May Be Taken From The Self Study Portions Also.

TEXT BOOK:

1. E.Balagurusamy - **"PROGRAMMING IN ANSI C"**, Tata McGraw-Hill, Third Reprint 2011, FifthEdition.

REFERENCE BOOKS:

1. Ashok N Kamthane - **"PROGRAMMING WITH ANSI AND TURBO C"**, Pearson Edition Publ, 2002.
2. Mark Allen Weiss-" **ANALYSIS IN C**", First Edition Pearson Education,2004.

UIT 3

Semester-I **15UIT1CL**

Core Practical I – PROGRAMMING LAB –C

Credit Points: 2 **Total Hours: 75**

Objectives: To learn the systematic way of solving problems and to understand the different methods of organizing large amounts of data using c language.

LIST OF PRACTICAL PROGRAM

1. Write a C program to find the sum, average, standard deviation for a given set of numbers
2. Write a C program to generate —n prime numbers.
3. Write a C program to generate Fibonacci series.
4. Write a C program to convert temperature from Fahrenheit to Celsius and vice versa.
5. Write a C program to print magic square of order n where n > 3 and n is odd.
6. Write a C program to sort the given set of numbers in ascending order.
7. Write a C program to perform matrix multiplication.
8. Write a C program to check whether the given string is a palindrome or not using pointers.
9. Write a C program to count the number of Vowels in the given sentence.
10. Write a function to perform (a) String copy (b) String concatenation and (c) Reversing the string.
11. Write a C program to find the factorial of a given number using recursive function.
12. Write a C program to print the student‘s Mark sheet assuming roll no, name, and marks in 5 subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.
13. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.

UIT 4

14. Write a C program which receives two filenames as arguments and check whether the file contents are same or not. If same delete the second file.
15. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write the total i) Number of characters ii) Number of words and iii) Number of lines.

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

UIT 5

Semester - II **16UIT202**

Core II - COMPUTER ORGANIZATION AND ARCHITECTURE

Credit Points: 4 **Total Hours: 60**

Objectives: To understand the core concept of hardware and software design for computer systems and also the necessary hardware interfaces for the software.

UNIT I **(12 Hours)**

Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Digital Logic: The Basic Gates – NOR, NAND, XOR Gates .

UNIT- II **(13 Hours)**

Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Halfsubtractor, Full subtractor, Parallel binary subtractor. **Boolean algebra *** – Karnaugh map – Canonical form 1 – Construction and properties – Don't care combinations - Product of sum, Sum of products, simplifications.

UNIT III **(11 Hours)**

Sequential circuits: Flip-Flops: RS, D, JK, and T -Multiplexers – Demultiplexers. Decoder - Encoder – Counters. Central processing Unit – General register organization – Stack organization - Input – Output Organization: Input – output interface – Asynchronous data transfer: Strobe Control and Handshaking.Priority Interrupt.

UNIT IV **(12 Hours)**

Input – Output Processor: CPU-IOP Communication. Memory Organization: **Memory Hierarchy*** – Main Memory- Associative memory, Hardware Organization, Match Logic, Read Operation, Write Operation.

UIT 6

UNIT V **(12 Hours)**

Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory Page Table, Page Replacement

* 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"**, PHI 1999 Edition 1.(Unit III, Unit IV, Unit V)

REFERENCE BOOKS:

1. T.C .Bartee-**" DIGITAL COMPUTER FUNDAMENTALS "** , Tata McGraw Hill, 2003, Sixth Edition
2. Salivaganan & S.Arivazhagan - **"DIGITAL CIRCUITS AND DESIGN"** VikasPubl, 2001
3. John P.Hayes- **"COMPUTER ARCHITECTURE AND ORGANIZATION"**, Tata McGraw Hill Publishers Pvt Ltd, Third Edition, 1998.
4. Miles J.Murdocca, Vincent, P.Heuring - "**COMPUTER ARCHITECTURE AND ORGANIZATION",** Wiley India Pvt.Ltd, First Edition,2007.

UIT 7

Semester - II **15UIT203**

Core III - OBJECT ORIENTED PROGRAMMING WITH C++

Credit Points: 5 **Total Hours: 45**

Objectives: To teach the basic notion of the Object Oriented Programming and to learn the principles of C++ Programming Language.

UNIT I **(9 Hours)**

Introduction to C++ - Key Concepts of OOP – Advantages – OO Languages – 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++, In line Functions – Function Overloading.

UNIT II **(9 Hours)**

Class and Objects: Declaring objects – Defining member functions – Static member variables and functions – Array of objects – Friend functions – Overloading member functions –**Bit fields and Class** *– Constructor and Destructors – Characteristics – Calling constructor and Destructors – Constructor and Destructor with static member.

UNIT III **(9 Hours)**

Operator Overloading: Overloading unary, Binary operators – Overloading friend functions – Type conversion - Inheritance: Types of inheritance: Single, Multilevel, Multiple, Hierarchical, Hybrid and Multi path inheritance – Virtual Base classes – Abstract Classes.

UNIT IV **(9 Hours)**

Pointers: Declaration – Pointer to class, object – THIS pointer – Pointer to derived classes and base classes – Arrays – Characteristics – Arrays of classes – Memory models – New and delete operators – Dynamic objects – Binding, Polymorphisms and Virtual functions.

UIT 8

UNIT V **(9 Hours)**

Files: File stream classes – File Modes – Sequential read/write operations – Binary and ASCII files – Random access operation – Templates - Exception handling – Strings – Declaring and initializing string objects – String attributes – **Miscellaneous functions *.**

* - Self-Study And Questions For Examinations May Be Taken From The Self Study Portions Also.

TEXT BOOK:

1. E. Balagurusamy - "**OBJECT ORIENTED PROGRAMMING WITH C++"**, TMH Pub., Fourth Edition,2004.

REFERENCE BOOKS:

1. Ashok N Kamthane – "**OBJECT ORIENTED PROGRAMMING WITH ANSI AND TURBO C++"**, Pearson Education Publ., 2003
2. PoornachandraSarang –**"OBJECT ORIENTED PROGRAMMING WITH C++",**SecondEdition,PHI Pub.,2009.
3. John R Hubbard – "**PROGRAMMING WITH C++"**, TMH Publ. II Edition, 2006.

UIT 9

Semester - II **15UIT2CM**

Core Practical II - PROGRAMMING LAB - C++

Credit Points: 2 **Total Hours: 45**

Objectives: To provide an awareness to develop the program skills using C++ with object oriented basic concepts.

LIST OF PRACTICAL PROGRAMS

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 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 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-d matrix 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. Create a class STRING . Write member function to initialize , get and display strings .Overload the operator + to concatenate two strings ,= = to compare two strings and a member function to find the length of the string.
5. Create a class EMPLOYEE, which consists of details like eno,ename,dept, basic-salary, grade. Write member functions to get display them. Derive a class PAY from the above class and write a member function to calculate da ,hra , pf depending on the grade and display the Pay slip in a neat format using console I/O.
6. Create a class SHAPE which consist of two VIRTUAL FUNCTIONSCal_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 cass separately and Display the result.

UIT 10

7. Create two classes which consists of two private variables, one float and one integer variables in each class. Write member functions to get and display them . Write FRIEND function common to arguments And the integer and float values of both the objects separately and Display the result.
8. Write a user defined function USERFUN() which has the formatting commands like setw( ) , showpoint() , showpos() and precision( ). Write a program which prints an multiplication table and uses USERFUN( ) for formatting.
9. Write a program to perform Insertion , Deletion and Updation using files.
10. 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

UIT 11

Semester-III **15UIT304**

Core IV –DATA STRUCTURES AND ALGORITHMS

Credit Points: 4 **Total Hours: 75**

Objectives: To familiarize basic data structures concept and their use in fundamental algorithms

UNIT I (13 Hours)

Introduction-Data structure-definition-How to create a program-How to analyze a program-Arrays-Order List –Sparse Matrices-Representation of Arrays-Stacks and Queues- Fundamentals- Evaluation Expression-**Multiple Stacks and Queues** *.

UNIT II (15 Hours)

Linked Lists-Singly Linked List-Linked Stacks and Queues-Storage pool-Polynomial Addition-More On Linked List-Sparse Matrices-Doubly Linked Lists and Dynamic Storage Management-Garbage Collection and Compaction.

UNIT III (16 Hours)

Trees: Basic Terminology-Binary Trees-binary Tree representation-Binary Tree Traversal-Threaded binary tree-Counting Binary trees.

Graphs: Terminology and representation-Introduction –Definition and Terminology-Graph Representation – Traversals-Connected components and spanning Trees -Shortest path-**Transitive Closure *.**

UNIT IV (16 Hours)

Internal Sorting- Insertion sort - Quick sort - Merge sort - Heap sort –Radix sort. External Sorting-sorting with Tapes, Sorting with Disks.

UNIT V **(15 Hours)**

Symbol Tables-Static tree tables-Dynamic tree tables-Hash tables- Hashing Functions-Overflow Handling.Files: Files-Queries– Sequential organization - Index Techniques – File organization

* Self-Study And Questions For Examinations May Be Taken From The Self Study Portions Also.

TEXT BOOK:

1. Ellis Horowitz, SartajShani - **"FUNDAMENTALS OF DATA STRUCTURES"**, Galgotia Publication Edition 1 , 1983.

REFERENCE BOOKS:

1. Robert Kruse, C.L, Jondo Bruce Leung - **"DATA STRUCTURES AND PROGRAM DESIGN IN C "**, Pearson Edition Asia, Second Edition,

UIT 13

Semester - III **15UIT305**

Core V– RELATIONAL DATABASE MANAGEMENT SYSTEM AND ORACLE

Credit Points: 4 **Total Hours: 75**

Objectives: To learn the basic concepts of database, SQL and PL/SQL languages.

UNIT I (13 Hours)

Database Concepts: A Relational approach:Database – **Relationships** * – DBMS– Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling –Dependency – Database Design – Normal forms – Dependency Diagrams -Denormalization – Another Example of Normalization.

UNIT II (17 Hours)

Oracle9*i*: Overview:Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus – SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - *i*SQL *Plus. Oracle Tables. DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

UNIT III (16 Hours)

Working with Table: Data Management and Retrieval**:** DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – **Arithmetic Operations *** – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions – Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

UIT 14

UNIT IV **(17 Hours)**

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 –SQ L 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 **(12 Hours)**

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

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

TEXT BOOK:

1. Nilesh Shah **– "DATABASE SYSTEMS USING ORACLE"**,2nd edition, PHI 2007.

REFERENCE BOOKS:

1. Arun Majumdar & Pritimoy Bhattacharya **– "DATABASE MANAGEMENT SYSTEMS"**, 2007, TMH.
2. Gerald V. Post **- "DATABASE MANAGEMENT SYSTEMS",**3rd edition, TMH, 2009.

UIT 15

Semester - III **15UIT306**

Core VI - JAVA PROGRAMMING

Credit Points: 5 **Total Hours: 75**

Objectives: The main aim is to learn the basic features of Java Programming along with Packages, Applets and Layouts .

UNIT I **(16 Hours)**

Introduction to Object-Oriented Programming – The Java language – Variable Declarations and Arrays – Operators in Java. Control Statements: An Introduction – Selection Constructs – Iteration Constructs – Jump Constructs . Introduction to Classes: Instance variables – Class variables – Instance Methods – Constructors – Class Methods – Declaring Objects – Garbage Collection.

UNIT II **(15 Hours)**

Classes and Methods in Detail: Method Overloading – Constructor Overloading –The this Reference – Using Objects in Method – Recursion – Access Modifiers –Inner Classes – Command Line Arguments. Inheritance: Basics of Inheritance –Super Class Variable and Subclass Object – The super reference – Constructor chaining – Method Overriding – The final Keyword. Abstract Classes and Interfaces: The abstract Classes and Methods – Defining Interface – Implementing Interfaces –Extending Interface – Interface Reference. Exception Handling: Types of Exceptions-Uncaught Exceptions – Handling Exceptions – **User Defined Exceptions** *

UNIT III **(15 Hours)**

Multithreaded Programming: Concept of Threads – Thread Creation – Thread's Life Cycle – Thread Scheduling – Synchronization and Deadlock – Inter-thread Communication. Packages and Access Modifiers: Packages – An Introduction – The package Declaration – The import Statement – Illustration Package – The Java Language Packages. Handling Strings: Creating Strings – Operations on Strings – Character Extractor Methods – String Comparison Methods.

UNIT IV **(14 Hours)**

Input Output Classes: Input and Output Operations – Hierarchy of classes in java.io Package – File class – InputStream and OutputStream. Classes – FileInputStream and FilterOutputStream Classes – Reader and Writer Classes – RandomAccessFile Class- StreamTokenizer. Applets: Applet Basics – Applet Life Cycle – Running Applets – Methods of the Applet Class – Font Class – **FontMetrics Class ***.

UNIT V **(15 Hours)**

Abstract Windowing Toolkit – AWT classes – Hierarchy of Classes – Control Fundamentals – Component Class – Basic Component Classes – Various Container Classes – Frame Window in an Applet – Menus. Layout Management and Event Handling: Layout Management Policies – Standard Layout Managers – Handling Events – Hierarchy of Event Classes – Event Delegation Model – Event Classes – Event Listener Interfaces – Adapter Classes.

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

TEXT BOOK:

1. Instructional Software Research and Development (ISRD) Group - "**INTRODUCTION TO OBJECT ORIENTED PROGRAMMING THROUGH JAVA**", Tata McGraw-Hill Publishing Company Limited, New Delhi, 2007.

REFERENCE BOOKS:

1. E.BalaGurusamy - " **PROGRAMMING WITH JAVA – A PRIMER**", Tata McGraw-Hill Publishing Company Limited, First Edition, 2008.
2. John R. Hubbard - " **SCHAUM'S OUTLINE OF PROGRAMMING WITH JAVA**", Tata McGraw- Hill Publishing Company Limited, Second Edition, 2007.

UIT 17

Semester - III **15UIT3CN**

Core Practical III – PROGRAMMING LAB – JAVA AND ORACLE

Credit Points: 2 **Total Hours: 75**

Objectives: To learn and practice the basics of java language and SQL Queries**.**

LIST OF PRACTICAL PROGRAMS

JAVA

1. Write a program to generate a Pascal Triangle.
2. Write a program for Multithreading.
3. Write a program for preparing mark list using inheritance.
4. Write a program for Multiple inheritance.
5. Write a program for creating your own package.
6. Write a program that right-justifies a text file.
7. Write a program that display a digital clock using applet.
8. Create an applet program to generates a human face .
9. Create an applet containing three buttons labeled red, green and blue, change the background color of the applet based on the button pressed.

ORACLE

10. Write queries for the following
    i) Create a table student with required fields and insert values to it (use constraints while creating).
    ii) Alter table student to add a new column.
    iii) Display only distinct mark from the Student table in descending manner.
11. Create a table employee with required fields and insert values to it.
    i) Generate a report for an individual employee.
    ii) Group rows based on department column
    iii) Create a View to include all employee information excluding salary.

12. Write a PL/SQL to split the student table into two tables based on result (One table for "Pass" and another for "Fail"). Use cursor for handling records of student table.
13. Write a PL/SQL block to Get input for student Id - If valid retrieve the related information and print the same otherwise raise an error.
14. Write a PL/SQL block to update the rate field by 20% more than the current rate in inventory table with fields Prono, ProName and Rate.
15. Create a Database trigger for not allowing marks greater than 75 to be inserted in student table.
16. Create a Database trigger before delete for each row not allowing deletion and give the appropriate message on the table student.

Guidelines to the distribution of marks for Practical Examinations:

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

Record : 10 marks

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

UIT 19

Semester-IV **15UIT407**

Core VII - OPERATING SYSTEMS

Credit Points: 4 **Total Hours: 75**

Objectives: To provide the core structure and design principles of operating system with a case study of Linux Systems.

UNIT I **(16 Hours)**

Introduction—what is an OS—Mainframe systems—Desktop Systems—multiprocessor systems—Distributed systems—Clustered systems—**Real—Time systems***. Operating system structures: System components—OS services—System calls.

UNIT II **(13 Hours)**

Process Management: Process concept –process scheduling—Operations on process –Cooperating process—inter-process communication.

CPU scheduling: Basic Concepts - scheduling criteria—scheduling algorithms—Multiple-processor Scheduling—Real-Time Scheduling.

UNIT III **(13 Hours)**

Deadlocks: Deadlock characterization—Methods for handling Deadlocks-Deadlocks prevention—Deadlock avoidance—deadlock detection –Recovery from Deadlock.

Memory management: Background-Swapping-Contiguous memory allocation- paging –segmentation—segmentation with paging.

UNIT IV **(16 Hours)**

Virtual memory: Demand paging—Process creation –Page replacement-Thrashing. I/O Systems: Disk structure—Disk scheduling –Disk management –**SwapSpace management ***.

UIT 20

File systems: File concepts—Access methods- Directory structure –File system structure—File system implementation—Directory implementation—Allocation methods—free space management—Recovery.

UNIT V **(17 Hours)**

Unix BSD: History-Design Principles-Programmer Interface-User Interface-Interprocess Communication. The Linux Systems: History-Design principles-Kernel modules-Process Management-scheduling-Memory management-IPC.

* Self-Study And Questions For Examinations May Be Taken From The Self Study Portions Also.

TEXT BOOK:

1. Abraham Silberschatz,Galvin,Gagne **- "OPERATING SYSTEMS CONCEPTS**",Sixth Edition, John Wiley&sons, 2004.

REFERENCE BOOKS:

1. Andrew S.Tanenbaum - "**MODERN OPERATING SYSTEM",** Prentice Hall of India pvt. Ltd., Delhi, 2006.
2. H.M.Deitel - **"OPERATING SYSTEMS",** Third Edition,PearsonEducation Publ, 2009.
3. Achyut S Godbole - **"OPERATING SYSTEMS",** TMH Publ,2006.

UIT 21

SEMESTER IV **17UIT408**

Core VIII - VISUAL BASIC .NET

Credit Points: 5 **Total Hours: 75**

Objectives: To impart an in-depth knowledge of VB.NET Framework and to develop their VB.NET programming skill.

UNIT I **(14 Hours)**

Essential Visual Basic .NET: Putting Visual Basic to Work – The .Net Frame work and the CLR – Building VB.Net Applications-The Visual Basic Language: Operators – Conditionals and Loops – Procedures, Scope and Exception Handling.

UNIT II (**15 Hours)**

Windows Forms – Adding Controls to Forms – Handling Events – Creating MDI Applications – Textboxes, Rich Text boxes, Labels – Buttons, Check boxes, Radio buttons, panels and Group boxes – List boxes, **Checked list box***, Combo boxes and Picture boxes.

UNIT III **(15 Hours)**

Windows Forms – Scroll bars, Splitters, Track Bars, Pickers, Notify Icons, Tool tips and Timers. Menus – Built in Dialog Boxes – Image lists, Tree and List view, Toolbars, Status bars and progress bars and tabbed controls.

UNIT IV **(15 Hours)**

Web forms –creating Buttons, creating Text boxes,creating Labels, creating Literals, creating Place Holders, Check boxes, Radio buttons, Tables, Panels, Image controls, Image buttons, List boxes, Drop down lists, Hyperlinks and link buttons, **HTML controls***.

UIT 22

UNIT V (**16 Hours)**

Creating User Controls,Web User Controls and Multithreading.Data Access with ADO.Net – Binding Controls to Database – Database Access with Web Applications.

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

TEXT BOOK:

1. Steven Holzner, "**Visual Basic.NET Black Book**", Dream Tech, First Edition,2005.

REFRENCE BOOKS:

1. Evangelos Petroustes, "**Mastering Visual Basic.NET**", BPB Publications, First Edition, 2002.
2. Bill Evjen Beres, et al. "**Visual Basic.NET programming Bible**", Wiley – DreamTech, Reprint, 2002.

UIT 23

Semester-IV **15UIT409**

Core IX- PRINCIPLES OF DATA COMMUNICATIONS AND NETWORK

Credit Points: 4 **Total Hours: 75**

Objectives: To provide an in-depth knowledge about concepts, terminologies and technologies used in data Communication and computer networking and to understand the functions of different layers and protocols.

UNIT I (15 Hours)

Introduction to Data Communications and Networking: Introduction- Fundamental Concepts - Data Communication – Protocols – **Standards *** – Signal Propagation – Analog and Digital Signals . Information Encoding: Representing Different Symbols – Minimizing Errors - Analog and Digital Transmission Methods – Modes of Data Transmission and Multiplexing. Transmission Errors: Detection and Correction.

UNIT II (15 Hours)

Transmission Media : Guided Media - Unguided Media . Network Topologies: Mesh, Star, Tree , Ring, Bus – Switching: Circuit switching, Message switching, Packet switching. Routing Algorithms: Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms – Approaches to Routing – Network Protocols and OSI Model.

UNIT III (16 Hours)

Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN): LAN – Ethernet – MAN – Switched Multimegabit Data Services (SMDS) - WAN – WAN Architecture - WAN Transmission Mechanism - WAN Addressing – Packet Forwarding – Aloha - Integrated Services Digital Network (ISDN) – X.25 Protocol – Frame Relay.

UIT 24

UNIT IV **(14 Hours)**

Asynchronous Transfer Mode (ATM) - Internetworking Concepts, Devices, Internet Basics, History and Architecture – An Introduction to TCP / IP, IP, ARP, RARP, ICMP.

UNIT V **(15 Hours)**

TCP: Features of TCP**, Relationship between TCP and IP ***, Ports and Sockets, TCP connections, What makes TCP Reliable, TCP Packet Format – User Datagram Protocol (UDP): UDP Packet, Difference between UDP and TCP – Domain Name System (DNS) – Electronic Mail (Email) – File Transfer Protocol (FTP).

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

TEXT BOOK:

1. Achyut S. Godbole - " **DATA COMMUNICATIONS AND NETWORKS**", Tata McGraw-Hill Publishing Company Limited, Ninth reprint, 2007.

REFERENCE BOOKS:

1. Behrouz A. Forouzan - "**DATA COMMUNICATIONS AND NETWORKING** "– Second Edition Update " Tata McGraw-Hill Publishing Company Limited, Nineteenth reprint, 2007.
2. Andrew S. Tanenbaum - "**COMPUTER NETWORKS**", III Edition, Prentice Hall of India, 2001.

UIT 25

Semester-IV **17UIT4CO**

Core Practical IV – PROGRAMMING LAB – VB.NET

Credit Points: 2 **Total Hours: 75**

Objectives: To learn effective program based on concepts of VB.Net Frame Work.

LIST OF PRACTICAL PROGRAMS

1. Program to perform arithmetic operations using interface.
2. Write a program to display the Exam results for given number.
3. Program for various font applications.
4. Program to simulate a simple calculator.
5. Program to simulate a digital clock with reset option.
6. Program for a notepad application.
7. Program to maintain Student details.
8. Program to maintain Employee details.
9. Program to maintain Sales details.
10. Program for Hotel Management.

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

UIT 26

Semester-V **15UIT510**

Core X - CLIENT / SERVER COMPUTING

Credit Points: 4 **Total Hours: 90**

Objectives: To enhance students to understand the role of both server and client insending and receiving data over a network.

UNIT I (17 Hours)

Client – Server computing – What is Client / Server ? – File servers, database servers, Transaction servers, Groupware servers, Object servers, Web servers – **FAT servers or client / server *** – Client / Server building blocks.

UNIT II (19 Hours)

Client / Servers and operating systems – The Anatomy of a server program – Needs of Client / Server from an OS – server scalability – Client anatomy –Client and server OS trends – Client OS and Server OS. NOS: Creating the single system image – Remote Procedure Calls (RPC) – Messaging and Queuing: The MOM Middleware.

UNIT III (18 Hours)

SQL Database Servers: What does SQL do ? – The ISO standards – What does a database server do ? – Stored procedures, Triggers and Rules. Data warehouses – OLTP (Online Transaction Processing) – Decision SupportSystems (DSS) – Executive Information System (EIS) – comparing DecisionSupport and OLTP systems – Production vs Information Databases – The datawarehouse.

UNIT IV (17 Hours)

Client / Server Transaction Processing – The ACID properties – Transaction Models – TP monitors – Client / Server groupware – Importance of Groupware– What is Groupware – The components of Groupware. Distributed Objects, CORBA

style – Object management architecture – Compound Documents –The compound document frame work.

UNIT V **(19 Hours)**

Web client / server – What is URL? – Shortest HTML tutorial – HTTP – 3 tier client / server – HTML web based forms – CGI : The server slide of the web –web security – **The internet and the intranets *** – Compound documents and the object web – 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& Jeri Edwards - " **THE ESSENTIAL CLIENT / SERVER SURVIVAL GUIDE**", Galgotia Publication Private Limited, Second Edition, 2002.

REFERENCE BOOKS:

1. Dawna Travis Dewire -" **CLIENT / SERVER COMPUTING** ",TataMcGraw-Hill,INCpublications,First Edition 2007.
2. Patrick Smith , Steve Guengerich - "**CLIENT / SERVER COMPUTING",**Second Edition,PHI Pub.,2002.
3. Steven M. Bobrowski - "**MASTERING ORACLE 7 AND CLIENT/SERVER COMPUTING**",BPB Publications.

UIT 28

Semester-V **15UIT511**

Core XI – SOFTWARE ENGINEERING

Credit Points: 4 **Total Hours: 90**

Objectives: To inculcate the methodologies involved in the development and maintenance of software over its entire life cycle.

UNIT I **(17 Hours)**

Introduction – The evolving role of S/W – **S/W Crisis *** – S/W Myths – S/W engineering technology – the S/W Process – S/W Process models – the prototyping model.Requirements engineering – System modeling – requirements analysis and elicitation for s/w – s/w prototyping – specification.

UNIT II **(19 Hours)**

Mechanics of structured analysis – data dictionary –elements of analysis model- data modeling – functional modeling and information flow.Mapping requirements into a s/w architecture – transform mapping – transaction mapping – user interface design – Interface design activities.

UNIT III **(18 Hours)**

Object oriented design – design for object-oriented systems-the system design process – s/w design and s/w engineering – the design process- design principles-design concepts – effective modular design – design heuristics for effective modularity.

UNIT IV **(17 Hours)**

S/w testing techniques: S/w testing fundamentals – White box testing – Basis path testing – control structure testing – Black Box testing.

UNIT V **(19 Hours)**

Testing strategies – A strategic approach to s/w testing – validation testing – system testing – the art of debugging – s/w quality – s/w rengineering – reverse engineering – Building blocks of CASE – **a taxonomy of CASE tools** *

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

TEXT BOOK:

1. Roger S Pressman-**"SOFTWARE ENGINEERING"**, 5th Edition, Reprint 2005, TMH Publishers.

REFERENCE BOOKS:

1. Watts S Humphrey - **"A DISCIPLINE FOR SOFTWARE ENGINEERING",** Pearson Education Publishers,2008.
2. Ian Somerville **- "SOFTWARE ENGINEERING",**7th Edition, Pearson Education Publication,2007.

UIT 30

Semester-V **15UIT512**

Core XII - MOBILE COMPUTING

Credit Points: 4 **Total Hours: 90**

Objectives: To provide the basics for various techniques in Mobile Computing and Mobile content services.

UNIT I **(18 Hours)**

Introduction: Mobility of Bits and Bytes –Wireless The Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services- Developing Mobile computer Applications – security in mobile computing – Standards _ Why is it necessary – Standard bodies. Mobile ComputtingArchitecture:**History of computers and Internet** * – Architecture for mobile computing – Three-tier architecture – Design considerations for mobile computing – Mobile computing through Internet – Making exiting applications mobile enabled.

UNIT II **(18 Hours)**

Mobile Computing Through Telephony: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI.Emerging Technologies: Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card.

UNIT III **(18 Hours)**

GSM : Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency allocations – Authentications and Security. SMS .

UNIT IV **(18 Hours)**

GPRS: GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- Limitations – Billing and Charging. WAP: MMS – GPRS Applications.

UNIT V **(18 Hours)**

CDMA and 3G: Spread spectrum technology – Is 95 – CDMA vs GSM – Wireless Data – Third generation networks – Applications on 3G. WIRELESS LAN: Wireless LAN advantages – IEEE 802.11 standards – Architecture – Mobile in Wireless LAN – Deploying wireless LAN – Mobile adhoc networks and sensor networks – Wireless LAN Security –**WiFivs 3G ***.

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

TEXT BOOK:

1. Asoke K Talukder ,Roopa R Yavagal **– "MOBILE COMPUTING",** TMH,Second Edition, 2010.

REFERENCE BOOKS:

1. Jochen Schiller – "**MOBILE COMMUNICATIONS**",AddisionWesely Pub, Second Edition, 2004.
2. UWE Hansmann, LotherMerk,Martin.S – **"PRINCIPLES OF MOBILE COMPUTING",** Second Edition,Springer 2006.
3 JeyasriArokiamary –"**MOBILE COMMUNICATIONS**", First Edition,Anuradhaagencies ,2005

UIT 32

Semester-V **15UIT5CP**

Core Practical V–SOFTWARE TESTING LAB

Credit Points: 2 **Total Hours: 75**

Objectives: To make student accustom with various automated tools used for software testing

LIST OF PRACTICAL PROGRAMS

1. Perform windows calculator validation.
2. Perform windows paint verification.
3. Display user entered data on an Ms-Excel application for default.
4. Display user entered data on an Ms-Excel application for specific fields.
5. Perform database verification.
6. Test Bitmap objects in an application.
7. Perform properties check for graphical objects.
8. Verify text area of an application.
9. Perform synchronization check for a vbapplication.
10. Generate user report message for a vb application.

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

UIT 33

Semester -VI **17UIT613**

Core XIII - OPEN SOURCE TOOLS

Credit Points: 5 **Total Hours: 90**

Objectives: To learn about advantages and Application of Open sources, JavaScript and PHP Concepts.

UNIT-I **(18 Hours)**

Introduction to open sources – Need of open sources – advantages of open sources – application of open sources. Introduction to JavaScript-Advantages of JavaScript-Basic Programming Techniques-Operators and Expressions in JavaScript JavaScript Programming Constructs-Conditional checking-Super-controlled endless loops-functions in JavaScript-Placing Text in a browser-Dialog boxes.

UNIT-II **(18 Hours)**

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

UNIT-III **(18 Hours)**

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.Using Functions and Classes: Creating User – Defined Functions – Creating Classes – Using Advanced OOP Concepts.

UNIT-IV **(18 Hours)**

Working with Files and Directories: Reading Files – Writing Files – Processing Directories.Working with Databases and SQL: Introducing Databases and SQL-Creating and Populating a Database -Using PHP's SQLite Extension - Introducing

UIT 34

SQLite – Retrieving Data – Adding or Modifying Data – Handling Errors –Using PHP's PDO Extension – Retrieving Data – Adding and Modifying Data –**Switching to a Different Database***.

UNIT-V **(18 Hours)**

Working with XML : Introducing XML – XML Basics – Anatomy of an XML Document – Well-Formed and Valid XML – XML Parsing Methods – XML Technologies – Simple XML and DOM Extensions

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

TEXT BOOKS:

1. Vikram Vaswani - "**PHP – A BEGINNER'S GUIDE**", Tata McGraw–Hill, 2008.
2. Ivan Bayross,**"Web enabled commercial application development using HTML,DHTML,JavaScript,Perl CGI**",BPB publications, 2nd edition 2002.

REFERENCE BOOKS:

1. Steven Holzner - "**THE PHP COMPLETE REFERENCE**", Tata McGraw–Hill, 2007.
2. Steven Holzer - "**SPRING INTO PHP5**", Addison Wesley, 2005

UIT 35

Semester-VI **17UIT614**

Core XIV – INFORMATION SECURITY

Credit Points: 4 **Total Hours: 90**

Objectives: To learn about the basic technological aspects of information security

UNIT I (17 Hours)

Is there Security Problem in Computing? : What does Security mean? – Attacks-The Meaning of Computer Security-Computer Criminals. P**rotection in general purpose operating systems**: Memory and Address Protection -File Protection Mechanisms-User Authentication.

UNIT II (19 Hours)

Program Security: Nonmalicious Program Errors – Viruses and other Malicious Code: Kinds of Malicious Code, How Viruses Attach, Home for Viruses, The Source of Viruses, Prevention of Virus Infection, Truths and Misconceptions About Viruses. Targeted Malicious Code: Trapdoors, Salami Attacks - Controls against Program Threats: Developmental controls.

UNIT III (18 Hours)

Database and Data Mining Security: Introduction 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: Who attacks networks? Reconnaissance, Threats in transit: Eavesdropping and wiretapping, Microwave-Summary of wiretapping-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, Shari Lawrence Pfleeger, DevenN.Shan- "**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)**", 2nd Edition, O'Reilly Media, 2006.
3. Thomas R. Peltier, Justin Peltier and John Blackley - **"INFORMATION SECURITY FUNDAMENTALS"**, 2nd Edition, Prentice Hall, 2010 Reprint.

UIT 37

Semester -VI **17UIT6CQ**

Core Practical VI – PROGRAMMING LAB – PHP

Credit Points: 2 **Total Hours: 75**

Objectives: To help the students to create Web pages using PHP.

LIST OF PRACTICAL PROGRAMS

1. Develop a PHP program using controls and functions
2. Develop a PHP program and check message passing mechanism between pages.
3. Develop a PHP program using String function and Arrays.
4. Design a form to display student information and validate it using JavaScript.
5. Design a college application form and validate it using JavaScript.
6. Develop a PHP program using parsing functions (use Tokenizing)
7. Develop a PHP program using the concept of Classes.
8. Develop a PHP program and check Regular Expression, HTML functions.
9. Develop a PHP program and check File System functions, date and time functions.
10. Develop a PHP program using session.

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

UIT 38

Semester-VI **15UIT6Z1**

PROJECT WORK AND VIVA-VOCE

Credit Points:4 **Total Hours: 90**

Objective:To guide the students to develop a project in an organization and examine their performance.

MARK DISTRIBUTION

Particulars		Marks
CIA	REGULARITY	15
	ATTENDANCE	05
VIVA –VOCE *		20
PROJECT RECORD *		60

Note: Out of 90 Hours , 30 Hours is allotted as lab session.

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

MAJOR ELECTIVE PAPERS

UIT 39

ELECTIVES FOR FIFTH SEMESTER

ELECTIVE - EMBEDDED SYSTEMS

Credit Points: 5 **Total Hours: 75**

Objectives: To teach all aspects of design and development of an embedded system including hardware and embedded software development.

UNIT I **(15 Hours)**

Introduction to Embedded System: An Embedded System – Processor in the System– Other Hardware units – Software embedded into a system – Exemplary embedded system – Embedded system on chip and in VLSI circuit. Processor and Memory organization: Structural units in a processor – Processor selection – **Memory devices** , **Memory selection** *- Allocation of memory – DMA.

UNIT II **(14 Hours)**

Devices and buses for device networks: I/O devices – Device drivers and Interrupts servicing mechanism: Device drivers – Parallel port device drivers – Serial port device drivers– Interrupt servicing mechanism – Context and the periods for context-switching, dead-line and interrupt latency.

UNIT III **(16 Hours)**

Program modeling concepts in single and multiprocessor systems: Modeling process for software analysis before software implementation – Programming models for event controlled or response time constrained real time programs. Inter-process communication and synchronization of processes, tasks and threads: Multiple processor – Problem of sharing data by multiple tasks and routines – Inter process communication.

UNIT IV **(15 Hours)**

Real time operating systems: Operating system services – I/O subsystem – Network operating systems – Real time and embedded operating systems – Interrupt routine in RTOS environment – RTOS task scheduling.

UNIT V **(15 Hours)**

Embedded system project management – embedded system design and code design issues in system development process – Uses of target system or its emulator and In circuit emulator – Uses of scopes and logic analysers for system h/w tests – **Issues in embedded system design***.

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

TEXT BOOK:

1. RajKamal - " **EMBEDDED SYSTEMS – ARCHITECTURE, PROGRAMMING AND DESIGN**", TMH,2007.

REFERENCE BOOKS:

1. David E Simon - " **AN EMBEDDED SOFTWARE PRIMER** ", Pearson Education Asia, 1999,Timmy noeragaard.
2. Newmes - "**EMBEDDED SYSTEM ARCHITECTURE** ",Oxford 2005.

UIT 41

ELECTIVE - NETWORK SECURITY & ADMINISTRATION

Credit Points: 5 **Total Hours: 75**

Objectives: To inculcate the concept of transferring authentic data along the network with several methods and algorithms.

UNIT I **(15 Hours)**

Attacks on computers and computer security: Introduction –Need for security –**Security approaches** *-principles of security –Types of attacks. Cryptography**:** Concepts and techniques - introduction – plain text and cipher text – encryption and decryption – symmetric and asymmetric key cryptography – possible types of attacks.

UNIT II **(15 Hours)**

Symmetric Key Algorithms and AES**:** Introduction - Algorithm Types and modes –An overview of symmetric key cryptography – Data encryption Standard (DES): How DES works –International Data Encryption Algorithm (IDEA): Hoe IDEA Works – Advanced Encryption Standard (AES) . Asymmetric Key Algorithms: Digital Signature and RSA : Introduction – brief history of Asymmetric Key cryptography – An Overview of Asymmetric Cryptography - The RSA algorithm – Symmetric and asymmetric cryptography together – digital signatures

UNIT III **(15 Hours)**

Digital certificate and Public Key Infrastructure (PKI): Introduction – digital certificates - the PKIX model – XML, PKI and Security – Creating digital certificates using JAVA. Internet Security Protocols **:** Introduction – basic concepts – Secure Socket Layer –(SSL) – Transport Layer Security(TLS) – Secure HyperText Transfer Protocol (SHTTP) – Time Stamping Protocol (TSP) – Secure Electronic Transaction (SET) – SSL Versus SET – 3-D secure Protocol – Electronic Money - Email Security : PEM –PGP.

UNIT IV **(15 Hours)**

User Authentication and Kerberos **:** Introduction – **Authentication basics***- Passwords – Authentication Tokens – Kerberos – Key distribution center –Single sign on (SSO) Approaches – Cryptographic Toolkits – Security and Operating Systems – Database Security .

UNIT V **(15 Hours)**

Network Security Firewalls and Virtual Private Networks(VPN) : Introduction – Brief introduction to TCP/IP – Fire walls – IP security – Virtual Private networks (VPN) –Case Studies on Cryptography and Security: Introduction – Cryptographic Solutions a Case Study – DOS Attacks – IP Spoofing Attacks – Cross Site Scripting Vulnerability (CSSV) – Contract signing – secret Splitting - virtual elections – secure multiparty calculations .

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

TEXT BOOK:

1. ATUL KAHATE - "**CRYPTOGRAPY AND NETWORK SECURITY"**, Second Edition,2008

REFERENCE BOOK :

1. Charlie Kaufman, Radia Pearlman, Mike Speciner, - "**NETWORK SECURITY PRIVATE COMMUNICATION IN PUBLIC WORLD "**, EEE Publications, Second Edition, 2006.

UIT 43

ELECTIVE – OBJECT ORIENTED ANALYSIS AND DESIGN(using UML)

Credit Points: 5 **Total Hours: 75**

Objectives: To learn the essential modeling elements of Unified Modeling Language.

UNIT I (15 Hours)

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, **Software Development Life Cycle***.

UNIT II (16 Hours)

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams. Advanced Structural Modeling: Interfaces, Types and Roles, **Packages***.

UNIT III (14 Hours)

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.

UNIT IV (15 Hours)

Basic Behavioral Modeling-I: Interactions, Interaction diagrams. BasicBehavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

UNIT V (15 Hours)

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads. Architectural Modeling: **Deployment***

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

TEXT BOOKS:

1. Grady Booch, JamesRumbaugh, Ivar Jacobson -"**THE UNIFIED MODELING LANGUAGE USER GUIDE"**, Pearson Education 2nd Edition 2005.

2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado -"**UML 2 TOOLKIT",** WILEY-DreamtechIndia Pvt. Ltd 2009.

REFERENCE BOOKS:

1. Pascal Roques -"**MODELING SOFTWARE SYSTEMS USING UML2"**, WILEY-Dreamtech India Pvt. Ltd 1st Edition 2008.
2. Craig Larman -"**APPLING UML AND PATTERNS:AN INTRODUCTION TO OBJECT – ORIENTED ANALYSIS AND DESIGN AND UNIFIED PROCESS"**, Pearson Education 3rd Edition 2008.

UIT 45

ELECTIVES FOR SIXTH SEMESTER

ELECTIVE – E-COMMERCE

Credit Points: 5 **Total Hours: 75**

Objective: To inculcate knowledge on E-Commerce concepts in the present IT world.

UNIT-I **(15 Hours)**

What is e-commerce? – E-Commerce is not E-Business – the drivers – Myths You should know – Advantages and Issues in E-Commerce – Benefits and Limitations of the Internet – Role of EStrategy – Integrating E-commerce – E-Commerce Business Models – Management Implications.

UNIT-II **(15 Hours)**

Mobile-Commerce-The Business of Time**:** What is M-Commerce? – Why wireless? – How wireless Technology is employed? – Wireless LAN – Wireless application Protocol -**Implications for Management ***.

UNIT-III **(15 Hours)**

Business-to-Business E-Commerce**:** What is B2B E-Commerce? – Supply chain Management and B2B – B2B Models – B2B Tools-EDI.

UNIT-IV **(15 Hours)**

E-Security**:** Security in Cyberspace – Designing for Security – How much risk you afford?– The VIRUS – Security Protection and Recovery – Role of Biometrics - How to secure your system? – Security and Terrorism.

UNIT-V **(15 Hours)**

Getting the money**:** Real World Cash – Electronic Money – **Requirements for Internet*** -Based Payments – How would you like to pay? – B2B and E-Payment – M-Commerce and M-Payment – General Guide to E-Payment.

UIT 46

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

TEXTBOOK:

1. Elias M. Awad **– "ELECTRONIC COMMERCE from Vision to Fulfillment "** 3rd edition, PHI.(Chapters: 1, 6, 11, 13 &15)

REFERENCE BOOKS:

1. Charles Trapper **- "E-COMMERCE Strategies" –** PHI Publication 2001 edition.
2. Agarwal & Others - **"AN INTRODUCTION TO THE WHATS AND HOWS OF E-COMMERCE" –**first edition Mac Millan Ind Ltd 2000.

UIT 47

ELECTIVE –CLOUD COMPUTING

Credit Points: 5 **Total Hours: 75**

Objectives: To teach the basics of cloud computing and the broad perspective of cloud architecture,applications and model.

UNIT I **(15 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 **(15 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.

UIT 48

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. RajkumarBuyya, Christian vecchiola ,Thamaraiselvi -**"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 EduInc, First Impression 2009.

UIT 49

ELECTIVE - DATA MINING

Credit Points: 5 **Total Hours: 75**

Objectives: To teach the core concepts of Data Mining

UNIT I **(15 Hours)**

Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – **Social Implications of Data Mining *** – Data Mining from Database Perspective.

UNIT II **(15 Hours)**

Data Mining Techniques – a Statistical Perspective on data mining – Similarity Measures – Decision Trees – Neural Networks – Genetic Algorithms.

UNIT III **(15Hours)**

Classification : Introduction – Statistical – Based Algorithms – Distance Based Algorithms – Decision Tree – Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms – Combining Techniques.

UNIT IV **(15 Hours)**

Clustering : Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms - Partitional Algorithms.

UNIT V **(15 Hours)**

Association Rules : Introduction - Large Item Sets – Basic Algorithms – Parallel & Distributed Algorithms – Comparing Approaches – Incremental Rules – Advanced Association Rules Techniques – **Measuring the Quality of Rules ***.

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

UIT 50

TEXT BOOK:

1. Margaret H.Dunbam –**"Data Mining Introductory and Advanced Topics"**, Pearson Education – 2008.

REFERENCE BOOK :

1. Jiawei Han &MichelineKamber – "**Data Mining Concepts & Techniques"**, 2006 Academic Press.

ALLIED PAPERS

UIT51

Semester - IV **15UIT4A4**

ALLIED IV – MICROPROCESSORS, PC HARDWARE AND INTERFACING

Credit Points: 5 **Total Hours: 90**

Objectives: To teach the architecture and instruction set of different Microprocessors.Microcontrollers, Peripheral and ports.

UNIT I (18 Hours)

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

UNIT II (18 Hours)

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

UNIT III (18 Hours)

Advanced Microprocessors: 80386 - Internal Block Diagram, Internal Registers, Modes of Operation, 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 **(18 Hours)**

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

UNIT V **(18 Hours)**

Parallel & Serial Ports: Parallel port – Standard Parallel port (SPP)- Enhanced Parallel port (EPP) –SerialPort: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 2005.

REFERENCE BOOKS:

1. Aditya P.Marthur-"**INTRODUCTION TO MICROPROCESSORS**", ThirdEdition,TMH 2002.
2. Brey.Barry.B,ShrmaC.R – **"THE INTEL MICROPROCESSORS"**–PHI Publications First Edition,2007.

SKILL BASED PAPERS

UIT 53

17UIT3S1

SEMESTER III

Skill Based Subject 1

Python Programming I

Credit Points : 3 **Total Hours : 30**

Objectives

1. To introduce the fundamentals of Python Programming.
2. To teach about the concept of Functions in Python.
3. To impart the knowledge of formatting and escape sequencing characters

Unit I **(6 Hours)**

Introduction to Python: Introduction – Python Overview – Getting Started with Python – Comments – Python Identifiers – Reserved Keywords – Variables – Standard Data types.

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Unit II **(6 Hours)**

Operators - Statement and Expressions – String Operations – Boolean Expressions – Illustrative Programs : Square root of a number, Area of a Rectangle and Swap the values of two numbers.

Unit III **(6 Hours)**

Control Statements – Iteration - While Statement – Input from Keyboard – Illustrative Programs using Control and Iteration Statements :Find a number is Odd or Even, Largest of three numbers, Input year is leap or not, Fibonacci sequence of n terms.

Unit IV **(6 Hours)**

Functions: Introduction - Built-in Functions – Composition of Functions – Illustrative program using Functions and Built-in Functions : To get current Date and Time, To get Calendar for a month, To format date and Time and to demonstrate built-in functions.

Unit V **(6 Hours)**

User defined Functions – Parameters and Arguments – Python Recursive Functions –the return statement. Illustrative programs using User defined functions and Recursive functions : to find HCF of given numbers, to display factors of a given number,

to convert decimal number to its binary, octal, hexadecimal equivalents, sum of natural numbers using recursion and factorial of a number.

Text Book:

1. E. Balagurusamy, (2017), Problem Solving and Python Programming , First Edition____McGraw-Hill Publication.

Reference Books:

1. Ashok Namdev Kamthane ,Amit Ashok Kamthane, (2017), Programming and Problem Solving with Python, First Edition.

UIT 55

17UIT4SL

SEMESTER IV

Skill Based Subject 2

Python Programming Lab I

Credit Points : 3 **Total Hours : 30**

Objectives

1. To gain knowledge about the concepts of python programming.
2. To understand the concepts of Built-in functions and User-defined functions.
3. To develop programs using String functions.

LIST OF PRACTICAL PROGRAMS

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 display all the prime numbers within an interval.
4. Write a program to create a simple calculator using functions.
5. Write a program to multiply two matrices using nested loops.
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. Program to perform different set operations.
9. Program to perform linear and binary search.
10. Program to perform merge sort.

Guidelines to the distribution of marks for Practical Examinations:

One Question will be given for each student. (3 Hours/60 marks)

Record Work: 10 marks

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

UIT 56

17UIT5S2

SEMESTER V

Skill Based Subject 3

Python Programming II

Credit Points : 3 **Total Hours : 30**

Objectives:

1. To teach the concepts of Strings and Tuples and dictonaries.
2. To gain knowledge about files and directories in python.
3. To learn the concepts of dictionaries in python.

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Unit I **(6 Hours)**

Strings : Compound Data type – len Function – String Slices – Strings are Immutable – String Traversal – Escape Characters – String Formatting Operators and Functions – Lists - values and accessing elements - Lists and mutable - Deleting elements from list- Built-in list operations - Built-in list methods.

Unit II **(6 Hours)**

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. 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.

Unit III **(6 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.

Unit IV **(6 Hours)**

Directories: mkdir() , chdir(), getcwd(), rmdir() .Illustrative programs to write data in a file for both write and append mode directories. Exception: Built-in exceptions – Handling exceptions – Exception with arguments – User defined exceptions.

17UIT5S2

Unit V **(6 Hours)**

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.

Text Book:

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

Reference Books:

1. Ashok Namdev Kamthane ,Amit Ashok Kamthane, (2017), Programming and Problem Solving with Python**,** First Edition.

UIT 58

17UIT6SM

SEMESTER VI

Skill Based Subject 4

Python Programming Lab II

Credit Points : 3 **Total Hours : 30**

Objectives:

1. To gain knowledge about the usage of tuples in Programming.
2. To teach the concepts of using dictionaries programming.
3. To impart knowledge about the creation of files and directories.

LIST OF PRACTICAL PROGRAMS

1. Write a program to count the number of each vowel in a string.
2. Write a program to sort alphabetically the words form a string provided by the user.
3. Write a program to demonstrate tuples functions and operations.
4. Write a program to demonstrate dictionaries functions and operations.
5. Write a python program to demonstrate File Input and Output operations.
6. Write a program to demonstrate Exception Handling.
7. Write a program to demonstrate Classes and their Attributes.
8. Write a program to demonstrate inheritance and method overriding.
9. Write a program to demonstrate Multiple Inheritance.
10. Write program to generate a student mark sheet using Built-in Class attributes.

Guidelines to the distribution of marks for Practical Examinations:

One Question will be given for each student. (3 Hours/60 marks)

Record Work: 10 marks

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

ENVIRONMENTAL STUDIES

&

VALUE EDUCATION – MORAL AND ETHICS

B.Sc Information Technology (2017-2018 & Onwards)

UIT 59

Part IV – Semester-I

ENVIRONMENTAL STUDIES 15EVS101

(2015-16 onwards)

Total Credits : 2 **Total Hours : 30**

Objectives: 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. PurohitShammi Agarwal, **"A TEXT BOOK OF ENVIRONMENTAL SCIENCES"**, Publisher Mrs. SaraswatiProhit, 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)**

Question Paper Pattern
(External only)

Duration: 3 hours Total Marks : 50

Answer all Questions (5 x 10 = 50 Marks)

Essay type, either or type questions from each unit.

UIT 62

Part IV – II Semester

Value Education – Moral and Ethics **16VED201**

(2016-17 onwards)

Total Credits : 2 **Total Hours : 30**

UNIT I **(6 Hours)**

Introduction – Meaning of Moral and Ethics – Ethics and culture – Aim of Education.

UNIT II **(6 Hours)**

Swami Vivekananda – A biography.

UNIT III **(6 Hours)**

The Parliament of Religions – Teachings of Swami Vivekananda.

UNIT IV **(6 Hours)**

Steps for Human Excellence.

UNIT V **(6 Hours)**

Meditation.

TEXT BOOK:

1. Value Based Education – **MORAL AND ETHICS**– Published by Kongunadu Artsand Science College (Autonomous), First Edition, 2015.

REFERENCES :

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, AdvaitaAshrama, Mayavati, Champawat, Uttarakhand, Himalayas.

Question Paper Pattern

(External only)

Duration: 3 hours Total Marks: 50

Answer all Questions (5 x 10 = 50 Marks)

Essay type, either or type questions from each unit.

NON - MAJOR ELECTIVE PAPERS

UIT 63

Semester III

Non - Major Elective - I "Human Rights" 15UHR3N1

(2015-16 onwards)

Objectives:

1. To prepare for responsible citizenship with awareness of the relationship between Human Rights, democracy and development.
2. To impart education on national and international regime of Human Rights.
3. To sensitize students to human suffering and promotion of human life with dignity.
4. To develop skills on human rights advocacy
5. To appreciate the relationship between rights and duties.
6. To foster respect for tolerance and compassion for all living creatures.

Credit Points: 2 **Total Hours: 30**

UNIT – I : **6 Hours**

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 : **6 Hours**

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 : **6 Hours**

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

UIT 64

UNIT- IV : Therapeutic Measures **6 Hours**

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 **6 Hours**

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
   h. Right to Information
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

Note: Study material can be obtained from the Office of the Controller of Examinations of our College.

Question Paper Pattern

Duration : 3 hrs Max : 75 marks

Section A(5x5=25)

Short notes
Either – Or/ Type - Question from each unit

Section B(5X10=50)

Essay type
Either – Or/ Type - Question from each unit

UIT 65

Semester IV
Non- Major Elective - II "Women's Rights" 15UWR4N2
(2010-11 onwards)

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

Credit Points: 2 **Total Hours: 30**

UNIT I **(6 Hours)**

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 **(6 Hours)**

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 **(6 Hours)**

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 **(6 Hours)**

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

UIT 66

UNIT V **(6 Hours)**

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.

REFERENCE BOOKS:

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.

Question Paper Pattern

Duration : 3 hrs Max : 75 marks

Section A(5x5=25)

Short notes
Either – Or/ Type - Question from each unit

Section B(5X10=50)

Essay type
Either – Or/ Type - Question from each unit