

PONDICHERRY UNIVERSITY

(A CENTRAL UNIVERSITY)

Kalapet, Puducherry



B.Sc. Information Technology

(Choice Based Credit System)

Regulations & Syllabus

2019-20 onwards

Pondicherry University
Bachelor of Information Technology (B.Sc. IT)
REGULATIONS

(Effective from the Academic year 2019-2020)

1. Aim of the Course

The B.Sc. (Information Technology) course aims to impart the students with fundamental and hands on knowledge of computers, information technology and communication and information technology management.

2. Eligibility of Admission

Candidates for admission to B.Sc. (IT) shall be required to have passed 10 + 2 system of Examination or equivalent with Mathematics / Business Mathematics / Computer Science/ Computer Applications as one of the subjects of study.

3. Lateral Entry Admission

Candidates who have passed Diploma in Computer Science / Information Technology/ Computer Technology / Computer Application in I Class (10+3 years of study) are eligible to apply for the lateral entry to the 2nd year of the course subject to availability of seats, but limited to 10% of the sanctioned intake.

4. Duration of the course

The course shall be of three years' duration spread over six consecutive semesters. The maximum duration to acquire prescribed number of credits in order to complete the Programme of Study shall be twelve consecutive semesters (six years).

5. Medium

The medium of instruction shall be English.

6. Course Structure

Category	Course Name	Number Of Papers	Credits Per Paper	Total Credits
MIL	Modern Indian Languages	2	3	6
ENG	English	2	3	6
AECC	Ability Enhancement Compulsory Course	2	2	4
SEC	Skill Enhancement Course	4	2	8
GE	Generic Elective Course	2	3	6
DSC	Discipline Specific Core Course	Theory- 12 Practical – 9 Project -1	Theory- 3 Practical – 2 6	$12 \times 3 = 36$ $9 \times 2 = 18$ $1 \times 6 = 6$ Total = 60
DSE	Discipline Specific Elective Course	6	4	$6 \times 4 = 24$
OE	Open Elective Course	2	3	$2 \times 3 = 6$
			Total	120

MIL, ENG, AECC

The crediting of MIL, ENG and AECC courses is as per Pondicherry University UG CBCS regulations.

DSC and DSE

At least 60% (72 credits) of the total minimum credit requirement must be earned by the student from DSC and DSE courses as follows in order to obtain the degree - 60 credits from Discipline Specific Core and 12 credits from Discipline Specific Elective courses.

SEC

Out of the 4 Skill Enhancement Courses, two courses viz. – i) Online Course / In-Plant Training (2 weeks) / One month Internship / mini project is mandatory. The Online Course to be studied, the organization to be chosen for In-Plant Training or One month internship is to be validated or approved by a panel of members comprising of the Department Faculty, before a student pursues the same.

For the remaining 2 SEC courses, any of the 2 credit Skill Enhancement Courses specified in the curriculum (B.Sc. IT) could be credited or substituted with Skill Enhancement Courses in the curriculum of other UG computer science courses or Skill Enhancement Courses of other UG Non-Computer Science Disciplines of study that constitute to skill development or an assortment of these without any overlap of courses.

GE

Any 2 of the 3 credit Generic Elective Courses specified in the curriculum (BCA) could be credited to constitute the 6 credits or substituted with Generic Elective courses in the curriculum of other UG Computer Science Disciplines of study or UG Courses of Non-Computer Science Disciplines of study that add proficiency to the students - with the advice of the Faculty Advisor, or an assortment of these without any overlap of courses.

DSE

The six 4 credit papers to be credited under DSE can be credited from Discipline Specific Elective specialization stream courses as follows:

- a. Three of the 4 credit courses can be credited from one specialization streams, thus completing 2 specialization streams. (or)
- b. All six 4 credit papers can be credited from any specialization stream across the different specialization stream courses specified in the curriculum without any overlap of courses credited in above. (or)
- c. Another specialization stream courses or across the different specialization stream courses in the curriculum of other UG Computer Science Disciplines of study without any overlap of courses credited in above.

OE

Any 2 of the 3 credit Open Elective Courses specified in the curriculum (B.Sc. IT) could be credited to constitute the 6 credits or substituted with Open elective courses in the curriculum

of other UG Computer Science disciplines of study or substituted with UG Courses of Non-Computer Science Disciplines of study that add proficiency to the students - with the advice of the Faculty Advisor or an assortment of these without any overlap of courses.

7. Faculty to Students Ratio

The Faculty to Student Ratio in all the practical / laboratory classes shall be maintained at 1:25.

8. Pattern of Examination

- I. The End-Semester examination and internal assessments for MIL, ENG, AECC, DSC, GE and OE courses are as per Pondicherry University UG CBCS regulations.
- II. All SEC courses (except Online Course / In-Plant Training (2 weeks) / One month Internship) to be treated as a practical / laboratory course and the End-Semester examination to be conducted as per Pondicherry University UG CBCS regulations.
- III. The internal assessments for all practical / laboratory courses (for DSC, SEC courses) shall be as follows – 15 marks from two internal practical / laboratory assessment tests and 5 marks based on practical / laboratory course based mini application development.
- IV. The internal assessment for DSE courses shall be conducted as follows - 12 marks from two internal assessment tests and 8 marks based only on two internal practical / laboratory assessment tests.

- V. The marks for attendance (5 marks) applies to all courses and the awarding of attendance marks is as per Pondicherry University UG CBCS regulations.
- VI. The Project work is to be evaluated as follows:
 - i. The internal assessment (25 marks) is awarded as follows:
 - a. 10 marks is awarded based on two internal project reviews conducted in periodic intervals by a panel comprising of members of the Department during the tenure of the project.
 - b. The student's project guide awards 10 marks for the project work and 5 marks for attendance (attendance marks as specified in the Pondicherry University UG CBCS regulations).
 - ii. The End Semester Examination assessment (75 marks) is evaluated under two aspects viz –
 - i)Project Work – (50 marks) ii)Project Report and Viva- Voce (25 marks)

Passing Minimum

Passing Eligibility and classification for the award of the Degree is as per Pondicherry University UG CBCS regulations.

Lateral Entry

The Lateral Entry students have to complete 81 credits from the DSC, DSE, GE, SE, OE courses as per curriculum (IIIrd to VIth semesters). In addition, they should complete the two AECC courses (4 credits) for the award of the degree. One MIL (3 credits) and one ENG (3 credit) courses also need to be completed, if it is not studied in the last three years of the course eligible for lateral entry admission.

Other aspects of CBCS not covered in this document by default conforms to the Pondicherry University UG CBCS regulations.

Programme Outcomes

PO1: The students with basic knowledge of computer science or mathematics are admitted to the first year of the course. They get trained in programming with the basics of C language and gain knowledge of digital systems through a course on Digital Electronics in the I semester.

PO2: Python Programming and Data Structures and Algorithms form the skill sets in the II

semester. In addition the students understand about administration and how to preserve nature through courses on Public Administration and Environmental Studies in the I Year.

PO3: In the course on JAVA programming the students learn about JDBC and swing concepts. Software Engineering course provides an in depth knowledge of software processes and software metrics. Networks provide a short description of different layers of communication and Information theory and coding provides knowledge of application of probability, entropy and coding techniques. Students learn the basic techniques of effective communication through a course on Soft Skills.

PO4: Electives for specialization starts from IV semester in different fields of computer science such as Data science, Information and Network Security, Wireless network communications, Multimedia applications and IT Project Management. DBMS and Graphics form the core courses. A course on Linux and shell programming offers the student with much needed knowledge in open source programming.

PO5: Electives continue and specialization courses offered on PHP/Android Programming, Artificial Intelligence and options for online courses, Internship/Mini project along with main course on Operating Systems form the core of the V semester which prepares the student with updated knowledge in latest techniques.

PO6: A course on web technology and electives are provided in the last semester. The student is ready to take any assignment in the field of Information Technology by doing a project on his own in the final semester with the knowledge gained by learning all the courses thoroughly.

B.Sc – INFORMATION TECHNOLOGY [CBCS PATTERN] COURSE STRUCTURE**From the Academic Year 2019 - 2020**

Title	No. of papers	No. of credits	Total Credits	Theory / practical
MIL	2	3	6	Theory
English	2	3	6	Theory
Discipline Specific Core (DSC) - Core papers – Theory	12	3	36	Theory
DSC – Core papers (LAB)	9	2	18	Practical
DSC - Project work	1	6	6	
Discipline Specific Elective (DSE) – Specialization Papers	6	3+1	24	Theory
Generic Elective (GE) - Mathematics	2	3	6	Theory
Open Elective (OE)	2	3	6	Theory
Ability Enhancement Compulsory Core (AECC) (Environmental Studies & Public Administration)	2	2	4	Theory
Skill Enhancement Core (SEC)	4	2	8	Practical
		Total Credits	120	

PONDICHERRY UNIVERSITY

B.Sc.-Information Technology

PROPOSED STRUCTURE OF THE COURSE UNDER CBCS 2019-2020

FIRST SEMESTER

COURSE	SUBJECT CODE	Paper	CREDITS		HOURS		
			Theory	Prac.	L	T	P
MIL	LTAM/LHIN/LTEL/LMAL111	Language-I	3	-	3	2	0
ENG	ENGL112	English-I	3	-	3	2	0
DSC-1	CSIT113	Introduction to Problem Solving using C	3	-	3	2	0
DSC-2	CSIT114	Digital Electronics	3	-	3	2	0
AECC-1	PADM115	Public Administration	2	-	2	0	0
DSC-1(lab)	CSIT116	Programming in C lab	-	2*	0	0	4
DSC-2(lab)	CSIT117	Digital lab	-	2*	0	0	4
		TOTAL	18		30		

SECOND SEMESTER

COURSE	SUBJECT CODE	Paper	CREDITS		HOURS		
			Theory	Prac.	L	T	P
MIL	LTAM/LHIN/LTEL/LMAL121	Language-II	3	-	3	2	0
ENG	ENGL122	English-II	3	-	3	2	0
DSC - 3	CSIT123	PYTHON Programming	3	-	3	0	0
DSC - 4	CSIT124	Data Structures and Algorithms	3	-	3	1	0
GE – 1 (1 out of 2)	CSIT125	Discrete Mathematics	3	-	3	0	0
	CSIT126	Applied Statistics					
AECC-2	ENVS127	EVS	2	-	2	0	0
DSC-3(lab)	CSIT128	PYTHON lab	-	2*	0	0	4
DSC-4(lab)	CSIT129	Data Structures and Algorithms Lab	-	2*	0	0	4
		TOTAL	21		30		

THIRD SEMESTER

COURSE	SUBJECT CODE	Paper	CREDITS		HOURS		
			Theory	Prac.	L	T	P
DSC – 5	CSIT231	Object Oriented Programming Using JAVA	3	-	3	1	0
DSC – 6	CSIT232	Operating System	3	-	3	1	0
DSC – 7	CSIT233	Computer Networks	3	-	3	0	0
DSC – 8	CSIT234	Software Engineering	3	-	3	1	0
GE-2 (1 out of 2)	CSIT235	Operation Research	3	-	3	0	0
	CSIT236	Numerical Methods					
DSC-5(lab)	CSIT237	JAVA lab	-	2*	0	0	4
DSC-8(lab)	CSIT238	Computer networks lab	-	2*	0	0	4
SEC-I		Select 1 SEC from SECs list	-	2*		1	3
		TOTAL	21		30		

FOURTH SEMESTER

COURSE	SUBJECT CODE	Paper	CREDITS		HOURS		
			Theory	Prac.	L	T	P
DSC – 9	CSIT241	Database Management System	3	-	3	0	0
DSC – 10	CSIT242	Information theory and Coding	3	-	3	1	0
Select DSE – 1 DSE – 2 Out of 5	CSIT243	Object Oriented System Design	3	1	3	1	2
	CSIT244	Client/Server Computing					
	CSIT245	Data Communication Technologies					
	CSIT246	Computer Graphics	3	1	3	1	2
	CSIT247	IT Infrastructure Management					
OE-1		Select 1 OE from the OE list	3	-	3	0	0
DSC-9(lab)	CSIT248	DBMS lab	-	2*	0	0	4
SEC-II		Select 1 SEC from SECs list		2*	0	1	3
		TOTAL	21		30		

FIFTH SEMESTER

COURSE	SUBJECT CODE	Paper	CREDITS		HOURS		
			Theo ry	Prac.	L	T	P
DSC – 11	CSIT351	Web Technology	3	-	3	0	0
Select DSE – 3 and DSE – 4 Out of 5	CSIT352	Software Testing	3	1	3	1	2
	CSIT353	Distributed Computing					
	CSIT354	Introduction to Wireless Communications	3	1	3	1	2
	CSIT355	Multimedia & its Applications					
	CSIT356	IT Project Management					
OE-2		Select 1 OE from OE list	3	-	3	0	0
DSC-11 (lab)	CSIT357	Web Technology lab	-	2*	0	0	4
SEC-III		Select 1 SEC form the SECs list		2*	0	1	3
SEC-IV <u>Compulsory</u>	CSIT806 CSIT807 CSIT808 CSIT809	Online Course / mini project / Internship (2weeks) / In-Plant Training (1month) <i>Any one from the above list</i>	-	2*	0	1	3
		TOTAL	20		30		

SIXTH SEMESTER

COURSE	SUBJECT CODE	Paper	CREDITS		HOURS		
			Theory	Prac.	L	T	P
DSC – 12	CSIT361	Visual Programming using C#	3	-	3	0	0
DSC – 13	CSIT362	PROJECT	-	6*	0	1	10
select DSE - 5 & DSE – 6 Out of 5	CSIT363	Software Quality Management	3	1	3	1	2
	CSIT364	Cloud Computing					
	CSIT365	Internet of Things	3	1	3	1	2
	CSIT366	Audio & Visual Technology					
	CSIT367	Information Security Management					
DSC-12 (lab)	CSIT368	Visual Programming Lab	-	2*	0	0	4
		TOTAL	19		30		

* University Practical Exam/ Viva Should be conducted.

<u>DISCIPLINE SPECIFIC CORES (DSC)</u>		Semester
1	Introduction to Problem Solving using C	I
2	Digital Electronics	I
3	Python Programming	II
4	Data Structures and Algorithms	II
5	Object Oriented Programming using JAVA	III
6	Operating Systems	III
7	Computer Networks	III
8	Software Engineering	III
9	Database Management Systems	IV
10	Information Coding & Theory	IV
11	Web Technology	V
12	Visual Programming with C#	VI
13	PROJECT	VI
<u>DISCIPLINE SPECIFIC ELECTIVES</u> <u>(DSE)-POOL</u> (Specialization Stream - I) Software Engineering		
1	Object Oriented System Design	
2	Software Testing	
3	Software Quality Management	
(Specialization Stream - II) Advanced Computing		
1	Client/Server Computing	
2	Distributed Computing	
3	Cloud Computing	

(Specialization Stream - III) Wireless Communication		
1	Data Communication Technologies	
2	Introduction to wireless Communication	
3	Internet of Things	
(Specialization Stream - IV) Multimedia		
1	Computer Graphics	
2	Multimedia & its Applications	
3	Audio & Visual Technology	
(Specialization Stream - V) IT Management		
1	IT Infrastructure Management	
2	IT Project Management	
3	Information Security Management	
<u>OPEN ELECTIVE LIST</u>		
1	Business Communication	CSIT701
2	IT Enabled Services	CSIT702
3	Total Quality Management	CSIT703
4	Artificial Intelligence	CSIT704
5	Introduction to E-Business	CSIT705
6	Fundamentals of Accountancy	CSIT706
7	Principles of Management	CSIT707

<u>SKILL ENHANCEMENT COURSES-LIST</u>		
1	**Soft Skills	CSIT801
2	Office Automation	CSIT802
3	Multimedia Tools	CSIT803
4	Programming with PHP	CSIT804
5	Mobile Application Development	CSIT805
6	** Online Course / Mini project – Viva (SEC-IV) / Internship (2weeks) / In-Plant Training (2 weeks)	CSIT806 CSIT807 CSIT808 CSIT809
<u>GENERIC ELECTIVES</u>		
1	Discrete Mathematics	CSIT125
2	Applied Statistics	CSIT126
3	Operation Research	CSIT235
4	Numerical Methods	CSIT236
<u>COURSES OFFERED TO NON-COMPUTER SCIENCE STUDENTS</u>		
1	Basics of Computers and Office Automation	CSIT171
2	Fundamentals of Information Technology	CSIT172
3	Fundamentals of ‘C’ Language	CSIT173
4	Web Designing	CSIT174

NOTE:

**** -- compulsory course**

DISCIPLINE SPECIFIC CORE

Paper Code: CSIT113

L	T	P
3	2	0

INTRODUCTION TO PROBLEM SOLVING USING C

Prerequisite: Basic knowledge of Mathematics and Computers.

Objectives:

- To learn the concepts of “ C ” Programming
- To develop software programs using “C” language

Outcomes:

- In-depth understanding of various concepts of C language.
- Skill to write program code in C to solve real world problems and to debug a program

MODULE – I

Introduction to Computers, Introduction to Programming - How to develop a program, Algorithms, Flow-charts, Types of Programming Languages - Debugging, Types of errors - Techniques of Problem Solving – Problem solving aspects – Top- Down aspects –Structured programming concepts.

MODULE – II

Character Set, Structure of a ‘C’ Program, Data Types, Operations, Expressions, Assignment Statement, Conditional Statements, Looping Statements, Nested Looping Statements, Multi Branching Statement (Switch), Break and Continue, Differences between Break and Continue, Unconditional Branching (Go to Statement)

MODULE – III

Functions: Defining and accessing: Passing arguments, Function prototypes, Function calls- Categories of functions- Nesting of functions- Recursion. Use of library functions, Scope , Visibility and Lifetime of variables.

MODULE – IV

Arrays: Declaration and Initialization of one and two dimensional arrays – Multidimensional array – dynamic arrays - Character arrays and strings. Structure: Defining and processing. Structure initialization Operations on individual members Arrays of structures, Arrays within Structures, Structures and Functions- Passing to a function, Union.

MODULE – V

Pointers: Declarations and initialization of pointer variables, Accessing pointer variables, Passing to a function. Operations on pointers, pointer and arrays, Array of pointers, Pointer to Functions. Data Files: Open, close, create, process unformatted data files.

TEXT BOOK

1. E. E.Balagurusamy, Programming in ANSI C , 8th Edition Tata McGraw Hill, 2019
2. P. K. Sinha & Priti Sinha, “Computer Fundamentals”, BPB Publications, 2007.
3. Byron S. Gottfried, Programming with C , Schaum’s Outline Series, TMH, 4th Edition

2018.

Paper Code: CSIT116

L	T	P
0	0	4

PROGRAMMING IN C LAB

LIST OF EXERCISES

1. Simple C programs
2. Program to illustrate control statements
3. Program to illustrate FOR loop
4. Program to illustrate SWITCH & WHILE statements
5. Program to illustrate functions
6. Program to illustrate user-defined functions
7. Program to illustrate arrays
8. Program to illustrate usage of pointers
9. Program to illustrate character handling libraries.
10. Program to illustrate string manipulation
11. Program to illustrate creation of files.
12. Program to illustrate creation, reading & accessing files

Paper Code: CSIT114

L	T	P
3	2	0

DIGITAL ELECTRONICS

Prerequisite: Basic knowledge about computers

Objectives:

- To learn the fundamentals of digital logic.
- To learn combinational and sequential logic.

Outcomes:

- Skill to use the methods of systematic reduction of Boolean expression using K- Map. Ability to interpret logic gates and its operations.
- Familiarization with combinational and sequential logic circuits in electronics.

MODULE -I

Number systems & Conversions – Arithmetic of number systems – binary codes – BCD – The excess – 3code – Gray code – ASCII – EBCDIC - Introduction to Logic Circuits – logic functions & gates – Inversion – truth tables – logic gates – truth table of basics gates – timing diagrams of NOT, AND & OR gates.

MODULE -II

Boolean Algebra – Basic Theorems and properties – Boolean Functions – Canonical and Standard Forms – Karnaugh Map Simplification –Two, Three, Four and Five Variables –NAND and NOR Implementation – Don't Care Conditions .

MODULE -III

Combinational Logic Circuits – Code Converter- Multiplexer – Demultiplexer – Magnitude Comparator- Adder: Half Adder, Full Adder – Subtractor : Half Subtractor, Full Subtractor – Encoder – Decoder.

MODULE -IV

Sequential Logic Circuits - SR flip flop – D flip flop – JK flip flop – T flip flop – flip flop triggering – Shift registers – data movements in digital systems – counters – classification of counters.

MODULE –V

Register transfer logic Inter register transfer Arithmetic, Logic and shift micro operations Conditional control statements fixed point binary data overflow Arithmetic shifts Instruction codes Design of simple computer.

Text Books:

1. Morris Mano M, “Digital Logic and Computer Design”, Pearson Education, 4th edition, 2014.
2. S.S. Bhatti & Ragul Malhotra, ”A Textbook of Digital Electronics”, I.K. International publishing, New Delhi, 2013

Paper Code: CSIT117

L	T	P
0	0	4

DIGITAL LAB

1. Study of Logic Gates
2. Design of Adder and Subtractor
3. Design and Implementation of Code Convertors
4. Design of 4-Bit Adder and Subtractor
5. Design and Implementation of Magnitude Comparator
6. 16 Bit Odd/Even Parity Checker and Generator
7. Design and Implementation of Multiplexer and Demultiplexer
8. Design and Implementation of Encoder and Decoder
9. Simulation of Logic Gates
10. Simulation of Adder and Subtractor

Paper Code: CSIT123

L	T	P
3	0	0

PYTHON PROGRAMMING

Prerequisite: Knowledge of any programming language

Objectives:

- To learn Basic Python Programming Concept.
- To develop simple Python programs and code reusing with functions

Outcomes:

- Skill to write codes in Python to solve mathematical or real world problems.
- Ability to isolate and fix common errors in Python programs.

MODULE 1

Introduction to Python - The IDLE Python Development Environment - The Python Standard Library - Literals - Numeric Literals - String Literals - Control Characters - String Formatting - Implicit and Explicit Line Joining Variables and Identifiers - Variable Assignment and Keyboard Input- Identifier-Keywords and Other Predefined Identifiers in Python – Operators - Various Operators - Relational Operators-Membership Operators – Boolean Operators - Expression and Data Types -Operator Precedence and Boolean Expressions - Operator Associativity - Mixed-Type Expression

MODULE 2

Control Structure -Selection Control- If Statement - Indentation in Python - Multi-Way Selection - Iterative Control - While Statement - Input Error Checking - Infinite loops - Definite vs. Indefinite Loops

MODULE 3

List Structures - Common List Operations - List Traversal - Lists (Sequences) in Python- Python List Type - Tuples- Sequences- Nested Lists Iterating Over Lists (Sequences) in Python - For Loops - The Built-in range Function - Iterating Over List Elements vs. List Index Values-While Loops and Lists (Sequences) - Dictionaries and sets

MODULE 4

Defining Functions - Calling Value-Returning Functions - Calling Non-Value-Returning Functions - Parameter Passing - Keyword Arguments in Python Default Arguments in Python - Variable Scope - Recursive functions - Exception Handling -The Propagation of Raised Exceptions - Catching and Handling Exceptions -Exception Handling and User Input

MODULE 5

String Processing - String Traversal - String-Applicable Sequence Operations -String Methods - Using Text Files - Opening Text Files - Reading Text Files - Writing Text Files

TEXT BOOK

, Charles Dierbach, Introduction to Computer Science using Python , Wiley First Edition (2015), ISBN-10: 81265560132015

REFERENCE BOOKS

- 1, Zed A.Shaw, Learn Python the Hard Way Paperback, Pearson Education, Third Edition edition (2017), ISBN-10: 9332582106
2. Paul Barry, Head First Python, O' Reilly Publishers, First Edition, 2010, ISBN:1449382673.

Paper Code: CSIT128

L	T	P
0	0	4

PYTHON PROGRAMMING LAB

LIST OF EXERCISES

1. Create simple programs using arithmetic Boolean and logical operators
2. Develop program using control flow tools like IF.
3. Develop program using LOOP control structures
4. Data structures
 - use list as stack
 - use list as queue
 - tuple, sequence
5. Write a program to read and write files, create and delete directories
6. Write a program with exception handling
7. Write a program using string handling and regular expressions

Paper Code: CSIT124

L	T	P
3	1	0

DATA STRUCTURES AND ALGORITHMS

Pre-requisite: Knowledge of any programming language

Objectives:

- To acquaint students with data structures used for programming and manipulation of data.
- To make students to understand the basics of algorithms.

Outcomes:

- Skill to analyze data and to determine appropriate data structure. Knowledge of various data structures and their implementations.
- Ability to implement algorithms to perform various operations on data structures.

MODULE-I

Introduction to Data Structure: Types of Data Structures - Linear & Non Linear Data Structures. Linear Data Structure - Arrays: Representation of arrays, Applications of arrays - Searching: Linear search and Binary Search. Stacks: Representation, Operations on stack, Implementation of stack using array, Application – Evaluation of Expression.

MODULE-II

Queues: Representation, Operations on Queues, Implementation of queues using array. List representations: implementing the list operations, doubly linked list representation. Polynomial - representations.

MODULE-III

Non Linear Data Structures: Trees: Basic terminology, Binary tree, Representation, Traversal, Binary search tree.

MODULE-IV

Graph: Definition and Terminology – Representation, Traversal – Depth First and Breadth First traversal techniques.

MODULE-V

Introduction to Algorithms: Algorithm Design Techniques – Iterative techniques: Bubble Sort, Insertion Sort, Divide and Conquer: Merge Sort, Quick Sort

TEXT BOOKS

1. Ellis Horowitz, Sartaj Sahni and Anderson, “Fundamentals of Data Structure in C”, University Press, 2nd edition, 2008.
2. T.H.Cormen, CharlesE. Leiserson, Ronald L. Rivest, Clifford Stein. “ Introduction to Algorithms, PHI, 3rd edition. 2010.

Paper Code: CSIT129

DATA STRUCTURES & ALGORITHMS LAB

L	T	P
0	0	4

LIST OF LAB EXERCISES

1. Linear Search
2. Binary Search
3. Implementation of Stack (Array Representation)
4. Implementation of Evaluation of Expression
5. Implementation of Queue (Array Representation)
6. Implementation of Singly Linked List
7. Implementation of Tree traversal
8. Implementation of Graph traversal
9. Implementation of Bubble sort
10. Implementation of Insertion sort
11. Implementation of Quick sort
12. Implementation of Merge sort

Paper Code: CSIT231

L	T	P
3	1	0

OBJECT ORIENTED PROGRAMMING USING JAVA

Prerequisite: Basic Knowledge of programming.

Objectives:

- To learn the basic concepts of OOP
- To develop Java programs, Swing and Applets

Outcomes:

- Skill to write Java application programs using OOP principles and proper program structuring.
- Ability to create packages and interfaces. Ability to implement error handling techniques using exception handling.

MODULE - I

Concepts of OOP: Introduction OOP, Procedural Vs Object Oriented Programming, Principles of OOP, Benefits and applications of OOPS

MODULE – II

Introduction to java applications – Introduction to classes, objects, methods & Strings - Control statements – Arrays - constructor – function overloading & overriding - Inheritance - Polymorphism – Interface – package - exception handling

MODULE – III

GUI components –Overview of Swing components –Displaying Text and Images in a Window - Text Fields , Introduction to Event Handling- GUI Event Types and Listener Interfaces - layout manager, Swings Vs AWT

MODULE – IV

Files, Streams & I/O – Introduction – Files & Streams – Sequential Access Text Files

MODULE – V

Introduction to Multi-Threading , Thread life cycle, Thread priorities. Introduction – Applets & Java Web Start – applet life-cycle, HTML tags, a simple applet program

Text Books:

Paul Deital & Harvey Deital, "Java: How to Program", Pearson Education, 10th edition, 2015.

Paper Code: CSIT237

OBJECT ORIENTED PROGRAMMING USING JAVA LAB

L	T	P
0	0	4

LIST OF EXERCISES

1. Program to illustrate class and objects.
2. Program to illustrate control structures (if-then, while, switch).
3. Program to illustrate arrays (creation, initialization and processing).
4. Program to illustrate Constructor and its overloading.
5. Program to illustrate Inheritance and Packages.
6. Program to illustrate Interface and static methods.
7. Program to illustrate Exception Handling Technique with IO streams
8. Program to illustrate File handling technique.
9. Program to illustrate Swing Application
10. Program to illustrate applets using HTML

Paper Code: CSIT232

L	T	P
3	1	0

OPERATING SYSTEMS

Pre-requisite: Knowledge of computers & computer organization

Objectives:

- To learn OS management functions.
- To learn Memory management, Processor management, Device Management and I/O Management

Outcomes:

- Understand how memory is utilized. Understand CPU scheduling algorithms to manage tasks.
- Knowledge of methods to prevention and recover from a system deadlock. Manages I/O devices.

MODULE –I

Operating Systems – Introduction – Basic Concepts and terminology – As OS Resource Manager – OS process view point – OS hierarchical and extended machine view – Memory management: Single contiguous memory allocation – Introduction to multiprogramming – Partitioned memory management.

MODULE –II

Memory management: Relocatable partitioned memory management – Paged memory management – Demand paged memory management – Segmented memory management – Segmented and Demand – Paged memory management – Swapping and Overlays.

MODULE –III

Processor management – State model – Job scheduling - Process scheduling – Multi Process system – Process Synchronization.

MODULE –IV

Device Management: Techniques for Device Management – Device Characteristics – Channels and Control Unit – Device Allocation – I/O Controller, Scheduler, Device Handler- Virtual Devices

MODULE –V

Information Management : A simple file system- General Model of a File System – Symbolic File System – Basic File System – Access Control Verification – Logical file system – Physical file system – Allocation strategy module.

TEXT BOOK

1. Stuart E.Madnick and John Donovan “Operating System”,TMH Reprint 2008. (Chapter 1,3,4,5,6)

Paper Code: CSIT233

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COMPUTER NETWORKS

Pre-requisite: Basic Knowledge of Computers

Objectives:

- To educate the functions of various OSI layers

Outcomes:

- Knowledge of OSI Layers in Computer Network.
- Ability to identify transmission media, types and topologies of network. Familiarization with the techniques of error detection and congestion control

MODULE –I

Introduction – Uses of Networks, Network hardware, Network Software, Network Reference Models, Example Networks.

MODULE –II

Physical Layer: Transmission Media: Guided, Wireless and Communication satellites – Multiplexing and Switching.

MODULE –III

Data Link Layer: data link Layer Design issues, Error Detection and correction, Simplex Stop-and-wait protocol, Sliding window protocols

MODULE –IV

Network Layer – Design issues, Routing Algorithms: Optimality Principle, Shortest path algorithm, flooding, link state routing, Hierarchical routing, Broadcast, Multicast. Congestion Control Algorithms.

MODULE –V

Transport Layer – Elements of Transport Protocols, Internet Transport protocols: UDP, TCP
Application Layer – Domain Name System – Electronic Mail

TEXT-BOOK

1. Computer Networks A.S Tanenbaum, David J. Wetherall, Prentice Hall, 5th edition, 2011
(Chapters 1.1 – 1.5, 2.1 - 2.6, 3.1 - 3.4, 5.1 – 5.3, 6.1 -6.5, 7.1,7.2)

REFERENCES

1. Behuouz A. Forouzan, “Data Communication & Networking “, McGraw-Hill, 4th Edition
2. Data and Computer communications Seventh edition William Stallings PHI

Paper Code: CSIT238

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COMPUTER NETWORKS LAB

LIST OF EXERCISES:

Implementation using JAVA or PYTHON

1. Text Message Sending and Receiving
2. File Transmission
3. Basic Chat Applications
4. Simple Mailing Application
5. Client Server Applications

Paper Code: CSIT234

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SOFTWARE ENGINEERING

Pre-requisite: Basic knowledge of programming

Objectives:

- To gain knowledge about software development life cycle models, software design, implementation, and testing of software.
- To gain overall knowledge of how software is developed

Outcomes:

- Understanding of various methods or models for developing a software product.
- Ability to analyze existing system to gather requirements for proposed system. Skill to design and code a software.

MODULE -I

Introduction to Software Engineering – evolving role of software – defining software engineering – changing nature of software – software myths – terminologies – role of software development – software life cycle models – build & fix model – waterfall model – incremental model – evolutionary model – unified model – selection of a life cycle model.

MODULE -II

Software Cost Estimation: Software cost factors - Software Cost Estimation Techniques -Staffing-level Estimation -Estimating Software Maintenance Costs -The Software Requirements specification - Formal Specification Techniques - Languages and Processors for Requirements Specification.

MODULE -III

Software Design: Fundamental Design Concepts - Modules and Modularization Criteria -Design Notations –Design Techniques -Detailed Design Considerations -Real-Time and Distributed System Design -Test Plans -Milestones, walkthroughs, and Inspections.

MODULE -IV

Implementation issues: Structures Coding Techniques -Coding Style -Standards and Guidelines – Documentation guidelines -Type Checking -Scoping Rules –Concurrency Mechanisms.

MODULE -V

Software testing – strategic approach to software testing – terminologies – functional testing – structural testing – levels of testing – validation testing – the art of debugging – testing tools

TEXT BOOK

1. R. Fairley, “Software Engineering Concepts”, Tata McGraw Hill Edition -2017.
2. Roger S. Pressman, “Software Engineering: A Practitioner’s Approach”, McGraw Hill, 7th edition, 2010. (Module 1 & Module 5)

Paper Code: CSIT241

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DATABASE MANAGEMENT SYSTEM

Prerequisite: Knowledge of data structures and file-handling

Objectives:

- To learn the fundamental concepts of Database management systems.
- To learn SQL commands to manage data and PL/SQL.

Outcomes:

- Understand data modeling and database development process. Construct and normalize conceptual data models.
- Implement a relational database into a database management system. Become proficient in using database query language.

MODULE I

Introduction to Database System- Objectives- Entities and Attributes – Data Models

MODULE II

Database Management Systems – Tree Structures – Plex Structures – Data Description Languages, Relational Databases – First, Second and Third Normal Form – Canonical Data structures - Varieties of data independences.

MODULE III

Basic SQL reports and commands – Datatypes and notations – String functions – Data functions – Unions – Joins – DDL – DML – DDL.

MODULE IV

PL/SQL: Approach and Advantages –PL/SQL Blocks -Variables-Manipulating Data – Triggers – Procedures, functions and packages - Exception handling

MODULE V

Locking Techniques – Time stamp ordering – Validation techniques - Granularity of data items – Recovery Concepts - log based Recovery – Database Security issues – Access Control – Statistical Database Security.

TEXT BOOK

1. James Martin, “Computer Database Organization”, 2nd edition- PHI, 2001

REFERENCES

1. James Martin, “Computer Database Organization”, 2nd edition- PHI, 2001
2. Kevin Loney, George Koch , Oracle 9i The Complete Reference 2002 McGraw Hill
3. Henry F. Korth Abraham Silberschatz , Sudarsan “Database System Concepts “, Sixth Edition McGraw Hill International Edition

Paper Code: CSIT248

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DBMS LAB

LIST OF EXERCISES

DBMS

For any TWO online application such as library information system, students; information system, employee information systems, payroll system, ticket reservation system etc., do the followings:

1. Create database and establish relationships between tables
2. Draw ER diagrams
3. Create view to extract details from two or more tables
4. Create stored procedures
5. Create functions
6. Create cursors & database triggers.
7. Create PL/SQLs.

Paper Code: CSIT242

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INFORMATION THEORY AND CODING

Prerequisite: Knowledge of Probability

Objectives

- Students will learn about Information Theory, Entropy and Probability.
- To understand Source Coding, Channel Coding, Error Detection and Correction, Error Control, Coding and various types of codes

Outcomes

- Understand the Information Theory, Entropy and Probability.
- Get an idea about Source Coding, Channel Coding, Error Detect Detection and Correction, Error Control, Coding and various types of codes

MODULE I:

Introduction to Probability, Sample space and events, The axioms of probability Elementary theorems –Conditional Probability and Independence, Baye's theorem. Random variables, discrete probability distribution, discrete functions for random and discrete random variables, continuous random variables.

MODULE II

Uncertainty and Information, Shannon Entropy, Joint and conditional Entropies Mutual Information, Uniquely decipherable and Instantaneous codes, Noiseless coding problem. Source coding Theorem, Block coding, construction of Optimal codes, Huffman's & Shannon – Fano methods.

MODULE III

Discrete memory less channel, channel capacity BSC and other channels.

MODULE IV

Types of codes, error and error control strategies, Linear block codes, syndrome and error detection, Minimum distance, Error detecting and correcting capabilities of a block code, Syndrome decoding, Hamming codes.

MODULE V

Cyclic codes, Generator and parity – check matrices, encoding, syndrome computation and error detection and decoding.

Text Books:

1. Murray Spiegel, John Schiller, R. Alu Srinivasan, Debasree Goswami, "Probability and Statistics" (Schaum's Outline Series).
2. J.H. van Lint, "Introduction to coding theory", Springer.
3. R. Ash, "Information Theory", Dover Science Publications.
4. Cover and Thomas, "Element of Information Theory", John Wiley & Sons.
5. Simon Haykin, "Communication Systems", Wiley Student

REFERENCE BOOKS

1. F.J. MacWilliams and N.J.A. Sloane, The theory of error correcting codes, North Holland, 1977.
2. R.E. Balahut, Theory and practice of error control codes, Addison Wesley, 1983.
3. Thomas M. Cover, Joy A. Thomas, "Elements of Information Theory", Wiley Publishers.
4. Ranjan Bose, "Information Theory Coding, Cryptography", TMH Publication.

Paper Code: CSIT351

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WEB TECHNOLOGY

Pre-requisite: Knowledge of Operating system, computer network, DBMS, and Java language.

Objectives:

- To gain knowledge in HTML and DHTML
- To design interactive web pages using Style sheets, Java-script and ASP.

Outcomes:

- Understand the various steps in designing Creative and dynamic website.
- Ability to write HTML, JavaScript, CSS and ASP.

MODULE – I

Introduction to Internet – The World Wide Web – Web Browsers, Web Servers, Uniform Resource locators, Multipurpose Internet mail extensions. HTTP Request Message - HTTP Response Message.

MODULE – II

Introduction to HTML – Elementary tags in HTML – List in HTML – Displaying Text in Lists – Using Ordered List – Using Unordered Lists HTML Description Lists - Nested HTML Lists, Control List Types – Graphics and Image Formats – Graphics and HTML document- image and hyperlink anchors – Image maps – Tables – Frames – Forms.

MODULE – III

Introduction to DHTML – Introduction to style sheets – Setting the default style sheet language – Inline style information – External Style sheets – Cascading Style sheets.

MODULE – IV

Introduction to Java script - script tag, interactive data, DOM, A simple document, Add a form, Add a text input element, Add a button element, properties, methods and event handlers. Scripts and HTML.

MODULE – V

Introduction to ASP – Database Management with ASP: Database access with ADO, working with ADO's Connection object, Using Command objects, Working with ADO's Recordset Object.

TEXT BOOKS

1. Robert W. Sebesta, "Programming the World Wide Web", Addison Wesley, 2011 (Chapter 1 only)
2. Elisabeth Freeman and Eric Freeman, "Head First HTML with CSS & XHTML (Head First)", O'Reilly, 2005
3. A. Russell Jones, "Active Server Pages 3", BPB Publications, 2000
4. Danny Goodman, "JavaScript Bible", 7th edition, Wiley Publishing Inc, 2010, (Chapters 6,7 only)

Paper Code: CSIT357

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WEB TECHNOLOGY LAB

LIST OF EXPERIMENTS

1. Usage of Simple HTML commands, Graphics and image formats and hyperlinks
2. Usage of Tables, Frames, Forms, Background Graphics and Color
3. Simple application using HTML
4. Simple application using DHTML and Cascading style sheet
5. Simple application using Java script
6. Simple application using ASP (Student's choice)

Code: CSIT361

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VISUAL PROGRAMMING USING C#

PRE-REQUISITE: Knowledge of any object oriented programming language

Objectives:

- Understand the foundations of CLR execution.
- Familiarize the object oriented aspects of C#.
- Design and develop applications on .NET

Outcomes:

- Understand programming in C# and able to write code for real life problems.
- Ability to connect to a database and create small projects.

MODULE I

Introduction to .Net Framework: an Overview - Framework Components - The Common Language Runtime (CLR) - .NET Base Class Library - Common Language Specification (CLS) - Common Type System (CTS) – Metadata and Assemblies - .NET Namespaces - MSIL - JIT Compilers.

MODULE II

Overview of C#: Program structure, Literals, Variables, Constants, Data Types, Operators, Statements and Expressions, Branching, Looping and loop control statements, Arrays, Strings manipulation, Boxing and Unboxing, Preprocessors, Namespaces

MODULE III

Object Oriented Programming in C# - Class, Objects, Encapsulation, Constructors and its types, Inheritance, Polymorphism. Interface, Abstract class, Operator overloading, Properties, Indexers, Delegates, Collections.

MODULE IV:

Errors and exception handling, File IO, Multithreading. Windows Forms and various controls, menu creation, SDI and MDI applications, Common Dialog Boxes. Events and event handling.

MODULE V

Introduction to ADO.NET - ADO.NET Architecture - Connection Object - Command Object - Dataset - Data Reader Object - Data Adapter Object – Data Table – Datagridview and Data Binding. Connecting to a database, and OLE DB data source, Adding, updating, deleting and viewing records in database.

TEXT BOOKS:

1. Herbert Schildt, The Complete Reference: C# 4.0, Tata McGraw Hill, 2012.
2. Christian Nagel et al. Professional C# 2012 with .NET 4.5, Wiley India, 2012.

REFERENCE BOOKS:

1. Andrew Troelsen , Pro C# 2010 and the .NET 4 Platform, Fifth edition, A Press, 2010.
2. Ian Griffiths, Matthew Adams, Jesse Liberty, Programming C# 4.0, Sixth Edition, O'Reilly, 2010.

Paper Code: CSIT368

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VISUAL PROGRAMMING LAB

LIST OF EXERCISES

1. Implement Classes and Objects, Inheritance & Polymorphism
2. Implement Interfaces, Operator Overloading, Delegates and Events
3. Implement Exception Handling & Multi-Threading
4. Create Console application & Window Applications.
5. Create programs using SDI &MDI
6. Create program using Database Controls
7. Develop any TWO case studies listed below:
 - I. Inventory Control
 - II. Retail Shop Management
 - III. Employee Information System
 - IV. Personal Assistant Program
 - V. Students' Information System

Paper Code: CSIT362

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PROJECT

Objective

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

Outcome

The course outcome is the ability of the student to apply Software Development Cycle to develop a software module. The student will be able to use the techniques, skills and modern software engineering tools necessary for software development. Develop a software product along with its complete documentation.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

DISCIPLINE SPECIFIC ELECTIVE (DSE) PAPERS SPECIALIZATION STREAM -I
[SOFTWARE ENGINEERING]

Paper Code: CSIT243

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OBJECT ORIENTED SYSTEM DESIGN

Prerequisite: Knowledge of object oriented programming

Objectives:

- Understand software modeling and Architectural Concepts
- Understand and apply UML notations in designing software
- Gain knowledge about Static and Dynamic modeling

Outcomes:

- Ability to develop the design phase of software development using UML

MODULE 1

System development - object basics - development life cycle - methodologies - patterns - frameworks - unified approach - UML.

MODULE 2

Use - Case models - object analysis - object relations - attributes - methods, class and object responsibilities

MODULE 3

Design processes - design axioms- class design - object storage - object interoperability

MODULE 4

User interface design - view layer classes - micro - level processes - view layer interface

MODULE 5

Quality assurance tests - testing strategies - object orientation on testing - test cases - test plans - continuous testing - debugging principles - system usability - measuring user satisfaction - case studies.

Text books:

1. Ali Bahrami, "Object Oriented Systems Development using the unified modeling language", 1st edition, TMH, 2008.
2. Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language User Guide", 2nd edition, Pearson Education, 2007.

Paper Code: CSIT352

L	T	P
3	1	2

SOFTWARE TESTING

Prerequisite: Knowledge in Software Engineering.

Objectives:

- To understand the Concepts of Software Testing.
- Introducing about various Testing Tools.

Outcomes:

- Understand the problems of defects and need of Testing
- Acquire knowledge about various testing strategies that are used in the industries to test their products

MODULE – I

Objectives of Testing - The Psychology of Testing – Economics of Testing – Software Testing Principles– Testing as a phase of SDLC- Software testing life cycle.

MODULE – II

Developing a test case: Testing Strategies – White Box Testing Techniques: Statement Coverage – Branch Coverage - Condition Coverage – Multiple Condition Coverage – Data flow Coverage- loop coverage. Black Box Testing Techniques: Boundary Value Analysis – Decision tables - Equivalence Partitioning - State based or graph based testing.

MODULE- III

Levels of Testing: Unit Testing – Integration Testing: Top down integration and bottom up integration – System Testing: overview – functional Vs Non-functional testing – Functional testing: Design Verification, Business vertical testing, deployment testing and Beta Testing. Non-functional Testing: Scalability testing, reliability testing, stress testing and inter-operability testing - Acceptance testing.

MODULE - IV

Regression Testing: Types- smoke test – criteria for selecting the test case – classifying test case – selecting test case – resetting the test case for regression testing – concluding the results – best practices.

MODULE - V

Software Test Automation: Approaches to Automation: partial automation, full automation- Choosing the right tool - Challenges in software test automation.

Text Books

1. Glenford J. Myers, Correy Sandler et. el, “The Art of Software Testing”, John Wiley & Sons, 2011. (Chapter 1 for module 1)
2. Srinivasan Desikan, Gopalaswamy Ramesh, “Software Testing Principles and Practices”, Pearson Education, 2008. (Chapters 3,4,5,6,8,16.8,16.10 for modules 2, 3,4,5)

Paper Code: CSIT363

L	T	P
3	1	2

SOFTWARE QUALITY MANAGEMENT

Prerequisite: Knowledge of Software Engineering.

Objectives

- To learn how to apply quality assurance tools & techniques
- To learn about standards and certifications

Outcomes:

- Able to understand the importance of quality and standards
- Understand various models of dealing with software quality

MODULE - I

Introduction, Environment, Characteristics, tasks and Goals, Software Quality Challenge - Software Quality requirements, factors: McCall's factor model, - Components of the Software Quality Assurance System : SQA Architecture, Pre-Project Components –Software PLC components.

MODULE - II

Integrating Quality Activities in the Project Life Cycle – Reviews - Assuring the Quality of Software Maintenance components - Case Tools and their effect on Software Quality.

MODULE - III

Software Quality Infrastructure Components - Procedures and Work Instructions – Staff Training and Certification - Software Configuration Management - Documentation Control.

MODULE - IV

Software Quality Management Components - Project Progress Control - components of project progress control- Progress control of internal projects and external participants- Implementation of project progress control

MODULE - V

Software Quality Metrics - Objectives of quality measurement- Classification - Product metrics – Implementation – limitation; scope of quality management standards: ISO 9000 family, CMM and CMMI.

TEXT BOOK

1. Daniel Galin, “Software Quality Assurance: From Theory to Implementation” - Pearson Addison-Wesley, 2012.

REFERENCES

1. Kshirasagar Naik and Priyadarshi Tripathy, “Software Testing and Quality Assurance”, John Wiley, 2008.
 2. Allen Gilles, “Software quality: Theory and management”, 2nd edition, Cengage Learning, 2003.
- DISCIPLINE SPECIFIC ELECTIVE (DSE) PAPERS SPECIALIZATION STREAM –II
[ADVANCED COMPUTING]

Paper Code: CSIT244
CLIENT/SERVER COMPUTING

L	T	P
3	1	2

Prerequisite: Knowledge of computer networks & DBMS

Objectives:

- To learn about objective evaluations and details of Client/Server development tools, used in operating system and database management system
- To learn the basics of middleware architecture

Outcomes

On successful completion of the course students will be able to:

- Understand the objective evaluations and details of Client/Server development tools, used in operating system and database management system
- Get an idea about the basics of middleware architecture

MODULE – I

Introduction – defining client/server computing – Classification of client/server systems – clients/server – advantages & disadvantages –driving forces behind client/server computing

MODULE – II

Architectures of client/server systems – introduction – components – principles behind client/server systems – client components – server components – communication middleware components – architecture for business information system – existing client/server architecture

MODULE – III

Client/Server databases – Introduction – client/server in respect of databases – client/server database architecture – database middleware component – access to multiple databases – distributed client/server database systems – distributed DBMS – web/database system for client/server applications

MODULE – IV

Client/server application components – introduction – technologies for client/server application – services of a client/server application – categories of client/server applications – client services – server services – client/server application connectivity
– client/server application: Layered Architecture

MODULE - V

System development – hardware & software requirements – communication interface technology – client/server technology & web services – what are web services – web services & client/server/browser – server technology – client/server technology & web applications

Text Book:

Subhash Chandra Yadav & Sanjay Kumar Singh, "An Introduction to Client/Server Computing", New Age International Publishers, 2009.

Paper Code: CSIT353

L	T	P
3	1	2

DISTRIBUTED COMPUTING

Prerequisite: Knowledge of Database and Networks.

Objective

- To make the students to understand the collaborative operations of collections of computer systems.

Outcomes

On successful completion of the course students will be able to:

- Understand the collaborative operations of collections of computer systems.

MODULE I

Introduction – Examples of Distributed Systems–Trends in Distributed Systems – Focus on resource sharing – Challenges. Case study: World Wide Web.

MODULE II

System Model – Inter process Communication - the API for internet protocols –External data representation and Multicast communication. Network virtualization: Overlay networks. Case study: MPI

MODULE III

Remote Invocation – Introduction - Request-reply protocols - Remote procedure call - Remote method invocation - Group communication.

MODULE IV

Publish-subscribe systems - Message queues - Shared memory approaches -Distributed objects - Case study

MODULE V

Distributed File Systems –Introduction - File service architecture - Distributed mutual exclusion – Elections

Text Book

George Coulouris, Jean Dollimore, Tim Kindberg, “Distributed Systems Concepts and Design”, Addison Wesley, 5th edition, 2011.

Paper Code: CSIT364

L	T	P
3	1	2

CLOUD COMPUTING

Prerequisite: Knowledge of Parallel and Distributing computing.

Objectives

- To impart the principles and paradigm of Cloud Computing
- To comprehend the Cloud Computing architecture and implementation

Outcomes

On successful completion of the course students will be able to:

- Understand the principles and paradigm of Cloud Computing
- Get an idea about the Cloud Computing architecture and implementation

MODULE – I

Computing Paradigms - Cloud Computing Fundamentals - Motivation for Cloud Computing - Defining Cloud Computing - Principles of Cloud computing - Cloud Ecosystem - Requirements for Cloud Services - Cloud Application - Benefits and Drawbacks - Cloud Computing Architecture and Management Cloud Architecture - Anatomy of the Cloud- Network Connectivity in Cloud Computing - Applications on the Cloud- Managing the Cloud.

MODULE – II

Cloud Deployment Models – Introduction - Private Cloud - Public Cloud- Community Cloud - Hybrid Cloud- Cloud Service Models- Infrastructure as a Service- Platform as a Service- Software as a Service

MODULE – III

Virtualization - Approaches to Virtualization- Hypervisors

MODULE – IV

From Virtualization to Cloud Computing- Programming Models for Cloud Computing

MODULE – V

Software Development in Cloud Introduction - Different Perspectives on SaaS Development - New Challenges - Cloud-Aware Software Development Using PaaS Technology

Text Book:

K. Chandrasekaran, “Essentials of Cloud Computing“, CRC Press, Taylor & Francis Group, 2015.

DISCIPLINE SPECIFIC ELECTIVE (DSE) PAPERS
SPECIALIZATION STREAM -III [WIRELESS COMMUNICATION]

Paper Code: CSIT245

DATA COMMUNICATION TECHNOLOGIES

L	T	P
3	1	2

Pre-Requisite: Introduction to Networks

Objectives:

- To know about Data communication model, data transmission concepts, media, encoding techniques
- To understand the concepts Multiplexing and ATM

Outcomes:

On successful completion of the module students will be able to:

- Get an idea about Data Communication communication model, data transmission concepts, media, encoding techniques.
- Understand the concepts Multiplexing and ATM

MODULE –I

Data Communication: A Communications Model, Data Communications, Networks, The Internet Protocol Architecture, TCP/IP, and Internet-Based Applications, The Need for a Protocol Architecture, The TCP/IP Protocol Architecture, The OSI Model, Standardization within a Protocol Architecture.

MODULE –II

Data Transmission-Concepts and Terminology-Analog and Digital Data Transmission - Transmission Impairments - Channel Capacity-Decibels and Signal Strength -Transmission Media : Guided Transmission Media - Wireless Transmission - Wireless Propagation -Line-of-Sight Transmission.

MODULE –III

Signal Encoding Techniques - Digital Data, Digital Signals - Digital Data, Analog Signals - Analog Data, Digital Signals - Analog Data, Analog Signals -Digital Data Communication Techniques : Asynchronous and Synchronous Transmission

MODULE –IV

Multiplexing - Frequency-Division Multiplexing - Synchronous Time-Division Multiplexing - Statistical Time Division Multiplexing - Asymmetric Digital Subscriber Line- Spread Spectrum - The Concept of Spread Spectrum - Frequency Hopping Spread Spectrum - Direct Sequence Spread Spectrum - Code-Division Multiple Access.

MODULE –V

Circuit Switching and Packet Switching - Switched Communications Networks - Circuit Switching Networks - Circuit Switching Concepts - Packet-Switching Principles.

TEXT BOOKS

1. William Stallings, “Data and Computer Communications” 8th edition, Pearson, 2007. (Chapters 1-10)

Paper Code: CSIT354

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INTRODUCTION TO WIRELESS COMMUNICATIONS

Pre-Requisite: Knowledge in Data Communication Technologies.

Objectives:

- To understand the concepts wireless communication Technology
- To understand the concepts of wireless, cordless, Wi-Fi, Bluetooth.

Outcomes:

- Acquire knowledge about the various wireless communication technologies.
- Understand the working of state of the art technologies such as mobile and WLANs

MODULE –I

Wireless Communication Technology- Antennas and Propagation- Antennas, Propagation Modes, Line-of-Sight Transmission, Fading in the Mobile Environment. Signal Encoding Techniques- Signal Encoding Criteria, Digital Data- Analog Signals, Analog Data-Analog Signals, Analog Data-Digital Signals.

MODULE –II

Wireless Networking - Satellite Communications- Satellite Parameters and Configurations, Capacity Allocation-Frequency Division, Capacity Allocation-Time Division Cellular Wireless Networks- Principles of Cellular Networks, First-Generation Analog, Second-Generation - TDMA, CDMA, Third-Generation Systems

MODULE –III

Cordless Systems and Wireless Local Loop- Cordless Systems, Wireless Local Loop –WiMax and IEEE 802.16 broadband wireless access standards

MODULE –IV

Mobile IP : Introduction, operation of Mobile IP, Mobile IP terminologies, Wireless Access Protocols: Introduction, Architecture overview, Wireless application environment

MODULE –V

Wireless LAN technology: wireless LAN- application, requirements, Technology: Infrared, spread spectrum, Narrowband microwave (radio), Introduction Bluetooth Technologies (Only Overview).

TEXT BOOKS

1. William Stallings, “Wireless Communications and Networks” 2nd edition, Pearson Prentice Hall, 2005. (Chapters 5, 6, 7, 9, 10,11,12, 13, 15.1)

Paper Code: CSIT365

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3	1	2

INTERNET OF THINGS

Pre-Requisite: Knowledge in Wireless and mobile communication Technologies.

Objectives:

- To understand the concepts wireless communication Technology
- To understand the concepts of wireless, cordless, Wi-Fi, Bluetooth.

Outcomes:

- Acquire knowledge about the various wireless communication technologies.
- Understand the working of state of the art technologies such as mobile and WLANs

MODULE- I

M2M to IoT-The Vision-Introduction, From M2M to IoT, M2M towards IoT-the global context, Differing Characteristics: Comparison between M2M and IoT.

MODULE- II

M2M to IoT – A Market Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies.

MODULE- III

An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, Standards.

MODULE- IV

M2M and IoT Technology Fundamentals- Devices and gateways, Local and wide area networking, Data management: Introduction, Managing M2M Data, Considerations.

MODULE- V

Business processes in IoT : Introduction, IoT Integration with enterprise system, Distributed business process in IoT - Everything as a Service(XaaS), M2M and IoT Analytics, Knowledge Management,

TEXT BOOK

1. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, “From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence”, 1st Edition, Academic Press, 2014. Chapters(1,2,3,4,5)

DISCIPLINE SPECIFIC ELECTIVE (DSE)

PAPERS SPECIALIZATION STREAM -IV

[MULTIMEDIA]

Paper Code: CSIT246

COMPUTER GRAPHICS

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3	1	2

Prerequisite: Knowledge of computers and programming

Objectives:

- Gain knowledge about graphics hardware devices and software used.
- To Understand the two dimensional graphics and their transformations.

Outcomes:

On successful completion of the module students will be able to:

- Get an idea about graphics hardware devices and software used.
- Understand the two dimensional graphics and their transformations.

MODULE - I

Overview of Computer Graphics System: Video Display Devices – Raster Scan Systems – Random – Scan Systems - Graphics Monitors and Workstations – Input Devices – Hardcopy Devices – Graphics Software.

MODULE - II

Output Primitives: Line Drawing Algorithms – Loading the Frame Buffer – Line Function – Circle – Generating Algorithms - Attributes of Output Primitives: Line Attributes – Curve Attributes –

MODULE - III

2D Geometric Transformations: Basic Transformation – Matrix Representations – Composite Transformations – Window to View port Co-Ordinate Transformations - Clipping: Point Clipping – Line Clipping – Cohen-Sutherland Line Clipping - Polygon Clipping – Sutherland – Hodgman Polygon Clipping Curve Clipping – Text Clipping.

MODULE - IV

Graphical User Interfaces and Interactive Input Methods: The User Dialogue – Input of Graphical Data – Input Functions – Interactive Picture Construction Techniques.

MODULE - V

Three Dimensional Concepts: 3D-Display Methods – Three Dimensional Graphics Packages.

Text Book:

Donald Hearn M. Pauline Baker, Computer Graphics C Version, 2nd edition, Pearson Education, 2014.

Paper Code: CSIT355

L	T	P
3	1	2

MULTIMEDIA & ITS APPLICATIONS

Prerequisite: Knowledge of Multimedia elements and about Multimedia tools.

Objectives:

- Formulate a working definition of interactive multimedia
- Getting basic idea about multimedia components and development process

Outcomes

On successful completion of the course students will be able to:

- Get an idea about the working of interactive multimedia
- Understand the multimedia components and development process

Module- I

Introduction: Multimedia elements multimedia applications System architecture evolving technologies defining objects data interface standards need for data compression multimedia databases

Module- II

Multimedia data compression: Types of compression color, gray scale and still video image compression video image compression audio compression . Data and file formats: RTF TIFF RIFF, MIDI, JPEG, AVI video file formats, MPEG standards.

Module- III

Multimedia I/O technologies: Pen input Video and Image display systems Print output technologies image scanners digital voice and audio digital camera Video images and animation full motion video. Multimedia storage and retrieval technologies: Optical media hierarchical storage management cache management for storage systems.

Module- IV

Multimedia application design: Types of Multimedia systems Virtual reality design components of multimedia systems Multimedia authoring systems: Hypermedia application design considerations. Hypermedia Messaging: mobile messaging Hypermedia message components, Hypermedia Linking and Embedding

Module- V

Distributed Multimedia Systems: Components Distributed Client-Server operation multimedia object servers Multi-Server network topologies Distributed multimedia databases Managing distributed objects.

Text Book

1. Prabhat K. Andleigh, Kiran Thakrar, Multimedia Systems Design, PHI 2002.

Reference

1. Tay Vaugan, "Multimedia making it works", 5th edition, TMH, 2001.
2. Jeffery Jefcoat, "Multimedia Systems and Applications", TMH.

Paper Code: CSIT366

L	T	P
3	1	2

AUDIO AND VISUAL TECHNOLOGY

Pre-requisite:

- **Knowledge in Multimedia Application Development with creativity**
- **Understanding Multimedia components**

Objectives:

- Formulate a working definition of interactive multimedia
- Acquiring knowledge about latest multimedia tools & hardware's

Outcomes

On successful completion of the course e students will be able to:

- Understand the working of interactive multimedia
- Get an idea about the latest multimedia tools & hardware's

Module-I

Multimedia Component Color : Color Science– Light and Spectra- Human vision- Spectral sensitivity of Eyes- gamma Correction- XYZ to RGB Transmission- Color models in Images- color models in video.

Module-II

Multimedia Component Audio : Digitalization of Sound- Audio filtering- Signal to Noise ratio- Audio sampling parameters: Sampling Rate- sample size- Mono Stereo audio channel- Surround sound channel- digital audio recording pitfalls- Audio recording & Editing Technique : introduction- digital audio recording technique- recording options- Professional multitrack Recording- Sound Equalization.

Module-III

Multimedia Component Video: Digital Video Production system- Video Shooting Platform- Video capture process- Digital Video post production- post production Concepts- Quarter screen and full screen video.

Module-IV:

Multimedia Component Animation: Classification I: Cel animation- Object animation -Classification II: Two dimensional animation- Three dimensional animations - Classification III : Animation for movies.

Module-V

Multimedia Component Graphics & Images: Digital Imaging- Graphics in multimedia projects- Graphics for interface design- Types of graphic imagery - Types of graphics storage- Raster graphics- Vector graphics- Multimedia graphic tools : Class - I :Image editing tools- Class – II : Digital artistry tools- Class - III: 3 Dimensional graphic tools.

Text Book(s):

1. Multimedia Magic- S. Gokul, Bpb Publications- 2nd Edition
2. Ze-Nian Li And Mark S. Drew, Fundamentals Of Multimedia, Pearson Prentice Hall- 2004.
3. Prabhat K. Andleigh, Kiran Thakrar, Multimedia Systems Design, Phi 2002.

Reference Book(s):

1. Tay Vaughan, Multimedia Making it with , 5th Edition, Tata McGraw Hill, 2001
2. Multimedia: An Introduction, Villamil & Molina, PHI.
3. Sound & Video, Lozano. Multimedia, PHI.
4. Multimedia: Production. Planning and Delivery, Villamil & Molina, PHI
5. Multimedia on the Pc, Sinclair, BPB.

DISCIPLINE SPECIFIC ELECTIVE (DSE) PAPERS
SPECIALIZATION STREAM -V [IT MANAGEMENT]

Paper Code: CSIT247

L	T	P
3	1	2

IT INFRASTRUCTURE MANAGEMENT

Prerequisite: Knowledge of Information System.

Objectives

- To understand the IT infrastructure
- To learn current computing environment
- To learn how to manage the Information Systems

Outcomes

On successful completion of the course students will be able to:

- Get an idea about IT Infrastructure, IT System Management
- Understand the current computing environment

MODULE 1 : IT Infrastructure: Overview

Definitions, Infrastructure management activities, Evolutions of Systems since 1960s (Mainframes-to-Midrange-to-PCs-to-Client-server computing-to-New age systems) and their Management, growth of internet, current business demands and IT systems issues, complexity of today's computing environment, Total cost of complexity issues, Value of Systems management for business.

MODULE II : IT Infrastructure Management

Factors to consider in designing IT organizations and IT infrastructure, Determining customer's Requirements, Identifying System Components to manage, Exist Processes, Data, applications, Tools and their integration, Patterns for IT systems management, Introduction to the design process for information systems, Models, Information Technology Infrastructure Library (ITIL).

MODULE III: Current computing environment

Complexity of current computing, multiple technologies, multiple vendors, multiple users, e-Waste disposal, Total cost of ownership.

MODULE IV : IT system Management

Common tasks in IT system management, approaches for organization Management, Models in IT system design, IT management systems context diagram, patterns for IT system Management

MODULE V: Establishing business value of information system

Information system costs and benefits, Capital budgeting for information system, Real Options pricing models, Limitation of financial models.

TEXT BOOK :

Gupta, IT Infrastructure & Its Management- Tata McGraw-Hill Education, 2010

Paper Code: CSIT356

L	T	P
3	1	2

IT PROJECT MANAGEMENT

Prerequisite: Knowledge of IT Infrastructure Management.

Objectives:

- To understand the Nature of IT projects
- To design Project plans and write Project proposals and understand the Project Development Life Cycle.

Outcomes:

- Acquire knowledge of the Project management process and need for such a management strategy
- Understand how to be a stakeholder in a project and know the responsibilities

MODULE –I

The Nature of Information Technology Projects – Conceptualizing the IT Project - Developing the Project Charter and Baseline Project Plan

MODULE –II

The Human Side of Project Management - Defining and Managing Project Scope

MODULE –III

The Work Breakdown Structure and Project Estimation - The Project Schedule and Budget - Managing Project Risk

MODULE –IV

Project Communication, Tracking and Reporting– IT Project Quality Management

MODULE –V

Managing Organizational Change, Resistance and Conflict – Project Implementation, Closure and Evaluation.

TEXT BOOK

1. Jack T.Marchewka, “Information Technology and Project Management”, John Wiley & sons P.Ltd,2003.

Paper Code: CSIT367

L	T	P
3	1	2

INFORMATION SECURITY MANAGEMENT

Prerequisite: Knowledge of Mathematics, Information System.

Objectives:

- To provide an understanding of principal concepts, major issues, technologies and basic approaches in information security.

Outcomes:

- Understand the history and the need for information security.
- Acquire knowledge about legal and ethical aspects of information security and risk control strategies.

MODULE- I:

Introduction: Security Definition, Why Security, Security and its need, Current Trends and Statistics, Basic Terminology, The CIA of Security the Relation: Security functionality and Ease of Use Triangle.

MODULE- II:

User identity and Access Management: Authentication, Account Authorization, Validation, Access, Control and Privilege management. Hashing and Cryptography- Encryption and Decryption

MODULE- III:

System Security, Desktop & Server Security, Firewalls, Password cracking Techniques, Key- logger, viruses and worms, Malwares & Spywares, Windows Registry

MODULE- IV:

Internet Security: LAN Security, Email Security, Hacking attacks, preventive measures.

MODULE- V:

Vulnerability Assessment, Penetration Testing, Cyber Laws

Text Book:

1. Information Systems Security: Security Management, Metrics, Frameworks And Best Practices- Nina Godbole, ISC2 Press, 2010

Reference Book:

1. Information Security Management Handbook, Volume 4- Micki Krause, ISC2 Press, 2007

OPEN ELECTIVE - I

Paper Code: CSIT701

BUSINESS COMMUNICATION

L	T	P
3	0	0

Pre-requisite: Basic knowledge in English

Objectives

- To learn how to apply quality assurance tools & techniques
- To learn about standards and certifications

Outcomes:

- Able to understand the importance of quality and standards
- Understand various models of dealing with software quality

MODULE I

The fact and meaning of communication: the need for communication, the communication process, interpersonal communication, business communication, characteristics of business communication, many meaning of communication; direct communication, non-direct of written communication, non-method of communication, non-verbal communication, visual communication, audio-visual communication, Tele-communication.

MODULE II

Objectives of communication process, types of communication-internal and external communication, formal and informal channels, the grapevine, internal communication networks, downward communication, upward communication, horizontal communication, barriers to communication and how to handle them.

MODULE III

Public relations advertising- concepts and types, interviews: types and techniques, meetings, committees, conference and communication problems.

MODULE IV

Business reports, memoranda and representation, business correspondence: theory principles of business correspondence, parts of a letter, forms / formats of letters.

MODULE V

Business correspondence in practice- applications, reference, testimonials, appointments, confirmation, promotion, termination, resignation enquiries and replies, orders and acknowledgements, circulars, public speaking, precise writing.

TEXT BOOK

1. Rajendra Pal & J.S. Korlahalli, "Essentials of Business Communications", Sultan Chand & Sons, 2017
2. M.K. Sehgal, Vandana Khetarpal, "Business Communication", 2nd edition Excel books, 2013

OPEN ELECTIVE – II

Paper Code: CSIT702

IT ENABLED SERVICES

L	T	P
3	0	0

Prerequisite: Knowledge of Information Technology

Objective:

- To understand importance of IT enabled services.
- To develop the ability to integrate various resources for optimization in the industry as well as for strategic utilization of IT enabled services and functions.

Outcomes:

- Understand the various IT business openings and strategies
- Acquire knowledge about various business models such as outsourcing

MODULE - I

Business Strategy: Challenges and Opportunities For IT - Business Strategy: Challenges and Opportunities in the Globalized, Interconnected, Convergent World, Establish Principles before Practice, IT Strategy, Application Strategy, Technology Strategy for IT, IT Management Strategy, Developing IT Strategy for Competitive Advantage, Stages of IT Strategy Development and Implementation, Challenges of IT and Business Strategy Alignment, Inhibitors of Business and IT Strategy Alignment, Three-D Framework for Business and IT Strategy Alignment.

MODULE – II

Strategic IT Planning - Business Implications for IT Strategic and Planning, Strategic IT Planning Motivations, SITP Process: Prevalent Planning Approaches, Difficulties in Developing and Executing SITP, Best Practices for Achieving Good SITP, SITP Approaches- Prevalent Researches.

MODULE – III

Enterprise IT Architecture – Challenges of EITA, Defining EITA, Need for EITA study, Contents of Typical Enterprise IT Architecture and Standards for Enterprise IT Architecture.

MODULE - IV

IT Application Strategy: Introduction, Need, COTS, COTS package selection life cycle, COTS implementation Strategy, Post implementation support and management.

MODULE – V

IT sourcing strategy: Introduction, Imperatives for outsourcing, motivation and need to outsource, Outsourcing and associated risk, IT management layers and considerations for outsourcing, strategic Vs generic sourcing, Business process outsourcing, process to succeed outsourcing contract management and governance.

Text Books:

1. Sanjiva Shankar Dubey, “ IT strategy and Management”, PHI, fifth edition, 2016 (Chapters: 1, 2, 4, 5, 6, 10)

OPEN ELECTIVE –III

Paper Code: CSIT703

TOTAL QUALITY MANAGEMENT

L	T	P
3	0	0

Prerequisite: Knowledge of Software Engineering and Software Quality Assurance

Objectives:

- To learn how to understand the customer's perception and to satisfy the customer
- To understand process capability and Reliability concepts

Outcome:

- Understand the importance of quality from the customer perspective and translate to requirements
- Understand the significance of statistical tool in Quality

MODULE I

Quality – vision, mission and policy statements. Customer Focus – customer perception of quality, Translating needs into requirements, customer retention. Dimensions of product and service quality. Cost of quality.

MODULE II

Overview of the contributions of Deming, Juran Crosby, Masaaki Imai, Feigenbaum, Ishikawa, Taguchi techniques – introduction, loss function, parameter and tolerance design, signal to noise ratio. Concepts of Quality circle, Japanese 5S principles and 8D methodology.

MODULE III

Meaning and significance of statistical process control (SPC) – construction of control charts for variables and attributed. Process capability – meaning, significance and measurement – Six sigma - concepts of process capability. Reliability concepts – definitions, reliability in series and parallel, and product life characteristics curve. Total productive maintenance (TMP), Terotechnology. Business process Improvement (BPI) – principles, applications, reengineering process, benefits and limitations.

MODULE IV

Quality functions development (QFD) – Benefits, Voice of customer, information organization, House of quality (HOQ), building a HOQ, QFD process. Failure mode effect analysis (FMEA) – requirements of reliability, failure rate, FMEA stages, design, process and documentation. Seven Tools (old & new). Bench marking and POKA YOKE.

MODULE V

Introduction to IS/ISO 9004:2000 – quality management systems – guidelines for performance improvements. Quality Audits. TQM culture, Leadership – quality council, employee involvement, motivation, empowerment, recognition and reward - TQM framework, benefits, awareness and obstacles.

TEXT BOOKS

1. Dale H. Besterfield, Carol Besterfield – Michna, Glen H. Besterfield, Mary Besterfield – Sacre, Hermant – Urdhwareshe, Rashmi Urdhwareshe, Total Quality Management, Revised Third edition, Pearson Education, 2011
2. Shridhara Bhat K, Total Quality Management – Text and Cases, Himalaya Publishing House, First Edition 2002.

REFERENCES

1. Douglas C. Montgomery, Introduction to Statistical Quality Control, Wiley Student Edition, 4th Edition, Wiley India Pvt Limited, 2008.
2. James R. Evans and William M. Lindsay, The Management and Control of Quality, Sixth Edition, Thomson, 2005.

OPEN ELECTIVE –IV

Paper Code: CSIT704 ARTIFICIAL

INTELLIGENCE

L	T	P
3	0	0

Pre-requisite: Knowledge of logic and programming

Objectives:

- To study the concepts of Artificial Intelligence and Methods of solving problems using Artificial Intelligence

Outcomes:

- Understand concepts of artificial intelligence and underlying characteristics
- Learn various techniques of knowledge representation

MODULE-I

Introduction to Artificial Intelligence- definition - underlying Assumption - A.I Techniques - Space search - production system - control strategies - Heuristic search - problem characteristics - production system characteristics.

MODULE-II

Heuristic search techniques - Generate and test - Hill Climbing – best first search - problem reduction - Knowledge Representation issues: Representation and mapping - Approaches to Knowledge Representation - Issues in Knowledge Representation - Frame problem.

MODULE-III

Representing simple facts in logic - representing instance and Isa relationship- computable functions and predicates - resolution – frames - strong slot and filler structure Conceptual Dependency – scripts- advanced problem solving system.

MODULE-IV

Game playing - minimax search procedure - adding alpha beta cuts offs - additional refinements.

MODULE-V

Planning – An example Domain: the blocks world – components of planning system- goal-stack planning - Expert Systems: Definition of Expert Systems – Role of Expert Systems Knowledge Acquisition- example expert systems: MYCIN.

TEXT BOOK:

1. Artificial Intelligence - Elaine Rich, Kevin Knight, Shivasankar B.Nair –Third edition- McGraw Hill- 2017

REFERENCE BOOK:

1. Stuart Russel, Peter Norvig “AI – A Modern Approach”, 2nd edition, Pearson Education, 2007

OPEN ELECTIVE - V

Paper code: CSIT705

L	T	P
3	0	0

INTRODUCTION TO E-BUSINESS

Pre-requisite: Basic knowledge of Information Technology

Objectives:

- This course introduces students to various aspects and models fore-business.
- At the end of the course, students should have an understanding of the impacts which e- business is having on society, markets and commerce.

Outcomes:

- Understand the various E-Business solutions available today such as E-Commerce and its mechanisms
- Acquire knowledge from e-governance to e-learning

MODULE I

Introduction E-Commerce (EC)- Definition and concept, EC Framework, Classification based on transaction, application, History–Digital Revolution, Business Environment, EC Business models: Structure, typical EC business models, Benefits and Limitation of EC.

MODULE II

EC mechanisms – E-Marketplaces: Components, Types, Mechanisms, Merchant Solutions, Auctions, Bartering and negotiating online, EC applications: Internet marketing and B2C electronic retailing: E-Tailing business models.

MODULE III

Online Travel and Tourism - Employment and Job Market Online - Online Real Estate - Online Publishing and e-Books Banking and Personal Finance Online - On-Demand Delivery Systems and E-Grocers - Online Delivery of products, Digital items, Entertainment and Gaming, B2B E-Commerce: Concepts, Characteristics, and Models

MODULE IV

From E-Government to E-Learning, Collaborative Commerce and C2C Commerce: E -Government- Definition and scope –G2C, G2B, G2G, Efficiency and effectiveness, Implementation of E-Government Services. E-Learning, E-Training and E-books: Definition- Benefits and drawbacks - Distance learning and Online Universities, Online corporate training, E-Books.

MODULE V

E-Commerce security, fraud issue and protection: Basic security issues, Technical malware attack methods: Virus to DoS, Nontechnical attack methods: Phishing to spam.

TEXT BOOK

1. Electronic Commerce: A Managerial Perspective, Turban, E. et al., Prentice Hall 2008.
Chapters(1.1,1.2,1.3,1.7,1.8,2.1,2.2,2.5,3.2,3.1-3.7, 4.1, 5.1,5.2,10.1-10.4)

OPEN ELECTIVE - VI

L	T	P
3	0	0

Paper Code: CSIT706

FUNDAMENTALS OF ACCOUNTANCY

Pre-requisites: Basic knowledge in mathematics

Objectives:

- To understand the basic Accountancy.
- To understand concepts of cash maintenance and Cost Accounting.

Outcomes:

- Acquire knowledge about basic account for maintaining record in a company
- Understand to manage profit and loss and trading accounts so that the student can maintain an account register

MODULE -I

Accounting – Introduction-Meaning-Accounting and book keeping distinguished-objectives of accounting-Branched of accounting-accounting concepts and conventions-accounting standards in India-systems of Accounting

MODULE - II

Double entry system-personal accounts, real accounts, nominal accounts-journal-ledger-preparation of trial balance-rectification of errors.

MODULE –III

Subsidiary books including cash book, bank Reconciliation statement

MODULE –IV

Preparation of trading account- preparation of profit and loss account and balance sheet- Final accounts with adjustments

MODULE –V

Basics of cost Accounting – Basic Concepts- Elements of cost – prime cost – works cost – cost of production – concept of inventory – reorder level – minimum level – maximum level – average level – safety stock.

TEXT BOOKS

1. S.N. Maheswari, “Advanced Accountancy Vol I”, Vikas Publishing, 2009
2. R.L. Gupta, “Advanced accounting”, S. Chand & Co. New Delhi, 2010
3. Pillai and Baghawati, “Cost Accounting”, 2010
4. Jam and Narang, “Cost Accounting”, Kalyani Publications

OPEN ELECTIVE - VII

L	T	P
3	0	0

Paper Code: CSIT707

PRINCIPLES OF MANAGEMENT

Pre-requisites: No specific pre-requisite

Objectives:

- To understand the importance and functions of management
- To understand the purpose of planning and leadership

Outcomes:

- Understand the need for management and learn the nuances of management.
- Acquire knowledge about various form of organizations, their structure and scope

MODULE –I

Meaning, Definition and importance of Management-Functions of a Manager-Management process- Role of a Manager-Social responsibility of Management-Co-Ordination-Meaning and scope requirements of effective co-ordination-problems in co-ordination.

MODULE –II

Meaning and purpose of planning – steps in planning Process-Limitations-Types of plans, objectives, Strategies, policies, procedures, programmes, management by objectives (MBO) – Decision making- Types of decisions-process of decision making-difficulties in decision making

MODULE –III

Nature and purpose of organizations-different forms of organizations-merits and demerits – linear and staff concepts- organisational charts- departmentations - bases for departmentation - product, function and territory-span of management

MODULE –IV

Authority-responsibility-accountability-delegation of authority-principles of delegation-unity of command – centralization and decentralization –advantages and disadvantages

MODULE –V

Nature and scope of direction-motivation meaning-major theories of motivation – Maslow’s theory - Herberg’s two factor Theory-Leadership Styles-Nature and purpose of controlling

TEXT BOOK

1.Kathiresan and Radha, “ Business Management”, Bhavani publications, Chennai,2004

SKILL ENHANCEMENT COURSES (SEC)

Paper Code: CSIT801

L	T	P
0	1	3

SOFT SKILLS

Prerequisite: Basic knowledge of English language

Objectives:

- To enable learners to develop their communicative competence.
- To facilitate learners to improve their soft skills.
- To equip learners with employability skills to enhance their prospect of Placements.

Outcomes

On successful completion of the course students will be able to:

- Develop their communicative competence.
- Understand employability skills to enhance their prospect of Placements.

MODULE - I

Nature of technical communication: Stages of communication – Channels of communication – Nature of technical communication – Importance and need for technical communication – Technical communication skills - The Listening process: Types of listening – Listening with a purpose – Barriers to listening – The speech process – Conversion and oral skills – Body language.

MODULE - II

Job interviews: Pre – interview preparation techniques – Interview questions – Answering strategies – Frequently asked interview questions – Projecting a positive image – Alternative interview formats - Group Discussion: Nature of group discussion – Characteristics of successful group discussions – Selection group discussion – Group discussion strategies – Techniques for individual contribution – Group interaction strategies.

MODULE - III

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

Text Book:

M. Ashraf Rizvi , “Effective Technical Communication”, Tata McGraw – Hill Education, 2005

SOFT SKILLS LAB – EXERCISES

1. ORAL PRESENTATION

- TV violence.
- Is the Fast-Food Industry Accountable Legally for poor health?
- Intelligence depends more on the environment than genetic factors.
- Environment vs. technology Impact of technology on learning
- Learning does not eradicate ignorance
- How WiFi improved your life?

2. GROUP DISCUSSION

- NGOs - Do they serve peoples' interests or are they pressure groups?
- Role of women in development.
- Kids today are not what they used to be.
- Repeated elections - Should taxpayers pay for it?
- In India, the whole is less than the parts - Do we lack in team spirit?
- "Dot.com" companies - Is there room for everyone?
- Artificial Intelligence - Will man be ever replaced by machines?

3. INTERVIEW SKILLS

- How to make a good impression
- Basic Interview Questions
- Behavioural Interview Questions

Paper Code: CSIT802

L	T	P
0	1	3

OFFICE AUTOMATION TOOLS

Prerequisite: Basic use of computers

Objectives:

1. To practically learn to use Microsoft word, excel and power point

Outcomes:

2. Students will be able to draft official and personal letters using various functions of MSWord.
3. Understand, manipulate, represent data with MSEXcel using formula and graphs
4. Acquire knowledge to prepare presentation for presenting their data through PowerPoint

MODULE – I

MS-WORD - Working with MS Word - Creating a New Document – Working with Font, Page setup, Paragraph and Page background - Text Editing using various features – Margins, Inserting Page Numbers, Pictures, Files, Word Art, Symbols – Header and footer, Page border, working with Columns, Tabs & Indents - Creation & Working with Tables -Margins & Space management in Document - Mail Merge

MODULE – II

MS-EXCEL: Working with MS Excel - concepts of Workbook & Worksheets - Working with Data & Ranges - Different Views of Worksheets - Using different features with Data and Text - Use of Formulas, Calculations & Functions - Cell Formatting including Borders & Shading; Working with Different Chart Types - Printing of Workbook.

MODULE – III

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

Text Books:

1. Dinesh Maidasani , Straight to the Point – MS Office 2010, Laxmi Publications, 2010.
2. Sherry Kinkoph Gunter, Master Visually Microsoft Office 2010, WILEY, 2010.

LIST OF LAB EXERCISES:

1. To create a personal letter using MS-WORD
2. To create company letter head using MS-WORD
3. To create a memo using MS-WORD
4. To create a greeting card using MS-WORD
5. To create a cover page of a project report.
6. To create letter using mail merge.
7. To create a spreadsheet for mark statement of students.
8. To create various graphs with respect to students' academic details.
9. To create a slide show regarding our college and department.

Paper Code: CSIT803
MULTIMEDIA TOOLS

L	T	P
0	1	3

Prerequisite: Familiarity with computers

Objectives:

- Understanding the key principles of animation and its applications.

Outcomes:

- Acquire knowledge of how to create animation using Flash.
- Acquire knowledge of how to create story board, work with files create movies and publish

MODULE – I

Flash - Action Scripting Using actions to control a timeline - Using frame labels - Creating button symbols - Creating animated buttons using movie clips – Movie Clip Controls – Browser / network.

MODULE - II

Advanced Animation Methods Creating movies playing within movies (movie clips and .swf) - Controlling multiple timelines (movies) through action scripting - Critique storyboards.

MODULE - III

Streamlining Files for Use on the Web, Publishing Files to the Internet & Pre-loaders- Controlling sound with script - Exploring types of output - Work on final project in class - Importing video - Publishing demo (video) reels on web - Publishing and exporting files.

REFERENCE BOOKS

1. E. A. Vander Veer and Chris Grover, “Flash CS3”, O’reilly, 2007
2. Richard Williams, “The Animator’s Survival Kit”, 2009

LIST OF PRACTICALS

1. Creating Company Title
2. Create new Clip art Company Logo
3. Animated Buttons and Menus
4. Text Graphics
5. Morphing
6. Shape and Motion Tween
7. Creating an animated Web site
8. Working with Audio and video

PHP programming

L	T	P
0	1	3

Paper Code: CSIT804

Prerequisite: Knowledge of Web Technology and Database programming

Objectives:

- To learn the fundamentals of PHP language
- To learn how to use PHP language to create websites

Outcomes:

- Understand how to write code using PHP
- Acquire knowledge about web techniques

MODULE – I

Introduction to PHP – brief history – installing PHP – Language basics – Lexical structure – data types – variables – expressions and Operators – flow-control statements – including code – embedding PHP in web pages

MODULE – II

Functions – Strings – Arrays - Multidimensional Arrays- Extracting Multiple Values -Slicing an Array - Checking Whether an Element Exists - Traversing Arrays – Sorting - Objects – Terminology - Creating an Object - Accessing Properties and Methods - Declaring a Class – Introspection

MODULE – III

Web Techniques - HTTP Basics - Server Information - Processing Forms - Setting Response Headers - Maintaining State - Databases - Using PHP to Access a Database - Relational Databases

Text Book:

Kevin Tatroe, Peter MacIntyre, and Rasmus Lerdorf, “Programming PHP”, O’Reilly, 3rd edition, 2013.

PHP Lab – List of Exercises

1. Create a PHP page using functions for comparing three integers and print the Largest number.
2. Write a function to calculate the factorial of a number (non-negative integer). The function accept the number as an argument.
3. Write a programe check whether the given number is prime or not.
4. Create a PHP page which accepts string from user. After submission that page displays the reverse of provided string.
5. Write a PHP function that checks if a string is all lower case.
6. Write a PHP script that checks whether a passed string is palindrome or not? (A palindrome is word, phrase, or sequence that reads the same backward as forward, e.g., madam or nurses run)
7. Write a programe to sort an array.
8. Write a PHP script that removes the whitespaces from a string.
Sample string : 'The quick " " brown fox'
Expected Output : Thequick""brownfox
9. Write a PHP script that finds out the sum of first n odd numbers.
10. Create a login page having user name and password. On clicking submit, a welcome message should be displayed if the user is already registered (i.e.name is present in the database) otherwise error message should be displayed.

Paper Code: CSIT805

L	T	P
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MOBILE APPLICATION DEVELOPEMENT

Prerequisite: Basic Knowledge of programming

Objectives:

- To introduce students to the Mobile application development ecosystem.
- To impart mobile application development skills.

Outcomes:

- Understand the anatomy of Android app and develop small application
- Understand to use multimedia handling in android application

Module I: Introduction to Mobile Apps - Mobility Panorama - Various Mobile Platforms - Different Approaches to Mobile Development - Comparison of Various Mobile app development platforms - Overview of Android App Development Scenario - Mobile App development challenges.

Module II: Android App Development - Setting up the development environment - Building the Hello World Android App - Anatomy of Android Apps - Logical Components. Android Activities - UI Resources and Elements - Activity interaction - Fragments - Services - App Data Persistence.

Module III: Multimedia Handling in Android Apps : Audio, Video and Images, Capture and Storage - Graphics and Animation - Location Services - Sensor handling in Android apps - App markets and publishing apps.

Text Book:

- *Composing Mobile Apps : Learn, Explore and Apply using Android*, by Anubhav Pradhan and Anil V Deshpande, Wiley Publications, 2014, ISBN: 978-81-265-4660-2.

Web Resources:

- <https://developer.android.com/training/basics/firstapp/index.html>
- <https://developers.google.com/training/android/#for-new-programmers>

Lab Exercises:

- Design and develop a mobile app to compute Body Mass Index.
- Design and Develop a mobile app for an event registration form.
- Design and develop a mobile app for storage and retrieval of data.
- Design and develop a mobile app with multimedia components.
- Design and develop a mobile app to utilize various sensors.
- Design and develop a mobile app to utilize location services.

L	T	P
0	1	3

Paper Code: CSIT806: ONLINE COURSE /

Paper Code: CSIT807: MINI PROJECT/

Paper Code: CSIT808: INTERNSHIP (2 WEEKS) /

Paper Code: CSIT809: IN-PLANT TRAINING (1-month)

GENERAL ELECTIVE –I

Paper Code: CSIT125

DISCRETE MATHEMATICS

L	T	P
3	0	0

Objectives:

- Ability model data sets as mathematical functions and solve.
- Ability to understand and model the discrete structures such as graphs and trees.

Outcomes:

- Acquire knowledge regarding the use of Discrete Mathematics in Computer Science.
- Acquire knowledge regarding relevant topics such as set Theory, basic logic, graphs and trees.

MODULE –I

Matrices – definition – special types of matrices – operations – symmetric matrices – skew symmetric matrices – Hermitian and skew Hermitian matrices – Inverse – Orthogonal matrices – Solutions of Simultaneous equations – Rank of a matrix – Eigen values and eigenvectors – Cayley Hamilton Theorem.

MODULE –II

Mathematical Logic – Connectives – Statement Forms – Paranthesis – Truth Table – Tautology and Contradiction/Logical Implications and equivalences – Disjunctive and Conjunctive normal forms.

MODULE –III

Sets – Relation – functions – Poset – Hasse Diagram – Lattice and its Properties – Boolean Algebra – Properties – Karnaugh Map (Two, Three and Four Variables Only).

MODULE –IV

Graph Theory: Introduction – application of graphs – Finite and Infinite Graphs – Incidence and Degree – Isolated Vertex, Pendant Vertex and Null Graph. Paths and Circuits – Connected Graph, Disconnected Graphs and components – Euler Graphs – Operations on Graphs – Hamiltonian Paths and Circuits

MODULE –V

Trees and Fundamentals Circuits: Trees – Some properties of Trees – Pendant Vertices in a Tree – Distance and Centers in a Tree – Rooted and Binary Trees – On Counting Trees – Spanning Trees – Fundamental Circuits

Text Books

1. Manicavachagom Pillay and others ,”Algebra”,11th Revised edition. Vol II.,S.V. Publications, (Unit – 1)
 2. Narsingh Deo, “Graph Theory with applications to Engineering and Computer Science”, PHI, 1997. (Unit –4, 5)
- Trembly & Manohar, “Discrete Mathematics for Computer Science”, TMH, 1997 (Units – 2, 3).

GENERAL ELECTIVE –II

Paper Code: CSIT126

APPLIED STATISTICS

L	T	P
3	0	0

Prerequisite: Knowledge of basic mathematics

Objectives:

- To learn the basics of statistics concepts
- To learn solving correlation and regression problems

Outcomes:

- Ability to understand and represent data
- Ability to analyze and interpret data.

Module 1-Diagrammatic and Graphic Presentation

General Rules for Constructing Diagrams, Types of Diagrams, One Dimensional or Bar Diagrams, Types of Bar Diagrams, Two-Dimensional Diagrams, Limitations of Pie Diagrams.

Module 2-Measures of Central Value

Arithmetic Mean

Calculation of Simple Arithmetic Mean-Individual Observations, Calculation of Arithmetic Mean-Discrete Series, Calculation of Arithmetic Mean-Continuous Series, Merits and Limitations of Arithmetic Mean.

Median

Calculation of Median-Individual Observations, Computation of Median-Discrete Series, Calculation of Median-Continuous Series, Merits and Limitations of Median

Mode

Calculation of Mode-Individual Observations, Calculation of Mode-Discrete Series, Calculation of Mode-Continuous Series, Merits and Limitations of Mode.

Module 3-Measures of Dispersion

Significance of Measuring Variation, Properties of a Good Measure of Variation, The Interquartile Range or the Quartile Deviation, Merits and Limitations, The Mean Deviation, Calculation of Mean Deviation, Calculation of Mean Deviation-Continuous Series, Merits and Limitations, The Standard Deviation, Difference Between Mean Deviation and Standard Deviation, Calculation of Standard Deviation, Merits and Limitations.

Module 4-Correlation Analysis

Types of Correlation, Scatter Diagram Method, Merits and Limitations of the Method, Karl Pearson's Coefficient of Correlation, Direct Method of Finding Out Correlation Coefficient, Origin is made and Problems, Rank Correlation Coefficient, Merits and Limitations of the Rank Method.

Module 5-Regression Analysis

Uses of Regression Analysis, Difference Between Correlation and Regression Analysis, Regression Lines, Regression Equations, Regression Equation of Y on X, Regression Equation of X on Y and Problems

Text Book

S.P.GUPTA, Statistical Methods, Sultan Chand & Sons, Educational Publishers, New Delhi.

Reference Book:

P.R.Vittal, "Mathematical Statistics", Margham Publications.

GENERAL ELECTIVE –III

Paper Code: CSIT235

L	T	P
3	0	0

OPERATION RESEARCH

Prerequisite: Knowledge of basic mathematics

Objectives:

1. Ability to analyze the given data set using mathematical models.
2. Ability to represent the dataset and solve using techniques such as linear programming, Game theory, PERT and CPM.

Outcomes:

- Acquire knowledge to use OR methods for computation.
- Derive solutions for business problem using methods in OR.

Module –I

Introduction to Operations Research - Principal components of decision problems - phases of OR study.

Module –II

Linear Programming - graphical solution - simplex method including artificial variable technique
- duality.

Module –III

Transportation and assignment models - Sequencing

Module –IV

Game theory - optimal solution of two-person zero-sum games - mixed strategies - graphical solution of (2 X n) and (m X 2) games - solution of (m X n) games by linear programming.

Module – V

PERT and CPM - network diagrams - determination of the floats and critical path - probability considerations in project scheduling.

Text Books

1. Treatment as in Hamdy A.Taha “Operations Research - An introduction (III edition)”, chapters 1, 2, 3 (omit 3.4), 4 (omit 4.4, 4.5), 5 (omit 5.4), 11 (omit all sections except 11.4 only), 12 (omit 12.3, 12.5).
2. R.L. Ackoff and M.W.Sasieni "Fundamentals of O.R.". (For Sequencing)

GENERAL ELECTIVE –IV

Paper Code: CSIT236

NUMERICAL METHODS

L	T	P
3	0	0

Prerequisite: Knowledge of basic mathematics

Objectives:

- To learn about linear interpolation methods
- To learn about numerical integration & Differentiation methods

Outcomes

On successful completion of the course students will be able to:

- Understand the linear interpolation methods.
- Understand the numerical integration & Differentiation methods

MODULE - I

Roots of Non-Linear Equations - Iterative methods , Bisection methods, method of false position – Newton-Raphson method – Statement of Fixed Point Theorem – Fixed point iteration: $x=g(x)$ method.

MODULE - II

Direct Solution of linear Equations - Gaussian elimination and Gauss-Jordon methods - Iterative methods: Gauss Jacobi and Gauss-Seidel methods- Inverse of a matrix by Gauss Jordon method – Eigen value of a matrix by power method.

MODULE - III

Curve Fitting Interpolation - Lagrangian Polynomials – Divided differences – Interpolating with a cubic spline – Newton’s forward and backward difference formulas.

MODULE – IV

Numerical Differentiation - Derivatives from difference tables – Divided differences and finite differences. Numerical integration - Trapezoidal and Simpson’s 1/3 and 3/8 rules – Romberg’s method – Two and Three point Gaussian quadrature formulas.

MODULE - V

Ordinary Differential Equation - Taylor series method – Euler and modified Euler methods – Fourth order Runge – Kutta method for solving first and second order equations.

Text Books:

1. Balagurusamy, E., “Numerical Methods”, Tata McGraw-Hill, 1999.

Reference Book:

2. Kandasamy, P., Thilagavathy, K. and Gunavathy, K., “Numerical Methods”, S. Chand Co. Ltd., New Delhi, 2003
3. A.Singaravelu, “Numerical Methods” Meenatchi Agency.
4. Dr.M.K.Venkataraman, “ Numerical Methods in Science and Engineering, The National Publication Company.

Non-Major Elective Course

Paper Code: CSITS171

L	T	P
3	1	0

BASICS OF COMPUTERS & OFFICE AUTOMATION

Prerequisite: No specific prerequisite

Objectives:

- To understand how to use software packages viz MS-Word, Excel and Powerpoint for day-to-day activities.

Outcomes:

- Non computer science will be able to understand the basics of computers and understand the office automation tools such as word, excel and powerpoint

MODULE – I

DOS: Internal & External commands; Wildcard Character; file name; Creating/Editing file; batch file - MS Windows: Windows Basic - Introduction to Windows- Using My Computer; Using Windows Explorer - Printing- Introduction to Accessories and Control Panel

MODULE – II

Word processing - Introduction - Introduction to MS Word - Working with MS Word - Creating a New Document-Different Page Views and layouts - Working with Styles, Text Attributes; Paragraph and Page Formatting - Text Editing using various features - Advanced Features of MS-Word – bookmarks - Spell Check and Thesaurus; Find & Replace; Headers & Footers ; Inserting – Page Numbers, Pictures, Files, Auto texts, Symbols -Working with Columns, Tabs & Indents;- Creation & Working with Tables -Margins & Space management in Document - Mail Merge.

MODULE – III

MS Excel - Introduction and area of use -Working with MS Excel - concepts of Workbook & Worksheets - Working with Data & Ranges - Different Views of Worksheets - Column Freezing, Labels, Hiding, Splitting etc.;-Using different features with Data and Text - Use of Formulas, Calculations & Functions-Cell Formatting including Borders & Shading; Working with Different Chart Types - Printing of Workbook & Worksheets with various options.

MODULE -IV

MS PowerPoint - Introduction & area of use- Working with MS PowerPoint- Creating a New Presentation-Working with Presentation; Using Wizards- Slides & it's different views; Inserting, Deleting and Copying of Slides - Working with Notes, Handouts, Columns & Lists- Adding Graphics, Sounds and Movies to a Slide-Working with PowerPoint Objects; Designing & Presentation of a Slide Show

MODULE – V:

MS Access: DBMS Concept; Creating database, table, fields & its properties; Data types; Adding primary key into table; Relationship; Adding/Editing data; sorting; indexing; designing queries; using forms; Report generation.

Text Books:

1. Rob Tidrow, Master Visually Windows 7, John Wiley, 2010.
2. Dinesh Maidasani , Straight to the Point – MS Office 2010, Laxmi Publications, 2010.
3. Sherry Kinkoph Gunter, Master Visually Microsoft Office 2010, WILEY, 2010.
4. Faithe Wempen, Computing Fundamentals: Introduction to Computers, WILEY, 2014.

Paper Code: CSIT172

FUNDAMENTALS OF INFORMATION TECHNOLOGY

L	T	P
3	1	0

Prerequisite: No specific pre-requisite

Objective:

- To acquire the basic knowledge about computers

Outcomes:

- Understand the concepts and various components of computers. Acquire knowledge about internet and other applications

Module - I

Introduction to Computers - Generation of Computers - Classification of Digital Computer - Anatomy of Digital Computer.

Module - II

CPU and Memory - Secondary Storage Devices - Input Devices - Output Devices.

Module - III

Introduction to Computer Software - Programming Language – Operating Systems – Introduction to Database Management System.

Module - IV

Computer Networks - WWW and Internet - Email - Web Design

Module - V

Computers at Home, Education, Entertainment, Science, Medicine and Engineering - Introduction to Computer Security - Computer Viruses, Bombs, Worms.

Text Book:

1. Fundamentals of Information Technology, Alexis Leon and Mathews Leon, Vikas Publishing House Pvt. Ltd., 2009.
2. Faithe Wempen, Computing Fundamentals: Introduction to Computers, WILEY, 2014.

Paper Code: CSIT173

FUNDAMENTALS OF 'C' LANGUAGE

L	T	P
3	0	1

Prerequisite: Knowledge of computers

Objective:

- To learn how to solve common types of computing problems.
- To learn about various programming constructs of C

Outcomes:

- Analyze a given problem and develop an algorithm to solve the problem
- Use the 'C' language constructs in the right way. Design, develop and test programs written in 'C'

MODULE- I

Introduction to Programming - How to develop a program, Algorithms, Flow-charts, Types of Programming Languages, Compiler and Linker, Testing and Debugging a program, Documentation. Constants, Variables & Data Types - Character set, C Tokens, Identifiers and Keywords, Constants, Variables, Data types - Operators & Expressions - Managing Input & output operations

MODULE - II

Decision Making – Branching & Looping - Arrays - One dimensional array: Array Manipulation, Different operations on one dimensional arrays, two dimensional array, operations on two dimensional arrays, multi-dimensional array, dynamic arrays - Handling of Character Strings.

MODULE - III

Functions - Top down approach of problem solving, standard library functions, passing values between functions, scope rules of functions, calling convention, return type of functions, call by value and call by reference, recursive functions - Storage Classes - Scope and extent, Storage Classes in a single source file: auto, extern and static, register,

MODULE – IV

Structures and Unions - Defining a structure, Declaring Structure variables, accessing structure members, structure initialization, copying and comparing structure variables, operation on individual members, arrays of structures, arrays within structures, structures and functions, union, size of structure, bit fields.

MODULE - V

File Processing - Defining and Opening a file, closing a file, input/output operations on files, error handling during I/O operations, random access to files, Command Line Arguments.

Text Books:

1. E. Balagurusamy, “Programming with ANSI-C”, Fourth Edition, Tata McGraw Hill, 2008,
2. Hanly J R & Koffman E.B, “Problem Solving and Programming design in C”, Pearson Education, 2009.

Paper Code: CSIT174

WEB DESIGNING

L	T	P
3	0	1

Prerequisite: Knowledge of computers

Objectives:

- To acquire the fundamental knowledge about internet & WWW.
- To learn how to develop static and dynamic web pages / websites for any organization.

Outcomes:

- Understand the scenario of web page development
- Ability to develop web pages using HTML and Cascading Style Sheets.

MODULE - I

Internet and the World Wide Web - Internet - Introduction to internet and its applications, E-mail, telnet, FTP, e-commerce, video conferencing, e-business. Internet service providers, domain name server, internet address, World Wide Web (WWW) - World Wide Web and its evolution, uniform resource locator (URL), browsers – internet explorer, Netscape navigator, opera, Firefox, chrome, Mozilla. search engine, web saver – apache, IIS, proxy server, HTTP protocol

MODULE – II

HTML5 – Introduction - formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors - Style sheets, CSS formatting text using style sheets, formatting paragraphs using style sheets.

MODULE – III

Page layout and navigation - Creating navigational aids: planning site organization, creating text based navigation bar, creating graphics based navigation bar, creating graphical navigation bar, creating image map, redirecting to another URL, creating division based layouts.

MODULE – IV

Tables, Forms and Media - Creating tables: creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment

MODULE – V

Creating user forms: creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page.

Text Books:

Faith Wempen, “HTML5 Step by Step”, Microsoft Press, 2011.

B.Sc DEGREE EXAMINATION
Month and year

Information Technology

Semester
Subject Name

Time: Three hours

Maximum: 75 marks

SECTION – A (10 X 2 = 20 marks)

Answer **ALL** the questions

Totally 10 questions. 2 questions from each unit

SECTION – B (5 X 5 = 25 marks)

Answer **ALL** the questions, choosing either (a) or (b).

11. a)
(OR)
b)
12. a)
(OR)
b)
13. a)
(OR)
b)
14. a)
(OR)
b)
15. a)
(OR)
b)

one question (a & b) from each Unit [Equal distribution for all 5 units]

SECTION – C (3 X 10 = 30 marks)

Answer any **THREE** questions.

16.
17.
18.
19.
20.

One question from each Unit