

DATA STRUCTURE & ALGORITHMS

L T P

Full marks -100 Th + 50 Pr

3 2

Hours 42 Th + 28 Pr

Subject Code: CSE402

1. BASIC CONCEPTS -

06 hrs

Problem solving techniques, divide and conquer techniques, top down and bottom up design, Introduction to data structure (Linear, Non Linear) Data types (Primitive, Non Primitive), Space and time Complexity, Concept of arrays, Operation on arrays with algorithms (Searching, traversing, inserting, deleting).

2. LINKED LISTS

08 hrs

Introduction to linked list and double linked list, Representation Of linked lists in memory, comparison between linked list and Array, Traversing a link list, Searching a link list, Insertion And deletion into linked list (At first node, Specified Position, Last node), Application of link list, Doubly linked lists, Traversing a doubly link lists, Insertion and deletion into doubly Link list.

3. STACKS AND QUEUES

08 hrs

Introduction to stacks, representation of stacks with array and link List, Implementation of stacks, Application of stacks (Polish Notations, converting infix to post fix notation, evaluation of Post fix notation, tower of Hanoi), Recursion : concept and Comparison between recursion and iteration, Introduction to queues, Implementation of queues, Circular queues, De-queues.

4. SORTING ALGORITHMS

06 hrs

Introduction, Search Algorithm (Linear and Binary), Concept of sorting. Insertion sorts, Bubble sort, Quick sort, Merge sort, Heap sort

5. TREES & GRAPHS

10 hrs

Concept of Binary Trees (Complete, Extended Binary Tree), Concept and representation of Binary Tree, Concept of balance Binary Tree, Traversing Binary Tree(Pre order, Post order and In Order), Searching, Inserting and deleting in binary search tree, Minimum spanning tree, Depths-first-search and Breath First Search, applications of graph.

6. TABLES

04 hrs

Searching Sequential tables, Hash tables and Symbol tables, heaps.

Data Structure & Algorithm Lab

Subject Code: CSE 407

List of Experiments:

1. Make a program to insert 10 elements in an array by taking user input.
2. Make a program that demonstrates deletion of elements from beginning, middle, last position from an array.
3. Make a program for merging of elements of two arrays.
4. Make a program that demonstrates PUSH operation of stack.
5. Make a program that demonstrates POP operation of stack.
6. Make a program to insert elements in a linear queue.
7. Make a program to insert elements in a circular queue.
8. Make a program that demonstrates the working of simple list for inserting elements at beginning position, middle position and at the end of list.
9. Make a program that demonstrates the working of circular list for inserting elements at beginning position, middle position and at the end of list.
10. Write a program for insertion sorting.
11. Write a program for bubble sorting.
12. Write a program for quick sort.
13. Write a program for merge sort.
14. Write a program for heap sort.
15. Make a program for binary search.
16. Make a program for linear search.
17. WAP to Create a Tree.
18. WAP to check whether a Tree is a Binary Search Tree.
19. WAP program to construct a B Tree.
20. WAP for Depth First Binary Tree Search.

TEXT BOOKS:-

- 1) Salaria RS, Data Structures and Algorithm Using C, Khanna Book Publishing Co. (P) Ltd. New Delhi
- 2) Patel R.B., Expert data structures with C– Khanna Publishers, New Delhi.
- 3) Schaum's Outline Series – Data structures–McGraw Hill, Delhi.
- 4) Tanenbaum, Data Structures, Prentice Hall of India, New Delhi.
- 5) Srivastava SK, Srivastava Deepali, Data Structure through C in depth, BPB Publications Delhi.
- 6) Data Structure by Trimly & Sorenson.

Computer Hardware and Peripherals

Subject Code : ECE403

Total Contact Hours : 42

Full Marks : 100 (80+20)

L T P

3 0 0

- 1. Introduction :** **04 hrs**
Digital computer concepts, concept of Hardware & Software, structure & functions of a computer system, Role of operating system , Introduction to finite state machine.
- 2. Memory Unit :** **08 hrs**
Memory classification , characteristics, Organization of RAM , address decoding ROM/PROM/EEPROM ; Magnetic memories , recording formats & methods , Disk & tape units, Concept of memory map , memory hierarchy , Associative memory organization ; Cache introduction , techniques to reduce cache misses , concept of virtual memory & paging.
- 3. CPU Design:** **10 hrs**
The ALU – ALU organization , Integer representation , 1s and 2s complement arithmetic ; Serial & Parallel Address; implementation of high speed Address Carry Look Ahead & carry Save Address; Multiplication of signed binary numbers-Booth's algorithm ; Divide algorithms- Restoring & Non-Restoring ; Floating point number arithmetic; Overflow detection , status flags.
- 4. Instruction Set Architecture-** **06 hrs**
Choice of instruction set ; Instruction word formats, Addressing modes.
- 5. Control Design –** **10 hrs**
Timing diagrams; T-States, Controlling arithmetic & logic instruction , control structures; Hardwired & Micro programmed, CISC & RISC characteristics.
Pipelining-general concept , speed up , instruction & arithmetic pipeline; Examples of some pipeline in modern processors , pipeline hazards; Flynn's classification –SISD ,SIMD , MISD , MIMD architectures- Vector and Array processors & their comparison , Concept of Multiprocessor; Centralized & distributed architectures.
- 6. Input/output Organization :** **04 hrs**
Introduction to Bus architecture, effect of bus widths, Programmed & Interrupt I/O, DMA.

Reference Books :

1. Hayes-- Computer Architecture & Organization,3/e ,MH
2. Carter—Computer Architecture (Schaum Series), TMH
3. Mano M.M—“Computer System Architecture”
4. Chaudhury P. Pal—“ Computer Organization & Design” , PHI

Operating System

Subject Code : CSE403

Full Marks: 100 (80+20)

Total Contact Hours: 42

- 1. INTRODUCTION TO OS** **6 hrs**
 - 1.1 Definition of O.S.
 - 1.2 History of O.S. and different types of operating System, Multiprocessor Systems Distributed Systems, Clustered Systems, Real Time Systems, Recent Operating System Characteristic –XP,WIN 7/8/10
 - 1.3 Operating system services.
 - 1.4 System calls – Uses, process control, file management, Device management, Information maintenance, communication.
 - 1.5 Operating system structure: Simple structure, layered, monolithic, microkernel.
 - 1.6 Booting

- 2. PROCESSES** **6 hrs**
 - 2.1 Definition of process & thread
 - 2.2 Inter process communication
 - 2.3 Classical I.P.C. problems
 - 2.4 Process Scheduling

- 3. PROCESS SCHEDULING ALGORITHM** **6 hrs**
 - 3.1 Resident Monitor (Single user)
 - 3.2 Multi user system
 - 3.3 Time sharing system
 - 3.4 FIFO
 - 3.5 Round Robin Fashion/Time quantum Concept.
 - 3.6 Multiple queues
 - 3.7 Priority queues
 - 3.8 Shortest job first

- 4. MEMORY MANAGEMENT** **6 hrs**
 - 4.1 Resident Monitor
 - 4.2 Multiple Partition
 - 4.3 Garbage collection and compaction
 - 4.4 Paged memory management
 - 4.5 Page Replacement Algorithms
 - 4.6 Swapping
 - 4.7 Segmentation
 - 4.8 Segmented paged memory management
 - 4.9 Demand paged memory management
 - 4.10 Virtual Memory

- 5. FILE SYSTEMS** **6 hrs**
 - 5.1 Concept of Files & Directories
 - 5.2 File System Implementation
 - 5.3 Security Issues in Files

- 5.4 Protection Mechanisms
- 5.5 Case studies of UNIX file system

6. INPUT/OUTPUT

4 hrs

- 6.1 Principles of I/O Hardware
- 6.2 Principles of I/O Software
- 6.3 Disk

7. DEVICE MANAGEMENT

6 hrs

- 7.1 Techniques for Device Management - Dedicated, shared, virtual
- 7.2 Device allocation considerations I/O traffic control & I/O Schedule, I/O Device handlers
- 7.3 Spooling

8. CASE STUDIES

2 hrs

- 8.1 UNIX O.S
- 8.2 LINEX
- 8.2 MS- DOS
- 8.3 WINDOWS – NT



Operating System

Subject Code : CSE405

LIST OF PRACTICALS:

1. Demonstrate giving brief history of Operating System, types of Operating Systems in use these days, how it is necessary for a computer functioning..
2. Prepare a report on different views of the Operating System, the journey of a command execution, Design and implementation of Operating System.
3. Prepare a report on memory management of Operating System.
4. Prepare a report on file management of Operating System.
5. Demonstrate the Security and Protection features of an Operating System.
6. Demonstrate the functions of Multi Processor Systems.
7. Demonstrate and produce report on computer network algorithms for distributed processing.
8. Prepare a brief history of Windows Operating System.
9. Demonstrate features, tools and accessories of Windows.
10. Demonstrate features of LINEX
11. Demonstrate features of UNIX
12. Demonstrate features of DOS
13. Cell and kernel programming examples
14. Prepare a brief report on features and benefits of Unix Operating System.

Books Recommended:

1. Operating Systems-Concept and Design, McGraw-Hill international Edition-Computer Science Series, 1992 - Milan Milenkovic
2. An introduction to Operating Systems, Addition-Wesley Publishing Company, 1984. - Harvey M. Deitel
3. Operating System Concepts, Addition-Wesley Publishing Company, 1989. - James L. Paterson, Abraham Silbers chatz
4. Modern Operating Systems, Prentice-Hall of India Private Ltd., 1995. - Andrew S. Tanenbaum
5. Modern Operating System Sriram K Vasudevan
6. Operating System Concepts Galvin

DATA COMMUNICATION AND COMPUTER NETWORKING

Subject Code : ECE405

Full Marks : 100 (80+20)

Total Contact Hours : 42

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1. **Introduction to data communication:** **08 hrs**
Data Communication, Analog and Digital, Periodic and Aperiodic Signals, Analog Signals, Time and Frequency Domains ,Composite Signals , Digital Signals. Digital to Digital Conversion, Analog to Digital Conversion, Digital to Analog conversion and Analog to Analog Conversion
2. **Multiplexing & Access Techniques:** **08 hrs**
Many to one/one to Many, Frequency division Multiplexing, Wave division Multiplexing, Time division Multiplexing, Multiplexing applications, different access techniques (FDMA, TDMA, CDMA, WCDMA,LTE) Demultiplexing concept and circuit , packet and message switching techniques.
3. **Computer Network :** **06 hrs**
Networks, Protocols and Standards, Standards Organizations. Line Configuration, Topology, Transmission Modes, Categories of Networks Internet works. Introduction to OSI and TCP/IP protocol suit.'
4. **Transmission & Network Devices :** **08 hrs**
Guided Media, Unguided Media, Transmission Impairments, Performance Wavelength , Shannon Capacity , Media Comparison, PSTN , Switching. Digital data transmission, DTE-DCE Interface, Modems, 56K Modems , Cable Modems, Network classes, Repeaters, Hub, Bridges , Switches, Routers, Gateways , Routing Algorithms, Distance Vector Routing , Link State Routing
5. **Computer Networking :** **06 hrs**
Concepts , Types , Common tools and devices used, protocols.
6. **Error Detection and Correction:** **06 hrs**
Types of Errors, Detection, Parity Check, Vertical Redundancy Check Longitudinal Redundancy Check, Cyclic Redundancy Check, Checksum, Error Correction

Books:

1. Data communication & Networking by Bahrouz Forouzan.
2. Computer Networks by Andrew S. Tanenbaum
3. Data and Computer Communications by William Stalling

Computer Communication & Networking Lab

Subject Code : ECE410

Full marks : 50

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2

OBJECTIVES:

The student should be made to:

Learn to communicate between two desktop computers.

Learn to implement the different protocols

Be familiar with socket programming.

Be familiar with the various routing algorithms

Be familiar with simulation tools.

LIST OF EXPERIMENTS:

1. Study of Network Components.
2. Study of Analog and Digital Signals.
3. Study of Network Topologies.
4. To connect two pc's using peer to peer communication.
5. Implementation of small network using hub and switch.
6. To study Error Detection methods.
7. To study Error Correction methods.
8. To study the different line coding schemes.
9. Basic study of Network classes.
10. Study of DTE- DCE.

11. Study of Networks.
12. Overview of Boson Simulator.
13. Implementation of Error Detection / Error Correction Techniques
14. Implementation of Stop and Wait Protocol and sliding window
15. Implementation and study of Goback-N and selective repeat protocols
16. Implementation of High Level Data Link Control
17. Study of Socket Programming and Client – Server model
19. Write a socket Program for Echo/Ping/Talk commands.
20. To create scenario and study the performance of network with CSMA / CA protocol and compare with CSMA/CD protocols.
21. Network Topology - Star, Bus, Ring
22. Implementation of distance vector routing algorithm.



Database Management System

Subject Code : CSE 404

Total Hours 42 Hrs

FM 100 Th 50 Pr

L T P

3 2

1.Introduction

4 hrs

File and Database concept, Database System versus File System, DBMS Architecture, Data Model, Database Administrator, Database User, Schema, Data independency.

2.Entity-Relationship Model

4hrs

Basic concept key, E-R diagram, Strong and Weak Entity Sets, Specialization, Generalization, Aggregation. Codd's 12 rules.

3. Relation Data Model

8 hrs

Basic concepts, Types of Keys, Key Constraints, Domain Constraints, Referential Integrity Constraints, Procedural & Non-procedural Relational Algebra, Algebra Operation, Relational Calculus, the Tuple Relational Calculus, the Domain Relational Calculus.

4. SQL& PL-SQL

12 hrs

Basic structure, Data Definition Language, Data Manipulation Language, Data Control Language, Data Query Language, Transaction Control Language , set operations, aggregate functions, group by and having clause, null values, string functions, date and time functions, nested sub queries, Join concepts- Equi Join, Non-Equi Join, Self Join, Outer Joins, Views, SQL statement in PL-SQL, Cursors, Triggers, Functions.

5 Normalization, Transaction & Concurrency Control

10 hrs

1NF, 2NF, 3NF, BCNF, Multivalued Dependency, 4NF, 5NF, Transaction concept, States of Transaction, ACID properties, Conflict & View serializability, Lock base protocols, Two phase locking, Deadlock handling, Deadlock prevention, detection and recovery scheme.

6 Distributed Databases

4 hrs

Basic concepts, Data Fragmentation, Replication and Allocation techniques, Types of Distributed Database Systems, Client-Server Architecture & its relationship to Distributed Databases.

Reference Books :-

- 1.Database System Concepts – By Korth (TMH)
- 2.An Introduction to Database System – By Bipin Desai (Galgotia Publication)

Database Management System Lab

Subject Code: CSE406

List of Practical's:

1. Executing DDL and DML commands.
2. Study of various type of Integrity Constraints.
3. Executing relational, logical and mathematical set operators using SQL.
4. Study of SELECT command with different clauses.
6. Study of GROUP functions (avg, count, max, min, Sum).
7. Executing Date & Time functions.
8. Executing DCL in SQL.
9. Study of various type of SET OPERATORS (Union, Intersect, Minus).
10. Study of Various type of JOINS.
11. Program using if then else in PL/SQL.
12. Program using for loop & while loop in PL/SQL.
13. Program using nested loop in PL/SQL.



Computer Workshop

Subject Code: CSE408

Learning Objective

Students get the knowledge to support and maintain computer systems, desktops, and peripherals.

This includes installing, diagnosing, repairing, maintaining, and upgrading all hardware and equipment while ensuring optimal workstation performance.

Contents :

- 1. Basic blocks of a digital computer. 4 Hrs**
 - 1.1 Introduction to computers, classification, generations, applications.
 - 1.2 Hand Tools Basics and Specifications.
 - 1.3 Types of cabinets, relation with mother board form factor. Precautions to be taken while opening and closing PC cabinet.
 - 1.4 Main devices, components, cards, boards inside a PC(to card or device level only).
 - 1.5 Types and specifications of the cables and connectors used for interconnecting the devices, boards, cards, components inside a PC.
 - 1.6 Precautions to be taken while removing and/or reconnecting cables inside a PC.

- 2 Hardware Identification 4 Hrs**
 - 2.1 Identify the front and rear panel controls and ports on a PC Cases, Cooling, Cables & Connectors Power Supplies, Connections Motherboard, Connections Motherboard , Components CPU (Processor), RAM (Memory), Hard Drive , Connections Mechanical vs. Solid State Drives ROM Drives, Video Cards, Sound Cards , Use Of Debug Card Post Error & Code, SMPS Tester, PCI slot testing tool.
 - 2.2 Types of I/O devices and ports on a standard PC for connecting I/O devices.
 - 2.3 Function of keyboard, brief principle, types, interfaces, connectors, cable.
 - 2.4 Function of Mouse, brief principle, types, interfaces, connectors, cable.
 - 2.5 Function of monitor, brief principle, resolution, size, types, interfaces, connectors, cable.
 - 2.6 Function of Speakers and Mic, brief principle, types, interfaces, connectors, cable.
 - 2.7 Function of serial port, parallel port, brief principle of communication through these ports, types of devices that can be connected, interface standards, connectors, cable.
 - 2.8 Precaution to be taken while connecting/removing connectors from PC ports. Method of ensuring firm connection

- 3. Hardware Remove -Test Replace/ Install 8 Hrs**
 - 3.1** Removing & Installing RAM, Removing a ROM Drive & Installing a ROM Drive, Removing a Hard Drive & Installing a Hard Drive , Defects related to SMPS, its cable, connector and servicing procedure. Removing a Power Supply Installing a Power Supply , Removing a Video Card & Installing a Video Card, Install Expansion Cards Removing Fans & Installing Fans, Removing the Motherboard & Installing the Motherboard, Removing the Processor & Installing the Processor, Troubleshooting, Checking the Power Switch, Removing the CMOS Battery .
 - 3.2** Types of Processors and their specifications (Intel: Celeron, P4 family, Xeon, dual core, quad core, core 2 duo, i3,i5,i7 and AMD).
 - 3.3** Memory devices, Semiconductor memories, RAM, ROM, PROM, EPROM, EEPROM, Example of memory chips, and Concept of track, sector, and cylinder. FD Drive components-read write head, head actuator, spindle motor, sensors.
 - 3.4** Precaution and care to be taken while dismantling Drives. Drive bay, sizes, types of drives that can be fitted. Precautions to be taken while removing drive bay from PC, popular brands,

standards, interface, jumper setting. Drive components- hard disk platters, and recording media, air filter, read write head, head actuator, spindle motor, circuit board, sensor, features like head parking, head positioning, reliability, performances, shock mounting capacity. HDD interface IDE, SCSI-I/2/3 comparative study. Latest trends in interface technology in PC and server HDD interface.

Precautions to be taken while fitting drives into bays and bay inside PC cabinet.

- 3.5 CMOS setting (restrict to drive settings only)
- 3.6 Meaning and need for using Scan disk and defrag.
- 3.7 Basic blocks of SMPS, description of sample circuit

4. Operating System & Application Software Installation 10 Hrs

- 4.1 Partitioning hard disk (primary and extended partitions).
- 4.2 A walkthrough of installing Windows 7 / 8 /10 A walkthrough of installing Windows7/ 8/10, Imaging: create a Windows system image, How to Backup/Restore your Windows partition with the bootable image disk Duplicating a partition (creating a multiboot system) A multiboot system: the Windows boot manager vs. an alternative boot manager, Setting up a multiboot/dual boot system Dual Boot Ubuntu and Windows registry & tweaks.
- 4.3 My computer, network neighbourhood/ network places, Properties of connected devices. Applications under windows accessories. Windows Help. Finding files, folders, computers. Control panel, Installed devices and properties.
- 4.4 Data Backup 3 types of media to use when backing up your data, and when each method is appropriate How to create automated backups to ensure you always have a recent backup Learn how to manually backup data , How to make an exact copy (clone) of a hard drive.
- 4.5 Linux operating system - Installing UNIX / LINUX - Preparing functional system UNIX/LINUX - Adding new users, software, material components - Making back-up copies of the index and files - Dealing with the files and indexes.
- 4.6 **Installation of commonly used Application Softwares**

5. PC Cleaning & Hardware Troubleshooting 6 Hrs

- 5.1 The best cleaning supplies to use, How to increase airflow and increase your computer's lifespan, How to clean your computer.
- 5.2 The danger in not diagnosing problems first learn how to test your RAM, Check your hard drive for errors.
- 5.3 Minor repairs and maintenance of CD ROM/DVD ROM drives.
- 5.4 Minor repairs and maintenance of DAT drive.
- 5.5 Hard Drive Failure, How to Troubleshoot a Noisy Hard Drive, How to Format a Hard Drive, How to Completely Erase a Hard Disk Drive Installation and configuration of storage devices. Integration of PATA and SATA drivers. Recover emails, files, and data from a crashed hard drive or computer.
- 5.6 Latest trends in backup devices/media.

6. System Utilities and Virus Removal 6 Hrs

- 6.1 Bad Sectors in Hard disk, Master Boot Record, in-place installation, Registry fixing, performance level check, Shortcut fixing, Fixing Startup process, log, etc. Users and user account. Privileges, scope, permissions etc. Concept of Virtual Machine.
- 6.2 How to check to see if your hard drive has bad sectors, Fix the master boot record How to run an in-place installation, Using Task Manager and event viewer. Using System Monitor and Performance Logs. Configure config.sys file.
- 6.3 Learn how to prevent your PC from getting malware, All the different types of malware and how they attack your PC The difference between Anti Virus and Anti-Spyware software, How to run a full system scan, How to fix your browser from redirecting to other websites (browser hijack), Using a modern anti-virus utility, When utilities don't fix everything, how to manually remove a virus specific things to disable when trying to get rid of a nasty virus special utilities that work wonders.

- 7. User Account Customization 6 Hrs**
- 7.1** How to create and configure user accounts in Windows XP,Vista,7/8/10, Make Changes to an Account, Changing the storage location of the personal folders, Changing the storage location of installed software's , Setting up Parental Controls in Windows XP,Vista,7, 8,10 How to Use Fast User Switching in Windows View Hidden Files and Folders, Lock Down Windows 7 / 8/10 With User Account Control How to Delete User Accounts in Windows.
- 8. Windows Update, Software Installation & Device Drivers 10 Hrs**
- 8.1** How to find your system version in Windows, How to perform a Windows Update.
- 8.2** Installing a software program in windows, How to run a file from MS-DOS Extracting or uncompressing a compressed file, How to compress or make files into one file Extracting files from the Windows cabinets Uninstalling Windows software Unable to remove a program from Windows Add/Remove programs.
- 8.3** How to Update Drivers in Windows, How To Roll Back a Driver in Windows Familiarization with Device manager. Interfacing with cell-phone, tablet PC, synchronization of contacts.
- 8.4** How to Repair Corrupted Files Problems, How to check for corrupted files Restore your machine back to normal, Hard disk is filling up, what should one do?
- 8.5** Power on self test, Peripheral diagnostics, general purpose diagnostics, and Operating system diagnostics. Hardware boot process, Windows boot process.
- 8.6** Configure outlook, Backup and Restore Outlook, How to restore the Outlook, default installation, toolbars and settings, Restore Deleted Items from an Outlook PST-file.

Reference Books :-

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| 1. Inside PC | Norton |
| 2. Computer Installation and servicing | BPB Publication |
| 3. OS Programming | Peter Norton |
| 4. Servicing PC and Computers | BPB Publication |

Professional Practices-II

Subject Code : 401

Rationale:

Most of the diploma holders join industries. Due to globalization and competition in the industrial and service sectors the selection for the job is based on campus interviews or competitive tests.

While selecting candidates a normal practice adopted is to see general confidence, ability to communicate and their attitude, in addition to basic technological concepts.

The purpose of introducing professional practices is to provide opportunity to students to undergo activities which will enable them to develop confidence. Industrial visits, expert lectures, seminars on technical topics and group discussion are planned in a semester so that there will be increased participation of students in learning process.

Objectives:

Student will be able to:

1. Acquire information from different sources
2. Prepare notes for given topic
3. Present given topic in a seminar
4. Interact with peers to share thoughts
5. Prepare a report on industrial visit, expert lecture

Sl. No.	Activity Heads	Activities	Suggested Hrs
1.	Acquire information from different sources	Topic related to the branch and current area of interest i.e. articles in internet on which research or review is undergoing may be decided for the students group. The group may be restricted to maximum 5 students. Literature survey from Internet , print media and nearby practices may be undertaken. Minimum of 10 to 15 papers may be suggested for reading to get an overview and idea of matters.	12
2.	Prepare notes for given topic	Making review or concept to be penned down in form of a article .(the article or review may be of 8 – 10 pages length in digital form of 12 font size in Times New Roman font)	4
3.	Present given topic in a seminar	A seminar or conference or work shop on branch related topic is to be decided and all students in group of 5-6 students may be asked to present their views.	4
4.	Interact with peers to share thoughts	A power point presentation of the article prepared in stage 2 may be presented before the classmates and faculty members.	4
5.	Prepare a report on industrial visit, expert lecture	A topic on best practices and product / software development may be assigned to the student group. The group may be asked to prepare a survey, come to opinion making and list out the activities to develop the activities with SWOT analysis.	12

