w. e. f Academic Year 2011-12

STATE BOARD OF TECHNICAL EDUCATION, JHARKHAND

TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME : DIPLOMA IN COMPUTER ENGINEERING / COMPUTER TECHNOLOGY

COURSE CODE : CO / CM / CD

DURATION OF COURSE : 6 SEMESTERS **WITH EFFECT FROM 2011-12**

SEMESTER : FOURTH **DURATION :16 WEEKS**

PATTERN : FULL TIME - SEMESTER

SR. NO.	SUBJECT TITLE	Abbreviation	SUB CODE	TEACHING SCHEME			EXAMINATION SCHEME								
				TH	TU	PR	PAPER HRS	TH (01)		PR (04)		OR (08)		TW (09)		SW (16004)
								MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	
1	Microprocessor & Programming	MPO	12109	03	--	02	03	100	40	50@	20	--	--	--	--	50
2	Computer Networks	CNE	12110	03	--	02	03	100	40	--	--	--	--	25@	10	
3	Data Structure	DST	12111	03	--	04	03	100	40	50#	20	--	--	25@	10	
4	Computer Graphics	CGA	12112	03	--	02	03	100	40	--	--	25@	10	--	--	
5	Computer Architecture & Maintenance	CAM	12113	03	--	02	03	100	40	--	--	25#	10	25@	10	
6	Development of Life Skills -II	DLS	12041	01	--	02	--	--	--	--	--	25#	10	25@	10	
7	Professional Practices-IV	PPR	12114	--	--	05	--	--	--	--	--	--	--	50@	20	
			TOTAL	**16**	**--**	**19**	**--**	**500**	**--**	**100**	**--**	**75**	**--**	**150**	**--**	**50**

Student Contact Hours Per Week: **35 Hrs.**

THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH.

Total Marks **: 875**

@ Internal Assessment, # External Assessment, [ ] No Theory Examination.

Abbreviations: TH-Theory, TU- Tutorial, PR-Practical, OR-Oral, TW- Termwork, SW- Sessional Work.

- Conduct two class tests each of 25 marks for each theory subject. Sum of the total test marks of all subjects is to be converted out of 50 marks as sessional work (SW).
- Progressive evaluation is to be done by subject teacher as per the prevailing curriculum implementation and assessment norms.
- Code number for TH, PR, OR, TW are to be given as suffix 1, 4, 8, 9 respectively to the subject code.

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CD

Semester : Fourth

Subject Title : Microprocessor and Programming

Subject Code : 12109

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	02	03	100	50@	--	--	150

NOTE:

Two tests each of 25 marks to be conducted as per the schedule given by SBTE.

Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)

Rationale:

Microprocessor is brain of computer. Intel family is widely used all over the world. 8085 is the 8-bit CPU and 8086 is the 16-bit CPU. 8086 is the base of all upward developed processors. It is more powerful and efficient computing machine. It overcomes all major limitations of the previous processors. It is able to get interfaced with 8-bit, 16-bit systems. IBM PC is introduced in 1980 with 10MB hard disk, one double side double density floppy disk drive, KBD, monitor and asynchronous communications adapter.

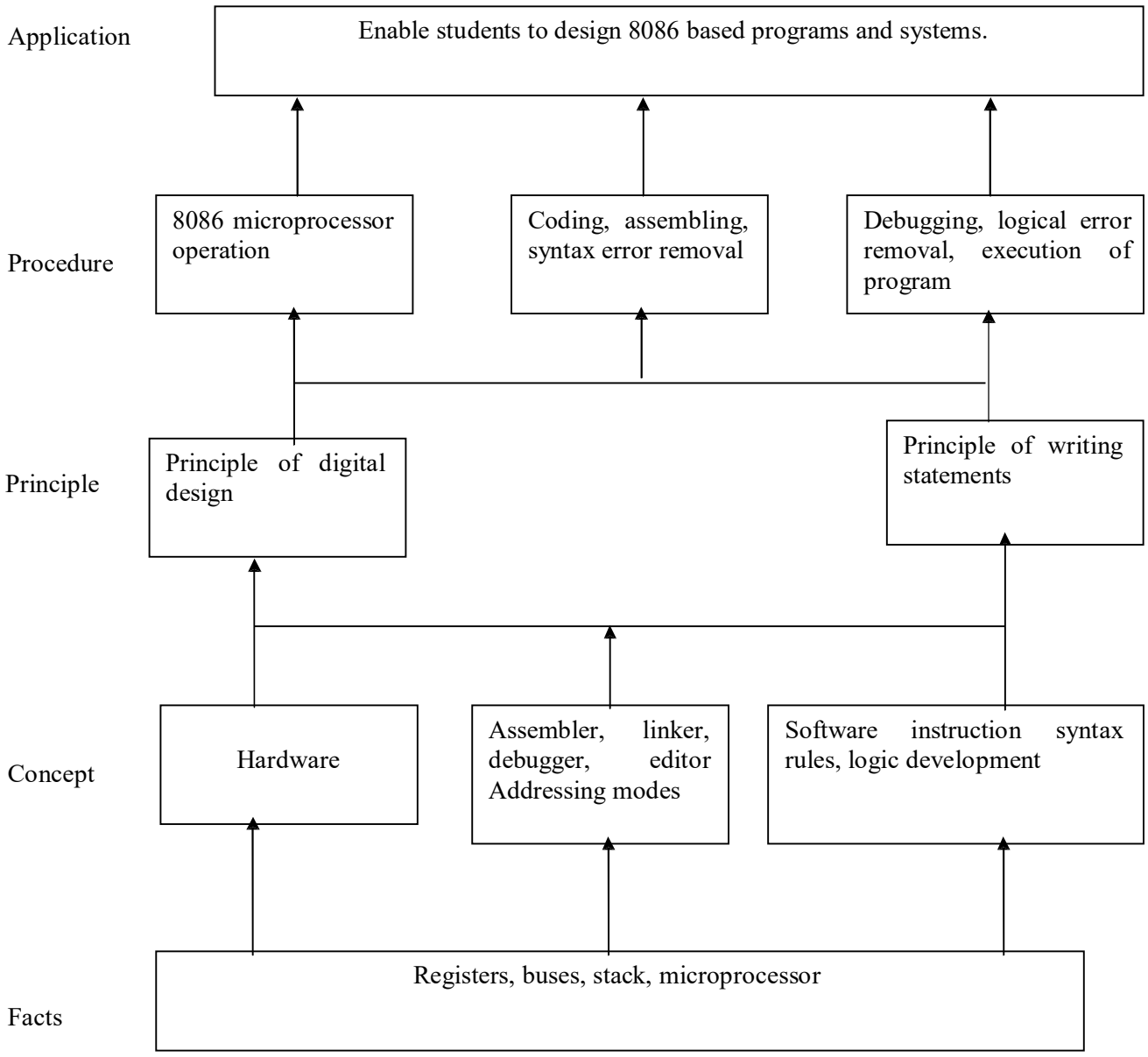
This subject covers Basics of 8085, architecture of 8086 along instruction set. It also covers interfacing with memory devices. This will act as base for the advanced microprocessor based design.

Objectives:

Students will be able to:

1. Draw block diagram for architecture of 8085.
2. Draw block diagram for architecture of 8086.
3. Describe concepts of pipelining segmentation and address generation.
4. Write syntax of given instructions.
5. Write the efficient Assembly Language Program for different problem statements.
6. Write the efficient Assembly Language Program using procedures and macros.
7. Design interface of memory chips.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	Basics of Microprocessor 1.1 Evolution of Microprocessor and types 1.2 Silent features of 8085 Microprocessor, architecture of 8085 (Block diagram), register organization, limitations of 8-bit Microprocessor.	04	08
02	16-bit Microprocessor 8086 2.1 Silent features of 8086 Microprocessor, architecture of 8086 (Block diagram, signal description), register organization, concepts of pipelining, memory segmentation and memory address generation. 2.2 Minimum and Maximum Mode operation and diagram	12	24
03	8086 Instruction set 3.1 Machine Language Instruction format, addressing modes 3.2 Instruction set (Arithmetic, logical, data transfer, bit manipulation, string, program control transfer, process control)	10	20
04	The art of assembly Language Programming 4.1 Program development steps defining problem, algorithms flowchart, initialization checklist, choosing instructions, converting algorithms to assembly language programs. 4.2 Assembly Language Programming Tools Editors, Assembler, Linker, Debugger. 4.3 Assembler directives, model of 8086 assembly language programming, programming using assembler.	12	24
05	Procedure and Macro 5.1 Defining Procedure (Directives used, FAR and NEAR, CALL and RET instructions) 5.2 Reentrant and Recursive procedures. 5.3 Defining Macros. 5.4 Assembly Language Programs using Procedure and Macros.	06	16
06	System Interfacing 6.1 Interfacing Techniques (I/O mapped I/O, Memory mapped I/O, memory and I/O addressing, 8086 addressing, and address decoding, memory interfacing As Even and Odd bank)	04	08
	Total	**48**	**100**

Practical:

Skills to be developed:

Intellectual skills

- Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as

Problem definition
Analysis
Design of logic
Coding
Testing
Maintenance (Modifications, error corrections, making changes etc.)

Motor skills

- Proper handling of Computer System.

List of Practical:

1) Basics of Assembler, linker, debugger, editor
2) Write an Assembly Language Program to
    - Add / Sub two 16 bit numbers.
    - Find sum of series of numbers.
    - Multiply two 16 bit unsigned/ signed numbers.
    - Divide two unsigned/ signed numbers (32/16 , 16/8, 16/16, 8/8)
    - Add / Sub / Multiply / Divide two BCD numbers.
    - Find smallest/ largest number from array of n numbers.
    - Arrange numbers in array in ascending/ descending order.
    - Perform block transfer data using string instructions / without using string instructions.
    - Compare two strings using string instructions / without using string instructions.
    - Display string in reverse order, string length, Concatenation of two strings.
    - Convert Hex to Decimal, Decimal to Hex.

Learning Resources:

1. Book

Sr. No	Name of Book	Author	Publication
1	Microprocessor & interfacing (programming & hardware)	Douglas V-Hall	Tata McGraw Hill
2	Advanced microprocessor & peripheral	A.K. Ray & K.M. Bhurchandi	Tata McGraw Hill
3	An introduction to the Intel family of Microprocessors	James L. Antonakos	Pearson Education Asia
4	Microprocessor Architecture programming & application with the 8085	Ramesh A. Gaonkar	Penfam International

2. Websites : www.intel.com
www.pcguide.com/ref/CPU
www.CPU-World.com/Arch/
www.techsource .com / engineering- parts/microprocessor.html
Demo lectures with power point presentations using LCD projector should be arranged to develop programming concepts of students.

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CD

Semester : Fourth Semester

Subject Title : Computer Networks

Subject Code : 12110

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
03	--	02	03	100	--	--	25@	125

NOTE:

Two tests each of 25 marks to be conducted as per the schedule given by SBTE.

Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)

Rationale:

Today is age of Information Technology. In many applications, we send information from one place to another place. So networking of computer is very essential. The many business applications like Railway reservation, Industrial sale, purchase, Industrial automation, on line Banking, E-business, E-Commerce and many applications. All this applications and many other require knowledge of computer network.

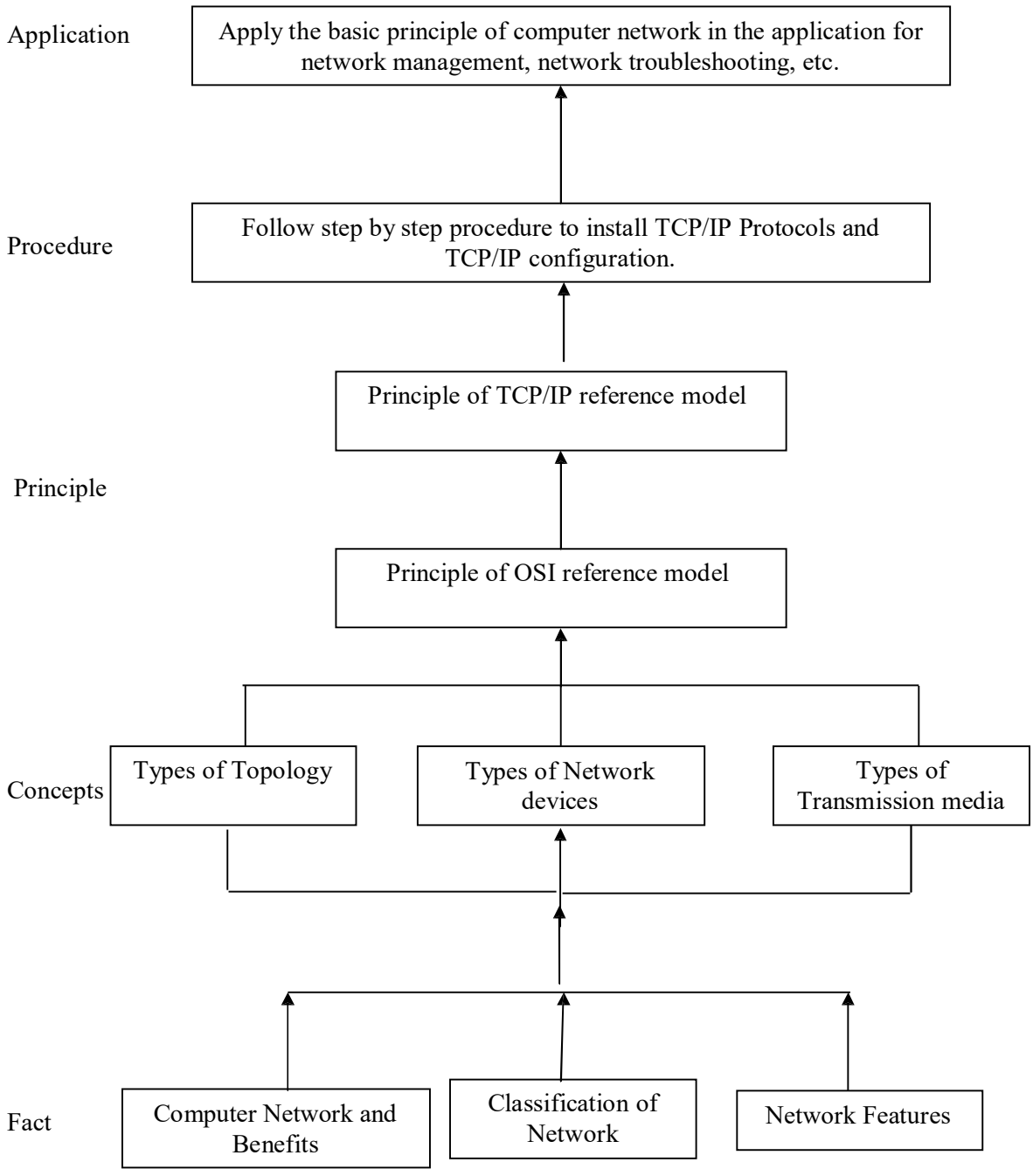
Computer network organize information from hundreds of offices spread over wide geo-graphical area and output remote information at a push of button. This gives type of network. Two or more computer interconnected through via copper wire, fiber optics, microwave, infrared and satellite i.e. wire and wireless communication.

Here we set basic concept of networking, its applications, topologies, communication media, network directing devices, protocol used, OSI reference model and TCP/IP model.

Objective: Students will be able to:

1. Identifying the benefits of network.
2. Distinguish between Network classifications.
3. Describe different types of Topology.
4. Describe different types of Network devices.
5. Compare different transmission media.
6. Compare OSI and TCP/IP model.
7. Configure TCP/IP.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	**Basic Network Concepts**: 1.1 Understanding Network - Human Networks; Computer Networks; Network Plan. 1.2 Identifying the Benefits of Network - Sharing Information; Sharing Resources; Facilitating Centralized Management – Managing Software, Maintaining the Network, Backing Up Data. 1.3 Distinguishing Between Network classifications - Classifying Networks by their Geography – LAN, MAN, WAN; Classifying Networks by their Component Role - Peer to Peer, Server based Network. 1.4 Network Features - File Sharing; Printer Sharing; Application Services; E-Mail; Remote Access.	10	22
02	**Network Topologies and Networking Devices**: 2.1 Type of Topology - Bus Topology; Ring Topology; Star Topology; Mesh Topology; Tree Topology; Hybrid Topology. 2.2 Network Control Devices -Hubs; Switches; Routers; Bridges; Repeaters; Gateways; Modems	10	22
03	**Transmission Media:** 3.1 Guided Media -Twisted Pair -UPT, STP; Coaxial Cable; Optical Fiber - Optical Fiber Structure, Light Source for Fiber, Propagation Mode, Advantages of optical fiber, Disadvantages of optical fiber. 3.2 Un-Guided Media: Wireless Communication – Communication Band; Microwave Communication; Satellite Communication – Access Method; Cellular (Mobile) Telephone – Band in Cellular Telephony, Calls Using Mobile Phones, Transmitting receiving operations; New Developments.	08	18
04	**Network Reference Model:** 4.1 OSI Reference Model - Interlayer Communication – Data Encapsulation, Horizontal Communication, Vertical Communication, Encapsulation Terminology; Physical layer; Data link layer; Network layer; Transport layer; Session layer; Presentation layer; Application layer. 4.2 TCP/IP Reference Model – Link; Internet; Transport; Application layer. 4.3 Comparison of the OSI and TCP/IP reference models.	12	22
05	**TCP/IP Fundamentals:** 5.1 TCP/IP Protocols - SLIP and PPP; ARP; IP; ICMP; TCP and UDP. 5.2 IP Addressing - IP Address Assignments; IP Address Classes; Subnet Masking; Registered and unregistered Addresses.	08	16
	Total	**48**	**100**

Practical:
Skills to be developed:

1) Intellectual skills
   Understanding of basics concept of network.
   Comparison of different network.
   Installation of protocols.
2) Motor skills
   - Proper handling of Computer System hardware.

LIST OF PRACTICAL:

1 To know your Network Lab
2 To connect Computers in different ways in a Local area Network (Topologies)
3 To connect and understand different network control devices used in a Local Area Network
4 To study transmission media.
5 To create a network cable using RJ-45 connectors.
6 To connect two hubs by creating crossover connection
7 To install a network interface card
8 To install TCP/IP protocol and configure advanced TCP/IP properties
9 To locate MAC address of Computer
10 To install a network printer
11 To deliver a 5 minutes seminar by each student on latest trends in Computer Networks
12 To arrange Industrial Visit to observe resource sharing

Learning Resources:

1. Books:

Sr. No.	Title	Author	Publication
01	Computer Networks	Andrew S. Tanenbaum	Tata McGraw-Hill Edition
02	Introduction to Networking	Richard A. McMohan, Sir	Tata McGraw-Hill Edition
02	Networking + Certification (Second Edition)	Microsoft Press	--
03	Complete Reference Networking	Craig Zacker	Tata McGraw-Hill Edition
04	Data Communication and Networking	Achyut S. Godbole	Tata McGraw-Hill Edition
05	Data Communication	Behrouz Forouzan	Tata McGraw-Hill Edition

2. CDs:

Book of Microsoft Certified Software Engineering (MCSE) of Microsoft Publication gives CD. Demonstration of this CD for understanding basic concept.

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CD

Semester : Fourth

Subject Title : Data Structure

Subject Code : 12111

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	04	03	100	50#	--	25@	175

NOTE:

Two tests each of 25 marks to be conducted as per the schedule given by SBTE.

Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)

Rationale:

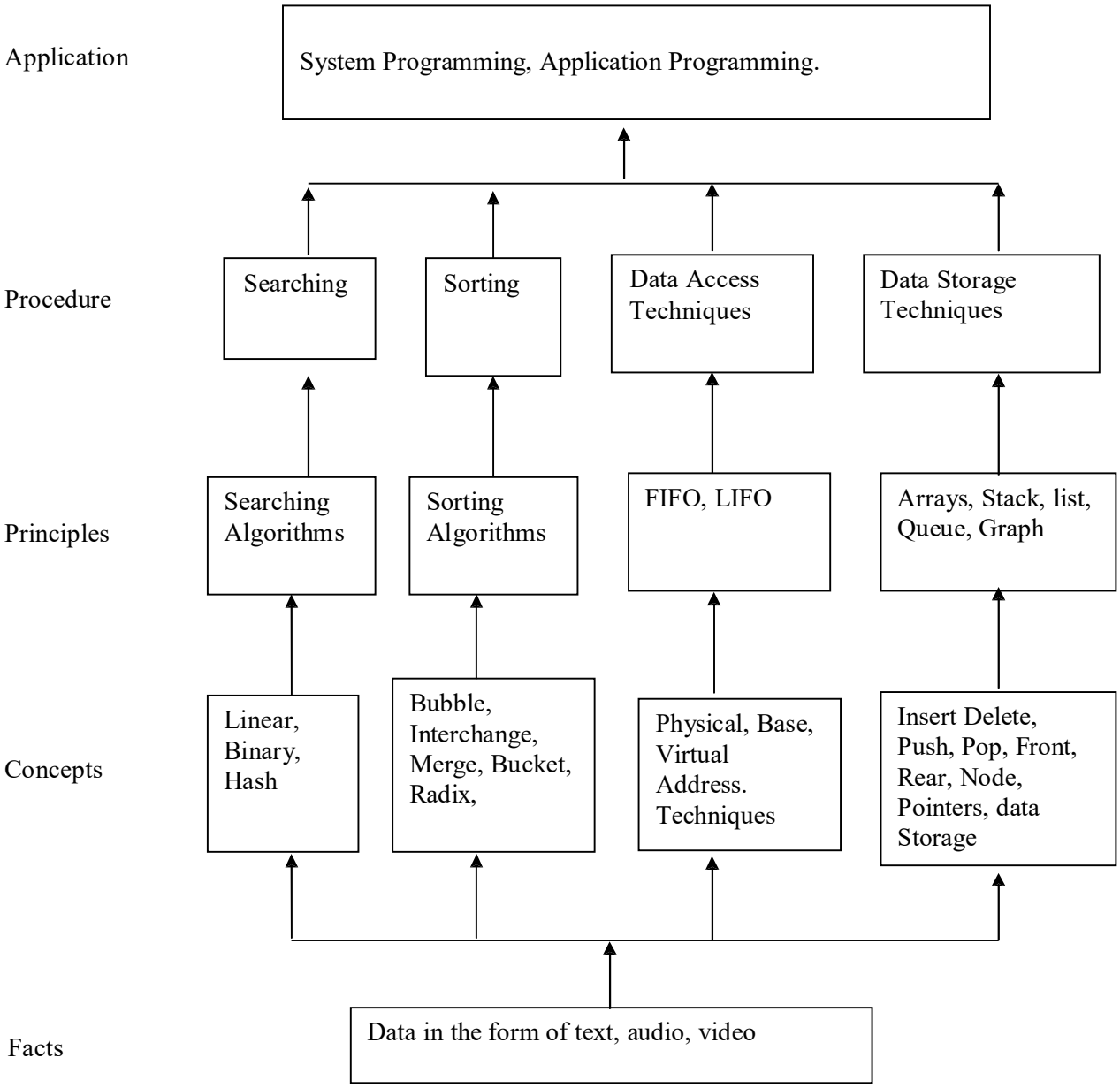
Data Structures is a subject of primary importance in Computer Science. Organizing or structuring data is important for implementation of efficient algorithms and program development. Efficient problem solving needs the application of appropriate data structures during program development.

Objectives:

Students will able to:

1. Understand different types of data structures.
2. Use the data structures stacks, queues, arrays, and lists in application programs.
3. Use the data structures trees, graphs in application programs.
4. Understand the applications of data structures in systems programming, database applications and programming languages.
5. Compare different implementations of data structures and to recognize the advantages and disadvantages of the different implementations.
6. Understand and apply sorting algorithms used in data structures such as bubble sort, insertion sort, selection sort, radix sort, merge sort and quick-sort.
7. Compare the efficiency of various sorting algorithms in terms of both time and space.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	Introduction to data structure: 1.1 Data Representation • Abstract data Types • Data Structures (Linear and Non- Linear) • Atomic Type 1.2 Data Types • Primitive data type • Derived data type 1.3 Operations on data structures • Traversing, Inserting, Deleting • Searching and sorting	02	08
02	Principles of programming and Analysis of Algorithms: 2.1 Algorithms • Different approaches for designing an algorithm • Complexity in terms of time and space • Big 'O' Notation	02	06
03	Searching & Sorting: 3.1 Sorting • An Introduction • Efficiency of Sorting Algorithms 3.2 Sorting Techniques • Bubble Sort • Selection Sort • Insertion Sort • Merge Sort • Radix Sort (only algorithm) • Shell Sort (only algorithm) • Quick Sort (only algorithm) 3.3 Searching • An Introduction • Linear search • Binary Search	08	16
04	Stacks: 4.1 Introduction to Stacks • Stacks as an Abstract Data Type • Primitive operations of stacks 4.2 Representation of Stacks through Arrays 4.3 Application of Stacks • Stack machines • Recursion • Arithmetic expression: Polish Notation	06	12
05	Queues: 5.1 Introduction • Queue as an Abstract Data Type • Representation of Queues 5.2 Operations on queue : Searching ,Insertion, Deletion. 5.3 Types of queues	06	12

	• Circular Queues • Priority Queue • Dequeues 5.4 Application of Queues		
06	Linked List: 6.1 Introduction • Terminologies Node, Address, Pointer, Information, Next, Null pointer, Empty list etc. 6.2 Operations on list Searching, Insertion and Deletion 6.3 Types of lists • Linear list • Circular list • Doubly list 6.4 Array, stacks, queues, implementation using list.	06	12
07	Trees: 7.1 Introduction to Trees 7.2 Types of Trees • General tree • Binary tree • Height balanced • Weight balanced • Binary search tree 7.3 Operations on Binary Search Tree • Insertion of node • Deletion of node • Traversal—Inorder, Preorder and Postorder • Searching-- Depth-first search and Breadth-first search	10	18
08	Graphs: 8.1 Introduction • Terminology graph, node (vertices), arcs (edge), directed graph, in-degree, out-degree, adjacent, successor, predecessor, relation, weight, path, length 8.2 Sequential Representation of Graphs 8.3 Linked Representation of Graphs 8.4 Traversal of Graphs • Depth-first search • Breadth-first search 8.5 Shortest Path algorithm for graph 8.6 Application of Graph	06	12
09	Hashing 9.1 Hash functions 9.2 Deleting items from hash tables	02	04
	Total	**48**	**100**

Practical:

Skills to be developed:

Intellectual skills:

- Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem

- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
  - Problem definition
  - Analysis
  - Design of logic
  - Coding
  - Testing
  - Maintenance (Modifications, error corrections, making changes etc.)

  Selection of appropriate data structures
  Selection of appropriate sorting and searching techniques

Motor skills:

- Proper handling of Computer System.

List of Practical:

Sr.No.	Practical
01	Programs based on: Array operations, insertion, deletion
02	Programs for implementing various sorting techniques. (Minimum three sorting techniques from topics mentioned in the syllabus))
03	Programs for implementing various sorting and searching techniques. (Minimum two searching techniques from topics mentioned in the syllabus.)
04	Programs based on Stacks Implementation of PUSH & POP operations, Evaluate postfix expressions, Infix to postfix conversions.
05	Recursive programs: factorial, fibonaci, Ackerman function, and tower of Hanoi. (Any two)
06	Programs for demonstrating queue operations (Minimum two).
07	Two programs based on Linked lists
08	Programs based on trees Creating a binary tree, in order, preorder and post order traversal of binary tree, deleting a node from binary tree.
09	Assignments based on graph theory.
10	Program based on hashing

Learning Resources:
Books

Sr. No.	Author	Title	Publisher
01	ISRD Group New Dehli	Data Structure Using C	Tata McGraw Hill
02	Tremblie and Sorrenson	Data Structures	TMH Publications
03	Lafore	Teach Yourself data Structure and Algorithms in 24 Hrs.	BPB Publication
04	Tannenbaum	Data Structures using C++	PHI Publication
05	Seymour Lipschutz	Data Structures	Tata McGraw Hill

Course Name : Computer Engineering Group

Course Code : CO/CM/CD

Semester : Fourth

Subject Title : Computer Graphics

Subject Code : 12112

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
03	--	02	03	100	--	25@	--	125

NOTE:

Two tests each of 25 marks to be conducted as per the schedule given by SBTE.

Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)

Rationale:

The computer is an information-processing machine. Almost every computer system is set up to allow the user to interact with the system through a graphical user interface, where information on the display screen is conveyed in both textual and graphical forms. Everyone should be aware of this rapidly expanding technology. The prerequisites of Computer Graphics are working knowledge of computer system.

Computer graphics is a complex and diversified technology. The output product of Computer graphics is a pictorial image. Hence the computer has become a new tool for the artist and animator. Computer graphics is an extremely effective medium for communication between man and machine through pictures, charts and diagrams. Thus the one can understand the information contents of a displayed diagram or perspective view much faster than the table of numbers.

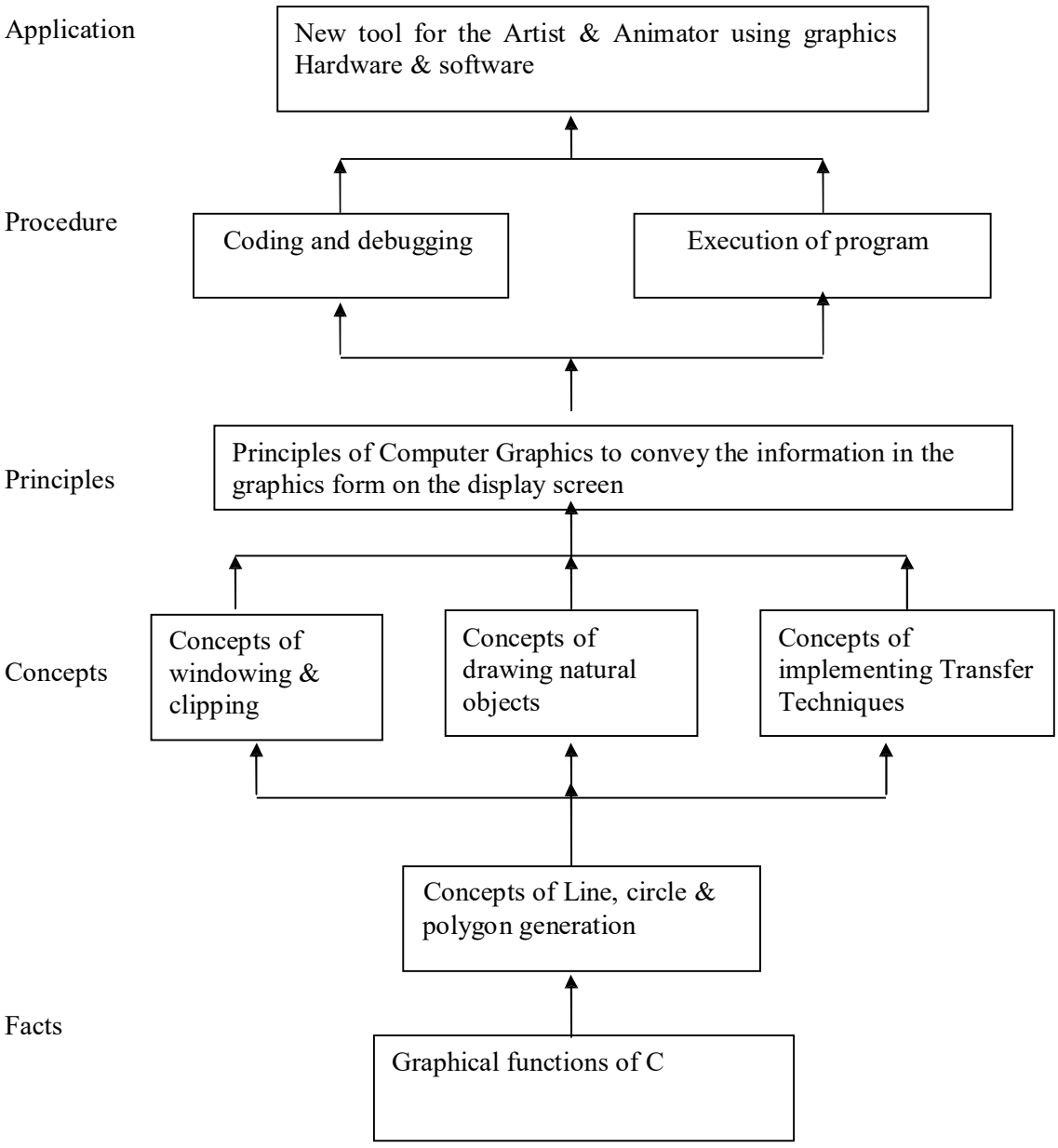
Computer graphics techniques can be used in many fields such as Engineering drawing, business graphs, architectural design and also for video games, which provides a new form of entertainment.

Objectives:

The students will be able

- To describe file structure of display & graphics file formats.
- To apply the algorithms to draw lines, circles and polygons.
- To use transformation techniques to scale, rotate and translate the object.
- To select the methods of enlarging visible portion of drawing
- To develop the logic for drawing the natural objects using different algorithms for curved lines
- To describe the fundamentals of raster graphics and interactive graphics.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	Basics of Computer Graphics Raster scan display: Frame buffers: - Rotating memory frame buffer - Shift register frame buffer - Random access frame buffer - Multiple plane frame buffer Display devices: Construction an Random scan display , working of following devices: CRT, Beam penetration CRT, Shadow mask CRT, DVST, Plasma panel, Liquid crystal display. Primitive operations: - moveto, lineto The Display-file interpreter, Display file structure, Graphics file formats: general explanation, advantages, disadvantages : - BMP - GIF - JPEG - TIFF - PCX Text mode graphics function, Graphic mode graphics functions, Shapes, colors, Co-ordinate systems, Applications of computer graphics	09	20
02	Line, circle, and polygon. Basic concepts in line drawing, Line drawing algorithms: DDA algorithms, Bresenham's algorithm Circle generating algorithms: Symmetry of circle, DDA circle drawing algorithm, Bresenham's circle drawing algorithm, midpoint circle algorithm Polygons – Types of polygons, Polygon representation, Entering polygons, inside –outside test, polygon filling: Flood fill, scan-line algorithm. Sample problems to illustrate above algorithms	11	22
03	Transformations 2D transformation: scaling, Reflection, shearing, Rotation, Translation, Rotation about an arbitrary point.. 3D Transformation: scaling, rotation, translation, rotation about arbitrary axis. Sample problems with sample coordinates to illustrate above algorithms	07	16
04	Windowing & clipping Viewing transformation, Normalization transformation Line clipping: Cohen-Sutherland, Line clipping algorithm, midpoint subdivision algorithm Polygon clipping: Sutherland – Hodgeman Polygon clipping algorithm. Sample problems with sample coordinates to illustrate above algorithms	08	16

05	Curves and fractals Curve generation: arc generation using DDA algorithm, Interpolation, B-Spline, Bezier curves: Properties, Cubic Bezier curves Fractals: Hilbert's Curve, Koch curve, Fractal lines, Fractal Surfaces.	09	18
06	Raster graphics and interactive graphics Need for graphics standards, Graphics standards: CORE GKS PHIGS IGES CGM VDI Advantages of Graphics standards, Hazards of Graphics standards. Graphical user interface : Introduction - Example - Features of GUI - Principles for good GUI design	04	08
	Total	**48**	**100**

Practical:
Skills to be developed:
Intellectual skills:

- Specifically develop the logic and algorithms for developing basic graphic software.
- Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
  Problem definition
  Analysis
  Design of logic
  Coding
  Testing
  Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:
Proper handling of Computer System

List of Practical:

1) Implement DDA algorithm for line drawing
2) Implement Bresennham's algorithm for line drawing.
3) Implement DDA algorithm for circle drawing
4) Implement Bresennham's algorithm of circle drawing.
5) Implement Flood fill algorithm for Polygon filling.
6) Implement scan-line algorithm for polygon filling.
7) Write Program for 2-D transformations -> scaling, Rotation,

8) Write Program for 2 D transformations shearing and Translation program
9) Write and implement program for rotation about an arbitrary point.
10) Implement Cohen- Sutherland algorithm for line clipping.
11) Implement mid point subdivision algorithm for line clipping.
12) Implement Sutherland-Hodgeman algorithm for polygon clipping.
13) Write a program to draw a curve using Bezier's algorithm.
14) Write a program to draw fractal lines.

List of Practical oriented Projects:

1) Oral geometry insertion for character animation (Develop a system to create an animatable mouth in head geometry)
2) Online storyboarding system (Create a system that will keep still images, text descriptions, sample animations, sample audio for each scene of an animation)

Learning Recourses:

1. Books:

Sr. No.	Book Title	Author	Publication
01	Computer Graphics	ISRD group	Tata McGraw Hill
02	Computer Graphics	A.P. Godse	Nirali Prakashan Technical Publications
03	Computer Graphics	Steven Harington	Mc Graw Hill
04	Computer Graphics	M.Pauline Baker & Donald Hearn	Prentice-Hall
05	Graphics Under 'C'	--	BPB
06	Principles of Interactive Computer Graphics	Newman and Sproull	Tata McGraw Hill
07	Computer Graphics	Plastock	Tata McGraw Hill

2. Websites:

1) www.insidecg.com
2) www.graphics.standard.edu
3) www.cmp.uea.ac.uk/research
4) www.computerarts.co.uk

3. Magazines:

1) Computer Graphics World
2) In-plant Graphics
3) Computer Arts

Demo lectures with power point presentations using LCD projector should be arranged to develop programming concepts of students.

Course Name : Computer Engineering Group

Course Code : CM/CO/IF/CD

Semester : Fourth

Subject Title : Computer Architecture and Maintenance

Subject Code : 12113

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	02	03	100	--	25#	25@	150

NOTE:

Two tests each of 25 marks to be conducted as per the schedule given by SBTE.

Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)

Rationale:

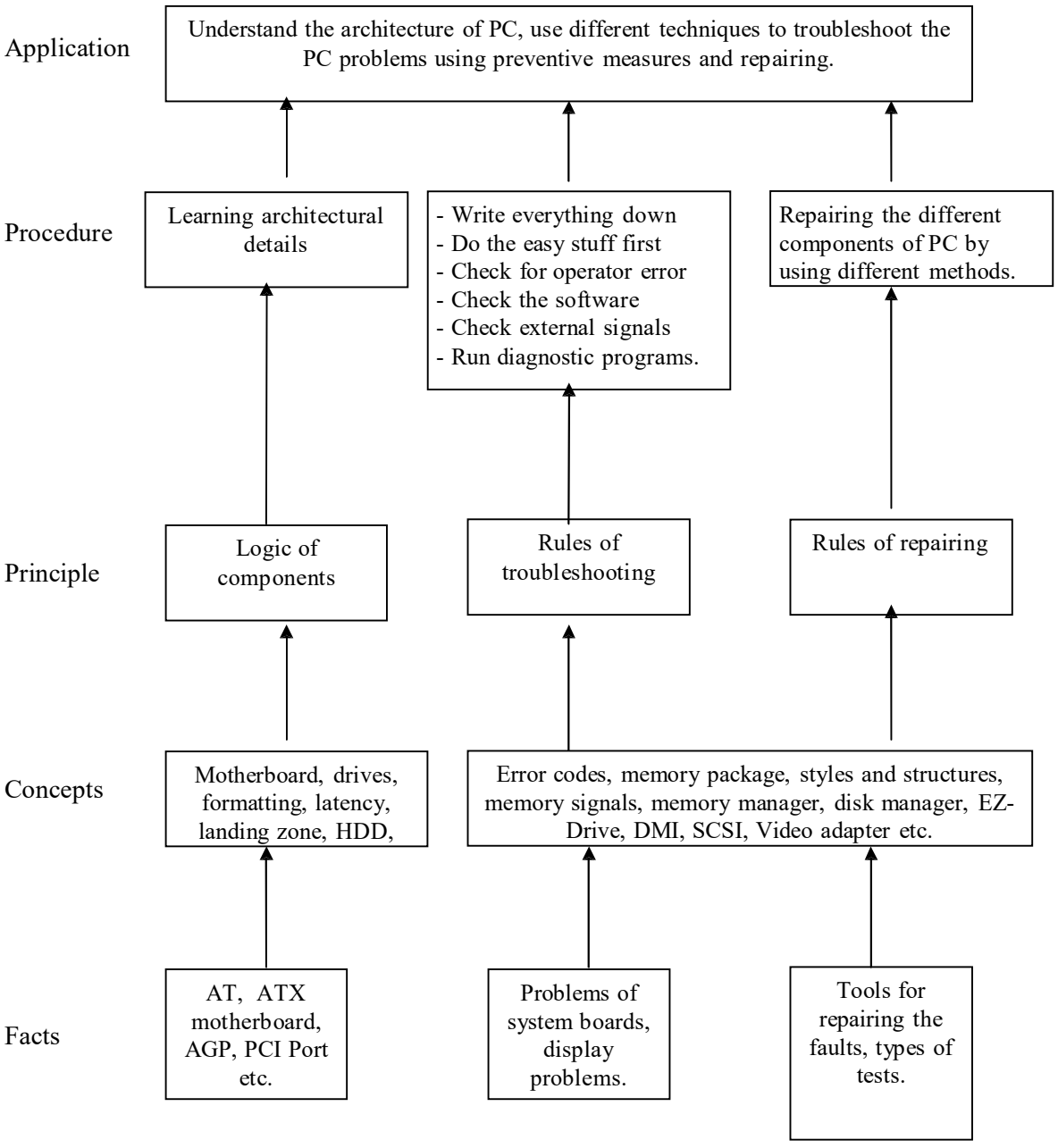
The aim of the subject is to teach the basic working of the computer motherboard, peripherals and add-on cards. The subject helps the students to do the maintenance of the Computer, peripherals and its add-on cards. The students will be able to select the proper peripheral as per their specification and requirement. This is the core subject. The pre-requisite of the subject is Microprocessor. The subject is practical oriented and will develop the debugging skills in the students.

Objectives:

The student will be able to:

1. Debug and repair the faults in system.
2. Assemble the system.
3. Load the operating system and device drivers in the system.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours	Marks
1	Motherboard And Its Components: 1.1 Chipset basic, chipset Architecture: North / South Bridge architecture and Hub architecture. 1.2 Architecture of Intel chipset 915 G & 945 G 1.3 Overview and features of ISA, PCI-X, PCI-X press, AGP, PCMCIA, AGP, Processor BUS (no pin description) PCI versus PCI Express 1.4 Logical memory organization: Conventional memory, Extended memory, Extended memory, upper memory (No memory map) 1.5 Concept of cache memory : Internal cache, External cache (L1, L2, L3 cache) 1.6 Overview and features of SDRAM, DDR, DDR2, DDR3 1.7 Features of Intel processors : Pentium, P2, Celeron, P3, P4, Pentium D and AMD processors : K6, Athlon XP, Athlon 64 1.8 Processor Modes : Real mode, Protected mode, Virtual real mode, 64 bit extension mode (AMD 64, EM 64) 1.9 Bios Basics, main functions 1.10 Motherboard Selection criteria	10	16
2	Storage Devices And Its Interfacing: 2.1 Recording Technique : FM, MFM, RLL Perpendicular magnetic recording 2.2 Hard disk construction and working 2.3 Servo Techniques : Wedge servo, Embedded servo, dedicated servo 2.4 Terms related to Hard Disk : Track, Sector cylinder, cluster, landing zone, MBR, Zone recording, write precompensation 2.5 Formatting, Low level formatting, High level formatting, partitioning 2.6 FAT basics, Introduction to file system FAT 16, FAT 32, NTFS 2.7 Hard disk drive interface : features of parallel AT attachment (PATA), Serial ATA (SATA), ATA devices jumper selections: Master, slave, cable select, ATA cables 2.8 ATA RAID : RAID 0, RAID 2.9 CDROM drive : Construction, Recording 2.10 DVD : Construction, Recording 2.11 Blu-ray disk specification	08	20
3	Display Devices & Interfacing: 3.1 CRT colour monitor : Block diagram and function of each block 3.2 Characteristics of CRT monitor : Dot pitch, Resolution, Video bandwidth, Horizontal scanning frequency, vertical scanning frequency, Interlaced versus non interlaced monitor 3.3 Advantages of CRT display related to LCD display 3.4 LCD monitor : functional block diagram of LCD monitor, working principal, advantages and disadvantages Types : Passive matrix and Active matrix, Important characteristics : Resolution, Refresh rate, Response time 3.5 Basic block diagram of a video accelerator care.	05	12
4	Input & Output Devices:	08	16

	Construction and Working 4.1 Keyboard : Types of keyswitches : Membrane, Mechanical, Rubber dome, Capacitive and interface 4.2 Mouse : Mechancial, Optomechanical, optical (New design) 4.3 Scanner : Flat bed, sheetfed, Handheld : Block diagram and specifications, OCR, TWAIN, Resolution, Interpolation 4.4 Modem : Internal and External : Block diagram and specifications 4.5 Printer : Dot matrix, Inkjet, Laser : Block diagram and specifactions.		
5	Power Supplies 5.1 Block diagram and working of SMPS. 5.2 Signal description and pinout diagram of AT and ATX connectors 5.3 Power supply characteristics : Rated wattage, Efficiency, Regulation, Ripple, Load regulation, Line reguation 5.4 Power problems : Blackout, Brownout, surges and spikes 5.5 Symptoms of power problems 5.6 Protection devices : circuit breaker, Surge suppressor : working UPS : Block diagram, working, Types, Ratings.	04	12
6	Interfaces: 6.1 SCSI, SCSI cables and connectors, SCSI drive configuration. 6.2 USB features 6.3 RS 232 : (voltages and 9 pin description) 6.4 Centronics (interface diagram, important signals and timing waveform) 6.5 Firewire features	05	12
7	PC Troubleshooting, Maintenance and Tools 7.1 Preventive Maintenance : Active, Passive, periodic maintenance procedure 7.2 Preventive maintenance of peripherals of PCs. 7.3 Fault finding and troubleshooting of the above peripherals 7.4 ESD (Electrostatic discharge), RFI protection, Earthing 7.5 Diagnostic software 7.6 Working of logic probe, logic pulser, current tracer 7.7 Block diagram and working of logic analyzar & CRO 7.8 Virus infection symptoms, precautions to prevent a virus infection	08	12
	TOTAL	**48**	**100**

PRACTICAL:

Skills to be developed**:**

Intellectual skills:

Understanding basic hardware of computer
Fault finding of input/output devices
Troubleshooting of input/output devices
Proper connection of input / output devices

Motor skills:

- Proper handling of Computer System hardware**.**

List of Practical:

1. Drawing the motherboard layout of Pentium IV and studying the chipset through data books or Internet.
2. CMOS setup of Pentium.
3. Hard Disk Partitioning.
4. Study of HDD: Identify various components of HDD and write their functions.
5. Study and installation of any one display cards: VGA or SVGA display cards.
6. Installation of Scanner, Printers and Modems.
7. Study of SMPS (ATX)
8. Study of Diagnostic Softwares. (Any one)
9. Fault findings:
   (a) Problems related to monitor.
   (b) Problems related to CPU.
10. Assembling of PC and Installation of Operating System.
11. Configuration of Client and Server PC, Laptop and Network components.
12. RS232C communication between two computers.

Learning Resources:
Books:

Sr. No.	Author	Title	Publisher
01	Mike Meyers, Scott Jernigan	Managing & Troubleshooting PCs	Tata McGraw Hill
02	Bigelow	Bigelow's Troubleshooting, Maintaining & Repairing PCs	Tata McGraw Hill
03	Mark Minasi	The Complete PC Upgrade & Maintenance Guide	BPB Publication
04	D. Balasubramanian	Computer Installation & Servicing	Tata McGraw Hill
05	Scott Muller	Upgrading & Repairing PCs	Techmedia

Course Name : Electronics, Electrical & Computer Engineering Group

Course Code : AA/CO/CM/CD/IF/EE/EP/DE/MU/EJ/ET/EX/EN/IE/IS/IC/IU/ED/EV/FC/ ML/SC/TX

Semester : Fourth

Subject Title : Development of Life Skills-II

Subject Code : 12041

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
01	--	02	--	--	--	25#	25@	50

Rationale:

In today's competitive world, the nature of organizations is changing at very rapid speed. In this situation the responsibility of diploma holder is not unique. He will be a part of a team in the organization. As such the individual skills are not sufficient to work at his best.

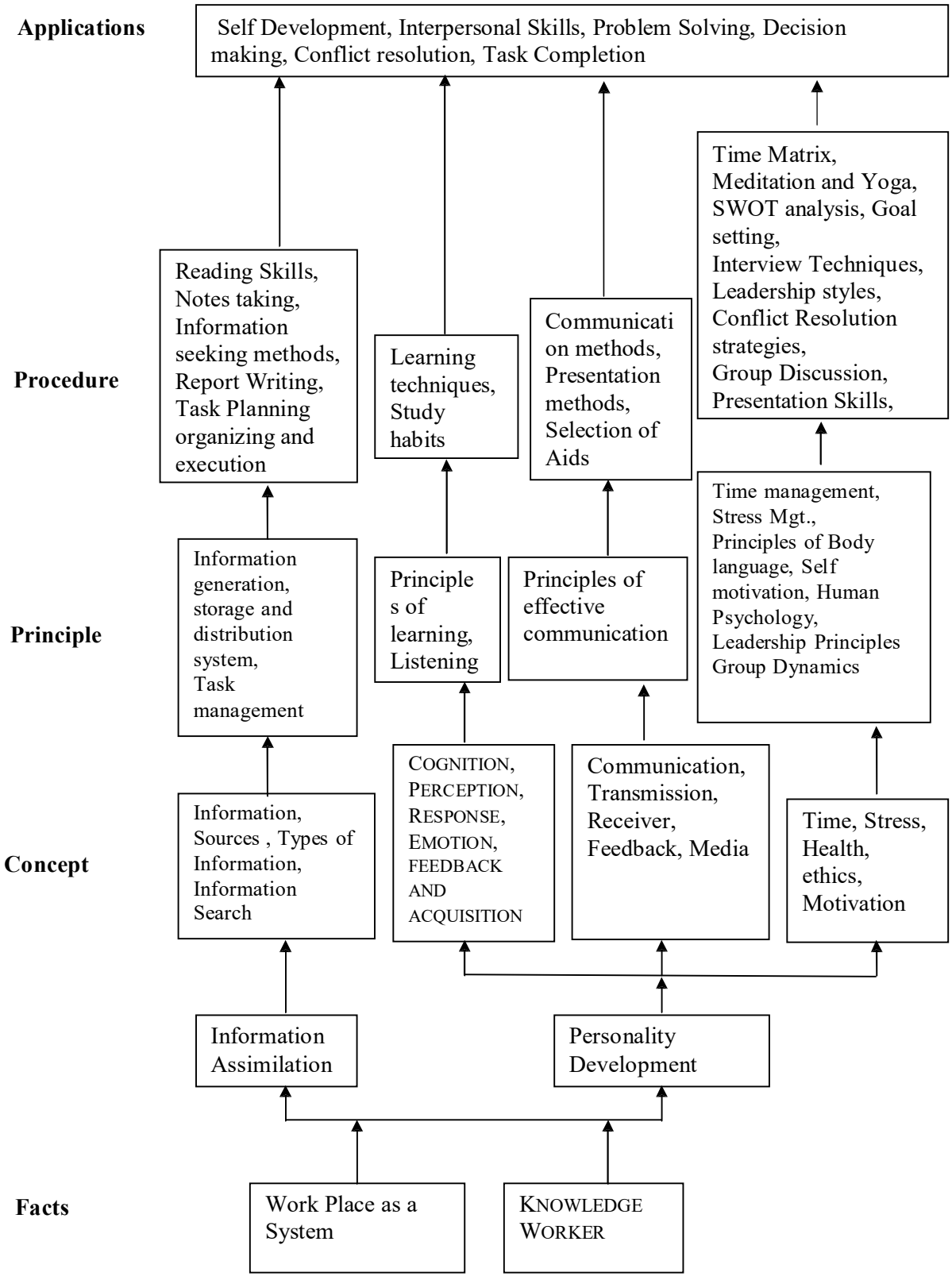
This subject will develop the student as an effective member of the team. It will develop the abilities and skills to perform at highest degree of quality as an individual as well as a member of core group or team. Such skills will enhance his capabilities in the field of searching, assimilating information, managing the given task, handling people effectively, solving challenging problems.

The subject is classified under human science.

Objectives: The students will be able to:

1. Developing working in teams.
2. Apply problem solving skills for a given situation.
3. Use effective presentation techniques.
4. Apply techniques of effective time management.
5. Apply task management techniques for given projects.
6. Enhance leadership traits.
7. Resolve conflict by appropriate method.
8. Survive self in today's competitive world.
9. Face interview without fear.
10. Follow moral and ethics.
11. Convince people to avoid frustration.

LEARNING STRUCTURE:



CONTENTS: Theory

Chapter	Name of the Topic	Hours
1	**SOCIAL SKILLS** Society, Social Structure, Develop Sympathy And Empathy.	01
2	Swot Analysis – Concept, How to make use of SWOT.	01
3	Inter personal Relation Sources of conflict, Resolution of conflict , Ways to enhance interpersonal relations.	02
4	Problem Solving **I)STEPS IN PROBLEM SOLVING,** 1) Identify and clarify the problem, 2) Information gathering related to problem, 3) Evaluate the evidence, 4) Consider alternative solutions and their implications, 5) Choose and implement the best alternative, 6) Review **II)Problem solving technique**.(any one technique may be considered) 1) Trial and error, 2) Brain storming, 3) Lateral thinking	02
5	**Presentation Skills** Body language -- Dress like the audience Posture, Gestures, Eye contact and facial expression. STAGE FRIGHT, Voice and language – Volume, Pitch, Inflection, Speed, Pause Pronunciation, Articulation, Language, Practice of speech. Use of aids –OHP,LCD projector, white board	03
6	**Group discussion and Interview technique** – Introduction to group discussion, Ways to carry out group discussion, Parameters— Contact, body language, analytical and logical thinking, decision making **INTERVIEW TECHNIQUE** Necessity, Tips for handling common questions.	03
7	**Working in Teams** Understand and work within the dynamics of a groups. Tips to work effectively in teams, Establish good rapport, interest with others and work effectively with them to meet common objectives, Tips to provide and accept feedback in a constructive and considerate way, Leadership in teams, Handling frustrations in group.	02
8	**Task Management** Introduction, Task identification, Task planning ,organizing and execution, Closing the task	02
	TOTAL	**16**

Contents: Practical -
List of Assignment: (Any Eight Assignment)

1) SWOT analysis:- Analyse yourself with respect to your strength and weaknesses, opportunities and threats. Following points will be useful for doing SWOT.
   a) Your past experiences,
   b) Achievements,
   c) Failures,
   d) Feedback from others etc.
2) Undergo a test on reading skill/memory skill administered by your teacher.
3) Solve the puzzles.
4) Form a group of 5-10 students and do a work for social cause e.g. tree plantation, blood donation, environment protection, camps on awareness like importance of cleanliness in slump area, social activities like giving cloths to poor etc. (One activity per group)
5) Deliver a seminar for 10-12 minutes using presentation aids on the topic given by your teacher.
6) Watch/listen an informative session on social activities. Make a report on topic of your interest using audio/visual aids. Make a report on the programme.
7) Conduct an interview of a personality and write a report on it.
8) Discuss a topic in a group and prepare minutes of discussion. Write thorough description of the topic discussed
9) Arrange an exhibition, displaying flow-charts, posters, paper cutting, photographs etc on the topic given by your teacher.

Note: - Please note that these are the suggested assignments on given contents/topic. These assignments are the guide lines to the subject teachers. However the subject teachers are free to design any assignment relevant to the topic. The **term work** will consist of any eight assignments.

Mini Project on Task Management: Decide any task to be completed in a stipulated time with the help of teacher. Write a report considering various steps in task management.

LEARNING RESOURCES:
BOOKS:

Sr. No	Title of the book	Author	Publisher
1	Adams Time management	Marshall Cooks	Viva Books
2	Basic Managerial Skills for All	E.H. Mc Grath , S.J.	Pretice Hall of India
3	Body Language	Allen Pease	Sudha Publications Pvt. Ltd.
4	Creativity and problem solving	Lowe and Phil	Kogan Page (I) P Ltd
5	Decision making & Problem Solving	by Adair, J	Orient Longman
6	Develop Your Assertiveness	Bishop , Sue	Kogan Page India
7	Make Every Minute Count	Marion E Haynes	Kogan page India
8	Organizational Behavior	Steven L McShane and Mary Ann Glinow	Tata McGraw Hill
9	Organizational Behavior	Stephen P. Robbins	Pretice Hall of India, Pvt Ltd

10	Presentation Skills	Michael Hatton (Canada – India Project)	ISTE New Delhi
11	Stress Management Through Yoga and Meditation	--	Sterling Publisher Pvt Ltd
12	Target setting and Goal Achievement	Richard Hale ,Peter Whilom	Kogan page India
13	Time management	Chakravarty, Ajanta	Rupa and Company
14	Working in Teams	Harding ham .A	Orient Longman

INTERNET ASSISTANCE

1. http://www.mindtools.com
2. http://www.stress.org
3. http://www.ethics.com
4. http://www.coopcomm.org/workbook.htm
5. http://www.mapfornonprofits.org/
6. http://www.learningmeditition.com http://bbc.co.uk/learning/courses/
7. http://eqi.org/
8. http://www.abacon.com/commstudies/interpersonal/indisclosure.html
9. http://www.mapnp.org/library/ethics/ethxgde.htm
10. http://www.mapnp.org/library/grp_cnfl/grp_cnfl.htm
11. http://members.aol.com/nonverbal2/diction1.htm
12. http://www.thomasarmstron.com/multiple_intelligences.htm
13. http://snow.utoronto.ca/Learn2/modules.html
14. http://www.quickmba.com/strategy/swot/

Course Name : Computer Engineering Group

Course Code : CO/CM/IF

Semester : Fourth

Subject Title : Professional Practices-IV

Subject Code : 12114

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
--	--	05	--	--	--	--	50@	50

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 attitude, in addition to basic technological concepts.

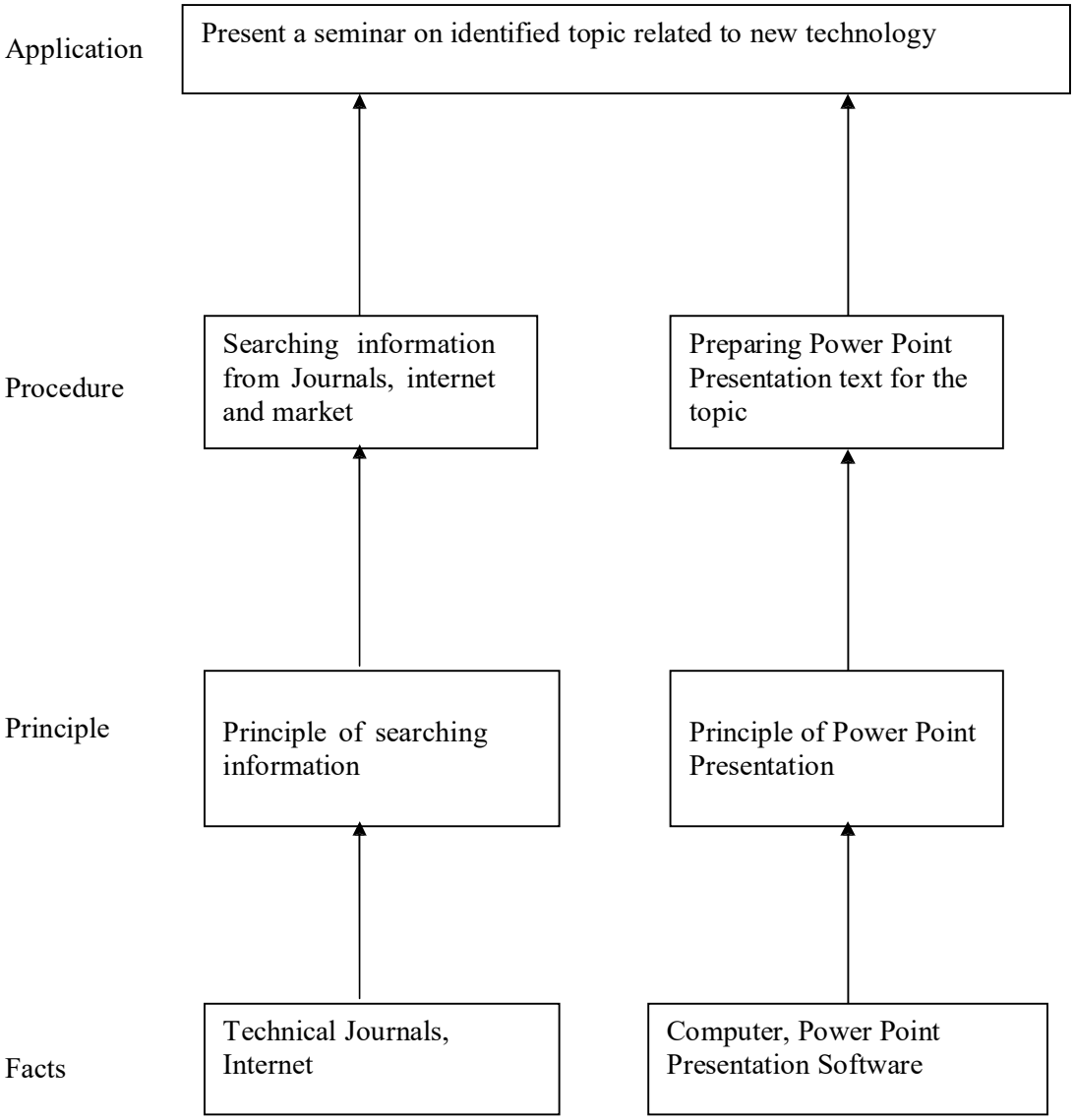
The purpose of introducing professional practices is to provide opportunity to students to undergo activities which will enable them to develop confidence. Industrial visits, expert lectures, seminars on technical topics and group discussion are planned in a semester so that there will be increased participation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

Learning Structure:



Activity	Content	Hours
01	**Industrial Visits** Structured industrial visits be arranged and report of the same should be submitted by the individual student, to form a part of the term work. The industrial visits may be arranged in the following areas / industries : 1) Telephone Exchange 2) District Level National Information Center(NIC) 3) Any other	21
02	**Lectures by Professional / Industrial Expert to be organized from any of the following areas:** i) Interview Techniques. ii) Cyber Laws iii) Nano Technology iv) Ethical Hacking v) Any other suitable topic	14
03	**Information Search :** Information search can be done through manufacturers, catalogue, internet, magazines; books etc. and submit a report. Following topics are suggested : i) Market survey of different processors. ii) Blue tooth Technology iii) Artificial Technology iv) Data ware-housing v) Cryptography vi) Digital signal processing vii) Bio-informatics viii) Any other suitable areas	12
04	**Seminar :** Each student shall submit a report of at least 10 pages and deliver a seminar (Presentation time – 10 minutes) Seminar topic i) Parallel Computing ii) Distributed Processing iii) Wireless communication iv) Virtual reality v) Embedded system vi) Computer security vii) Multimedia Techniques viii) Bio - Technology ix) Any other suitable topic	17
05	**Mini Project / Activities :** a) Web-site development b) Database related any topic c) System projects in VB like notepad, editors d) Animation projects using C, C++, VB etc e) Any other suitable topic	16
	Total	**80**