Lesson Plan for Even semester

Govt. Polytechnic, Ambala City

Name of the Faculty: Sh. Munish Gupta (Theory + Pract.) & Dharamvir Saini (Practical)

Discipline: Computer Engg.

Semester: 4th

Subject: DATA STRUCTURES USING 'C'

Lesson Plan Duration: 15 weeks (from January, 2020 to April, 2020)

Work Load (Lecture/ Practical) per week (in hours): Lectures- 03, Practicals-06

Week	Theory		Practical	
	Lecture day	Topic (including assignment/ test)	Practical day	Topic
1st	1	1.1 Problem solving concept, top down and bottom up design, structured programming	1st	Introduction to „C" language and data structures for practical exercises
	2	1.2 Concept of data types, variables and constants 1.3 Concept of pointer variables and constants	2nd	Input /Output statements in C, Various Header Files in C
	3	Introduction to data Structure(Linear, Non Linear, Primitive, Non Primitive)		
2nd	4	Concepts of Data Structure(Array, Linked List, Stack, Queue, Trees, graphs)	3rd	The addition of two matrices using functions
	5	Revision of previous chapter, Assignment and class test.		
	6	Concept of Arrays 2.2 Single dimensional array 2.3 Two dimensional	4th	Checking and Testing of Syllabus Program No 1

		array: Representation of Two dimensional Array(Base Address, LB, UB)		
3rd	7	Operations on arrays with Algorithms for searching	5th	The multipication of two matrices using functions
	8	Operations on arrays with Algorithms for traversing		
	9	Operations on arrays with Algorithms for inserting	6th	Checking and Testing of Syllabus Program No 2.
4th	10	Operations on arrays with Algorithms for deleting	7th	Push and pop operation in stack
	11	Revision of previous chapter, Assignment and class test		
	12	Introduction to linked list and double linked list	8th	Checking and Testing of Syllabus Program No 3
5th	13	Representation of linked lists in Memory, Comparison between Linked List and Array	9th	Conversion from in-fix notation
	14	Traversing a linked list 3.4 Searching linked list		
	15	Insertion and deletion into linked list (At first Node, Specified Position, Last node 3.6 Application of linked lists	10th	Checking and Testing of Syllabus Program No 4
6th	16	Doubly linked lists 3.8 Traversing a doubly linked lists	11th	The factorial of a given number using recursion
	17	Insertion and deletion into doubly linked lists		
	18	Revision of previous	12th	Checking and

		chapter, Assignment and class test		Testing of Syllabus Program No 5.
7th	19	Introduction to stacks 4.2 Representation of stacks with array and Linked List	13th	Insertion and Deletion of elements in queue using pointers
	20	Implementation of stacks	14th	Checking and Testing of Syllabus Program No 6.
	21	Application of stacks - Polish Notations - Converting Infix to Post Fix Notation - Evaluation of Post Fix Notation - Tower of Hanoi		
8th	22		15th	Insertion and Deletion of elements in circular queue using pointers
	23	Recursion: Concept and Comparison between recursion and Iteration 4.6 Introduction to queues	16th	Checking and Testing of Syllabus Program No 7.
	24	Implementation of queues (array and Linked List with algorithm)		
9th	25	Circular Queues	17th	Insertion and Deletion of elements in linked list
	26	De-queues		
	27	Revision of previous chapter, Assignment and class test	18th	Checking and Testing of Syllabus Program No 8.
10th	28	Concept of Binary Trees (Complete, Extended Binary Tree)	19th	Insertion and Deletion of elements in doubly linked list
	29			
	30	Concept of representation of Binary Tree	20th	Checking and Testing of Syllabus Program No 9.
11th	31	Concept of balanced Binary Tree	21th	The linear search procedures to search an element in a given list
	32	Traversing Binary		

	33	Trees (Pre order, Post order and In order)	22th	Checking and Testing of Syllabus Program No 10.
12th	34		23th	The binary search procedures to search an element in a given list
	35	Searching, inserting and deleting in binary search trees		
	36		24th	Checking and Testing of Syllabus Program No 11.
13th	37	Revision of previous chapter, Assignment and class test	25th	The bubble sort techniques
	38	Introduction of Sorting and Searching	26th	Checking and Testing of Syllabus Program No 12.
	39	Search algorithm (Linear and Binary)		
14th	40		27th	The selection sort techniques
	41	Concept of sorting		
	42	Bubble Sort, Insertion Sort	28th	Checking and Testing of Syllabus Program No 13.
15th	43	Selection Sort, Merge Sort	29th	Revision and test of practicals.
	44	Radix Sort, Heap Sort		
	45	Revision of previous chapter, Assignment and class test	30th	Revision and test of practicals.

LESSON PLAN

Name	**Mr. Ajay Singh**			
Disciplin	**Computer Engineering, Govt. Polytechnic, Ambala City**			
Semester	**4th**			
Subject	**Object Oriented Programming using Java**			
Duration	**16 WEEKS(January 2020 -April 2020)**			
Work Load	**Lecture**	**3 Lecture per week (I hour /day)**		
	Practica	**6 hours Lab per week (3 hours/day)**		
Week	**Theory**		**Practical**	
	Day	**Topic**	**Day**	**Topic**
1st	1st	Fundamentals of object oriented programming :procedure oriented programming Vs. object oriented programming (OOP)	1st	Creating Classes and Objects
	2nd	Object oriented programming concepts – Classes, object	2nd	Practice Classes and Objects
	3rd	object reference, abstraction, encapsulation, inheritance, polymorphism		
2nd	4th	Introduction of eclipse (IDE) for developing programs in Java	1st	Practice Classes and Objects
	5th	Review of constructs of C used in JAVA : variables, types and type declarations	2nd	Practice Classes and Objects
	6th	data types, pointers		
3rd	7th	Functions, structure and unions	1st	Practice Classes and Objects
	8th	increment and decrement operators,	2nd	Practice Classes and Objects
	9th	relational and logical operators		
4th	10th	if then else clause, conditional expressions	1st	Practice Classes and Objects
	11th	input using scanner class and output statement	2nd	Practice Classes and Objects
	12th	input using scanner class and output statement		
5th	13th	loops, switch case,	1st	Experiment 1 of Practical List
	14th	arrays, methods	2nd	Continue Previous Experiment
	15th	Creation of class and objects, accessing class members		
6th	16th	Private data members and functions	1st	Continue Previous Experiment
	17th	Public data members and functions	2nd	Practice Classes and Objects
	18th	Protected data members and functions ,Default data members and functions		
7th	19th	Comparision: Private Vs Public Vs Protected Vs Default	1st	Practice Classes and Objects
	20th	Constructors, Destructors	2nd	Experiment 2 of Practical List
	21st	Object & Object Reference		
8th	22nd	Definition of inheritance and its types	1st	Experiment 3 of Practical List
	23rd	protected data, private data, public data	2nd	Continue Previous Experiment
	24th	constructor chaining, order of invocation of constructors and destructors		
9th	25th	Class test of Inheritance of constructors and destructors	1st	Practice Inheritance examples
	26th	types of inheritance	2nd	Experiment 4
	27th	single inheritance, multilevel inheritance		

10th	28th	hierarchical inheritance	1st	Practice Inheritance examples
	29th	hybrid inheritance	2nd	Experiment 6
	30th	Class test of Inheritance		
11th	31st	Introduction to polymorphism and its types: Run-time and	1st	Experiment 7
	32nd	Uses of Polymorphism	2nd	Experiment 8
	33rd	Method & constructor overloading, method overriding		
12th	34th	up-casting and down-casting	1st	Experiment 8
	35th	practicing polymorphsim examples	2nd	Practice Inheritance examples
	36th	Revision and problem		
13th	37th	Key points of Abstract class	1st	Practice abstract Class
	38th	Key points of Interface	2nd	Practice Interface
	39th	difference between an abstract class & interface		
14th	40th	Multiple inheritance in Java	1st	Experiment 9
	41st	Need of Interface	2nd	Experiment 9
	42nd	implementation of multiple inheritance through interface		
15th	43rd	Definition of exception handling	1st	Experiment 10
	44th	Why Exception handling needed? Introduction to try & catch	2nd	Experiment 10
	45th	implementation of keywords like try, catch		
16th	46th	implementation of finally, throw & throws	1st	Practice Exception handling programs
	47th	Revision of Try , Catch , Finally, Throw and throws	2nd	Practice Exception handling programs
	48th	importance of exception handling in practical implementation of live projects		

Lesson Plan for Even semester

Govt. Polytechnic, Ambala City

Name of the Faculty: Dharmvir Saini

Discipline: Computer Engineering

Semester: 4th

Subject: COMPUTER ORGANIZATION

Lesson Plan Duration: 15 weeks (from January, 2020 to April, 2020)

Work Load (Lecture/ Practical) per week (in hours): Lectures- 04

Week	Theory		Practical	
	Lecture day	**Topic (including assignment/ test)**	**Practical day**	**Topic**
1st	1st	Introduction to basic Hardware organization of computer system		
	2nd	CPU organization : general register organization		
	3rd	CPU organisation: stack organization		
	4th	Introduction to instruction and their formats		
2nd	5th	Types of instructions like three address, two address, one address, zero address		
	6th	Introduction to CPU Addressing		
	7th	Introduction to different types of Addressing modes		
	8th	Immediate, register, direct, in direct, relative, indexed addressing modes.		
3rd	9th	CPU Design : Micro programmed vs hard wired control		

	10th	Introduction to different instruction set computers		
	11th	CISC characteristics, RISC characteristics, and their comparison.		
	12th	Assignment & revision of 1st Chapter		
4th	13th	Introduction to different types of memory and Memory organization		
	14th	Memory Hierarchy		
	15th	RAM and ROM chips,		
	16th	Memory address map and mapping schemes		
5th	17th	Memory connections to CPU		
	18th th	Brief about Auxiliary memory		
	19	Introduction to Magnetic disks		
	20th	Brief about Magnetic tapes		
6th	21st	Introduction to Associative memory		
	22nd th	Brief about Associative memory		
	23	Introduction to Cache memory		
	24th	Brief about Cache memory		
7th	25th	Introduction to Virtual memory		
	26th	Brief about Virtual memory		
	27th	Revision of All types of memory in detail		
	28th	Basics Memory management hardware		
8th	29th	Brief about Memory management		

		hardware		
	30th	Assignment & revision of 2nd Chapter		
	31st	Test Chapter 1 and revision		
	32nd	Test Chapter 2 and revision		
9th	33rd	I/O organization of a computer		
	34th th	Basis Input output system(BIOS)		
	35	Function of BIOS		
	36th	Testing and initialization of BIOS		
10th	37th	Configuring the system with BIOS		
	38th	Different Modes of Data Transfer		
	39th	Brief about Programmed I/O Data Transfer		
	40th	Brief about Synchronous		
11th	41st	Brief about asynchronous Data Transfer		
	42nd	Brief about interrupt initiated Data Transfer		
	43rd	Brief about DMA data transfer		
	44th	Difference between the different types of data transfer		
12th	45th	Assignment & revision of 3rd Chapter		
	46th	Introduction to Architecture of multiprocessor systems		
	47th	Different forms of parallel processing		
	48th	Introduction to Parallel processing and pipelines		
13th	49th	Basic characteristics		

		of multiprocessor		
	50th	Brief about General purpose multiprocessors		
	51st	Introduction to Interconnection networks		
	52nd	Brief about time shared common bus		
14th	53rd	Brief about Multi port memory		
	54th	cross bar switch		
	55th	Introduction to multi stage switching networks		
	56th	hyper cube structures		
15th	57th	Assignment & revision of 4h Chapter		
	58th	Test of unit 4th		
	59th	Revision of ALL chapters		
	60th	Revision along with problem solving session		

Lesson Plan (Even Semester)

Name of the Faculty : **Krishan Singh**

Discipline : **Computer Engg.**

Department : **Computer Engg.**

Semester : **4**th

Subject : DataBase Management System

Lesson Plan Duration : 15 weeks (from january, 2020 to April, 2020)

****Work load (Lecture / Practical) per week(in hours): Lectures-03, practicals -03**

Week	Theory		Practical	
	Lecture day	Topic (Including assignment / test)	Practical	Topic
1st	1st	**1. Introduction:** Database Systems; Database and its purpose, Characteristics of the database approach, Advantages and disadvantages of database systems	1st	Exercises on creation and modification of structure of tables.
	2nd	Classification of DBMS Users; Actors on the scene, Database Administrators, Database Designers, End Users, System Analysts and Application Programmers,		
	3rd	Workers behind the scene (DBMS system designers and implementers, tool developers, operator and maintenance personnel)		
2nd	4th	**2. Database System Concepts and Architecture :** Data models, schemas, instances, data base state. DBMS Architecture; The External level, The conceptual level, The internal level, Mappings.	2nd	Exercises on creation and modification of structure of tables.
	5th	Data Independence; Logical data Independence, Physical data Independence. Database Languages and Interfaces; DBMS Language, DBMS Interfaces.		
	6th	Classification of Database Management Systems- Centralized, Distributed, parallel and object based.		
3rd	7th	**3. Data Modeling using E.R. Model (Entity Relationship Model)** Data Models Classification; File based or primitive models	3rd	Exercises on inserting and deleting values from tables.
	8th	Traditional data models, semantic data models		
	9th	Entities and Attributes, Entity types and Entity sets, Key attribute and domain of attributes,		
4th	10th	Relationship among entities, Database design with E/R model.	4th	Exercises on inserting and deleting values from tables.
	11th	**4. Relational Model:** Relational Model Concepts: Domain, Attributes, Tuples cardinlity,		
	12th	Keys(Primary, Secondary, foreign, alternative keys) and Relations.		
5th	13th	Relational constraints and relational database schemes; Domain constraints,	5th	Exercises on querying the table (using select command).
	14th	Key constraints and constraints on Null.		
	15th	Relational databases and relational database schemes,		
6th	16th	Entity integrity, referential integrity and foreign key.		

Week	Lecture day	Topic (Including assignment / test)	Practi cal	Topic
	17th	Comparison b/w E/R model and Relational model.	6th	Exercises on querying the table (using select command).
	18th	**5. Normalization :**Trivial and non-trivial dependencies.		
7th	19th	Non-loss decomposition and functional dependencies	7th	Exercises on using various types of joins.
	20th	First, Second normal form		
	21st	Third normal forms, Boyce/Codd normal form, denormalization		
8th	22nd	**6. Database Access and Security:** Creating and using indexes	8th	Exercises on using various types of joins.
	23rd	Creating and using indexes		
	24th	Creating and using views.		
9th	25th	Creating and using views.	9th	Exercises on using functions provided by database package.
	26th	Database security, process controls, database protection		
	27th	Grant and revoke		
10th	28th	**7. MYSQL/SQL (Structured Query Language)** SQL* DDL (Data Definition Languages): Creating	10th	Exercises on using functions provided by database package.
	29th	Creating a table with data from another table		
	30th	Creating a table with data from another table		
11th	31st	Inserting values into a table,	11th	Exercises on commands like Grant, Revoke, Commit and Rollback etc.
	32nd	Updating columns of a Table,		
	33rd	Deleting Rows, Dropping a Table		
12th	34th	DML (Data Manipulation Language): Database Security and	12th	Exercises on commands like Grant, Revoke, Commit and Rollback etc.
	35th	Grant and Revoke Command, Maintaining Database Objects,		
	36th	Commit and Rollback		
13th	37th	Various types of select commands	13th	Design of database for any application.
	38th	Various types of select commands		
	39th	Various types of joins		
14th	40th	Various types of joins	14th	Design of database for any application.
	41st	Sub query		
	42nd	Aggregate functions		
15th	43rd	Aggregate functions, Challenges of My SQL.	15th	Design of database for any application.
	44th	Introduction to Big Data.		
	45th	Understanding Big Data with samples.		

Lesson Plan for Even semester

Govt. Polytechnic, Ambala City

Name of the Faculty: Smt. Amrita Saini + Ms. Payal

Discipline: Computer Engineering

Semester: 4th

Subject: Microprocessors and Peripheral Devices

Lesson Plan Duration: 15 weeks (from January, 2020 to April, 2020)

Work Load (Lecture/ Practical) per week (in hours): Lect- 03 Pract-06

Week	Theory		Practical	
	Lecture day	**Topic (including assignment/ test)**	**Practical day**	**Topic**
1st	1st	Typical organization of a microcomputer system.	1st	A brief history of Microprocessor. How Microprocessor works and its various features.
	2nd	Functions of its various blocks.		
	3rd	Microprocessor and its evolution.		
	4th	Function and impact of microprocessor on modern society.		
2nd	5th	Concept of Bus.	2nd	Familiarization of different keys of 8085 microprocessor kit.
	6th	Bus organization of 8085.		
	7th	Functional block diagram of 8085 and function of each block.		
	8th	Pin details of 8085 and related signals.		
3rd	9th	Demultiplexing of address/data bus generation of read/write control signals.	3rd	Familiarization of memory map of 8085.
	10th	Steps to execute a stored Programme.		

	11th	Instruction cycle, machine cycle and T-states.		
	12th	Fetch and execute cycle.		
4th	13th	Revision and assignments	4th	Steps to enter data/program on 8085 kit.
	14th	TEST		
	15th	Brief idea of machine and assembly languages, Machines and Mnemonic codes, Instruction format and Addressing mode.		
	16th	Identification of instructions as to which addressing mode they belong.		
5th	17th	Concept of Instruction set and Explanation of the instructions of the following groups of instruction set.	5th	Steps to modify data/program on 8085 kit
	18th	Data transfer group		
	19th	Revision and assignments		
	20th	TEST		
6th	21st	Arithmetic Group, Logic Group	6th	Steps to execute a programme on 8085 kit.
	22nd	Stack, I/O and Machine Control Group		
	23th	Revision and assignments		
	24th	TEST		
7th	25th	Programming exercises in assembly language	7th	Writing and execution of ALP for addition of two 8 bit numbers.
	26th	Concept of memory		

		mapping		
	27th	Partitioning of total memory space		
	28th	Revision and assignments		
8th	29th	Revision and assignments	8th	Writing and execution of ALP for subtraction of two 8 bit numbers.
	30th	TEST		
	31st	Address decoding		
	32nd	Concept of peripheral mapped I/O		
9th	33rd	Concept of memory mapped I/O	9th	Writing and execution of ALP for multiplication and division of two 8 bit numbers.
	34th	Interfacing of memory mapped I/O devices		
	35th	Revision and assignments		
	36th	TEST		
10th	37th	Concept of interrupt	10th	Writing and execution of ALP for arranging 10 numbers in ascending/descending order.
	38th	Maskable and non-maskable		
	39th	Edge triggered and level triggered interrupts		
	40th	Software interrupt		
11th	41st	Restart interrupts and its use	11th	Writing and execution of ALP for 0 to 9 BCD counters (up/down counter according to choice stored in memory).
	42nd	Various hardware interrupts of 8085		
	43rd	Servicing interrupts		
	44th	Revision and assignments		
12th	45th	extending interrupt system	12th	Interfacing exercise on 8255 like LED display control and 8253 programmable interval timer.
	46th	Concept of programmed I/O operations		
	47th	synchronous data transfer, asynchronous data		

		transfer (hand shaking)		
	48th	Interrupt driven data transfer		
13th	49th	DMA	13th	Interfacing exercise on 8279 programmable KB/display interface like to display the hex code of key pressed on display.
	50th	Serial output data, Serial input data		
	51st	8255 PPI		
	52nd	8253 PIT		
14th	53rd	8257 / 8237 DMA controller,	14th	Use of 8085 emulator for hardware testing.
	54th th	Programmable KB/Display Interface,		
	55	8251 Communication Interface Adapter.		
	56th	Revision and assignments		
15th	57th	Revision and assignments	15th	Revision and Problem Solving.
	58th	Revision and assignments		
	59th	Revision and assignments		
	60th	Revision and assignments		