J. B. INSTITUTE OF ENGINEERING AND TECHNOLOGY

Course Plan

For

Data Structures

I B. Tech(CSE)	II SEMESTER	ACADEMIC YEAR	2015-16

V.Padma

Assistant Professor

	COURSE PLAN	2015-16
		Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering

1. TARGET

a) Percentage Pass **90**

b) Percentage I class **75**

2. COURSE PLAN

(Please write how you intend to cover the contents: i.e., coverage of Units by lectures, guest lectures, design exercises, solving numerical problems, demonstration of models, model preparation, or by assignments, etc.)

By lectures,design excersises,assignments

3. METHOD OF EVALUATION

3.1. ☐ Continuous Assessment Examinations (CAE 1, CAE 2)

3.2. ☐ Assignments / Seminars

3.3. ☐ Mini Projects

3.4. ☐ Quiz

3.5. ☐ Term End Examination

3.6. ☐ Others

4. List out any new topic(s) or any innovation you would like to introduce in teaching the subject in this Semester.

V.Padma

Signature of HOD
Date:

Signature of Faculty
Date:

	GUIDELINES TO STUDY THE SUBJECT	2015-16
		Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma

Designation: Assistant Professor

Department:: Computer Science and Engineering

Guidelines for Preparing the Course:

Course Description:
This course introduces various data structures like linked list, stacks, queues, trees and graphs. Advantages and disadvantages of each data structure is analysed. It also describes various searching and sorting algorithms and analyses its complexity. It focuses on prefix, postfix and infix notations and their evaluation. Application of each data structure is also discussed.

Course Objectives:
The main objectives of this course are 1) To understand the basic data structures like linked list, stack and queue 2) To understand the non-linear data structures like trees and graphs 3) To be able to implement linked list, stack , queue, tree and graph data structures 4) To understand prefix, infix and postfix expression formats 5) To understand and implement binary search trees 6) To know the application of linked list, stacks and queues 7) To understand and calculate the time complexity of algorithms 8) To understand basic searching and sorting algorithms

Learning Outcomes:
On completion of this course students will have 1) An understanding of basic data structures 2) An understanding of basic sorting and searching algorithms 3) Knowledge to use appropriate data structure and algorithm to solve a problem 4) The ability to estimate time complexity(Big-O)

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma

Designation: Assistant Professor
Department:: Computer Science and Engineering

On completion of this Subject / Course the student shall be able to:

S.No.	Objectives	Outcomes
1.	Understand the Need and definition of datastructure and its classification	Understand
2.	Identify the best suitable datastructure for the given application.	Reproduce
3.	Understand the implementation of the operations like insertion ,deletion and searching of elements in a particular Data Structure.	Infer Reproduce
4.	Able to understand the different expressions with their conversions and evaluation using STACK.Example:Postfix to infix and evaluation of Postfix expression.	Reproduce
5.	Able to understand TREEs and the associated terminologies.	Infer
6.	Understand AVL and B trees with their operations .	Infer
7.	Conceptual understanding of graph with their different representations and traversal through BFS and DFS. Able to find the Minimum Spanning Tree of a graph using Prim's and Kruskal's algorithm	Distinguish Estimate
8.	Knowledge of searching algorithms like linear and binary search.	Distinguish
9.	Ability to decide on sorting algorithms with their efficiency.	Estimate

Signature of Faculty
Date:

Note: For each of the OBJECTIVE indicate the appropriate OUTCOMES to be achieved.
Kindly refer Page 16, to know the illustrative verbs that can be used to state the objectives.

	COURSE OUTCOMES	2015-16
		Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering

The expected outcomes of the Course / Subject are:

S.No.	General Categories of Outcomes	Specific Outcomes of the Course
A.	An ability to apply knowledge of mathematics, science, and engineering	The ability to apply the concepts of engineering i.e collecting data, organize the data in the suitable data structure(DS).
B.	An ability to design and conduct experiments, as well as to analyze and interpret data	Able to design the DS for the given application and implement the operations for the same.
C.	An ability to design a system, component, or process to meet desired needs within realistic Constraints such as economic, environmental, social, political, ethical, health and safety, Manufacturability and sustainability	Able to design the programs which meet time and space constraints.
D.	An ability to function on multi-disciplinary teams	Participating in projects, workshops encourages multidisciplinary teams
E.	An ability to identify, formulate, and solve engineering problems	Develop the programs with suitable DS to solve the problem
F.	An understanding of professional and ethical Responsibility	Professional is developed by being entrepreneur.
G.	An ability to communicate effectively	By conduction of seminars and discussions ability to communicate effectively
H.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	The subject learnt by students can be implemented in real time systems whenever it is necessary

I.	A recognition of the need for, and an ability to engage in life-long learning	Knowing about emerging techniques in solving problems related to DS.
J.	A knowledge of contemporary issues	The knowledge of present versions of the tools are updated
K.	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Skills are developed while working for the project during academic calendar.

Objectives – Outcome Relationship Matrix (Indicate the relationships by ☒ mark).

Outcomes / Objectives	A	B	C	D	E	F	G	H	I	J	K
1.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	COURSE SCHEDULE	2015-16
		Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: CSE
The Schedule for the whole Course / Subject is::

S. No.	Description	Duration (Date)		Total No. of Periods
		From	To	
1.	Data structures and Linked List	05-01-16	28-01-16	15
2.	Stacks and Queues	29-01-16	19-02-16	16
3.	Trees	22-02-16	15-03-16	14
4.	Graphs	16-03-16	06-04-16	13
5.	Sorting and Searching	07-04-16	26-04-16	11

Total No. of Instructional periods available for the course: 75Hours / Periods

	SCHEDULE OF INSTRUCTIONS UNIT - I	2015-16 Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering
The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal…) Page No___ to ___
1	05-01-16	1	Introduction to Data Structures	1	TB-1, Pg 43- 49
2	06-01-16	1	Abstract data types ,Revision of structures and pointers	1	TB-1 Pg 50,148-155
3	07-01-16	1	Introduction to Linked List	1	TB-1 Pg 162-166
4	08-01-16, 11-01-16	2	Singly Linked List implementation, insertion	3	TB-1 Pg 167-172
5	12-01-16, 13-01-16	2	Deletion and searching operations on singly linked list	3	TB-1 Pg172-179
6	18/01/16, 19/01/16	2	Circular Linked list implementation, insertion	3	TB-1 Pg 179-182
7	20/01/16	1	Deletion and searching operations on circular linked list	3	TB-1 Pg 182-184
8	21/01/16, 22/01/16	2	Double Linked list implementation, insertion	3	TB-1 Pg 188-191
9	25/01/16	1	Deletion and searching operations on Double linked list	3	TB-1 Pg 192-194
10	27/01/16	1	Applications of Linked lists	2	TB-1 Pg 211

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.
3. MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT – II	2015-16 Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering
The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal…) Page No___ to ___
1	29/01/16	1	Introduction to stacks , Stack Operations	3	TB-1 pg 219-220
2	01/02/16	1	Array representation of stack	3	TB-1 Pg 221-224
3	02/02/16, 03/02/16	2	Linked representation of stack	3	TB-1 pg 224-227
4	04/02/16	1	Stack Applications – infix to postfix conversion	4	TB-1 Pg 232-236
5	05/02/16, 08/02/16	2	Postfix expression evaluation	4	TB-1 Pg 236-238
6	09/02/16	1	Recursion implementation	4	TB-1 pg 243-251
7	10/02/16	1	Introduction to Queues, Operations on queues	3	TB-1 Pg 253-254
8	11/02/16, 12/02/16	2	Array and Linked representation of queues	3	TB-1 pg 254-260
9	15/02/16, 16/02/16	2	Circular queue operations	3	TB-1 Pg 260-264
10	17/02/16	1	Dequeue	3	TB-1 Pg 264-268
11	18/02/16	1	Applications of queue	2	TB-1 Pg 275-276

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.
MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT - III	2015-16 Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering
The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal…) Page No___ to ___
1	22/02/16	1	Introductions to Trees, Tree Definitions	5	TB-1 Pg 279 -280
2	23/02/16	1	Types of Trees	5	TB-1 Pg 280-281,285-286
3	24/02/16	1	Binary Tree representation and Terminology	5	TB-1 Pg 281-285
4	25/02/16, 26/02/16	2	Binary Tree Traversals	5	TB-1 Pg287-289
5	29/02/16	1	Introduction to Binary Search Tree	5	TB-1 Pg 298-299
6	01/03/16	1	Binary Search Tree- Insertion and search operations	5	TB-1 Pg 300-301
7	02/03/16	1	Deletion in Binary Search Trees	5	TB-1 Pg 301-303
8	03/03/16 04/03/16	2	Other operations on Binary Search Tree	5	TB-1 Pg 303-306
9	10/03/16	1	AVL Trees	6	TB-1 Pg 316-324
10	11/03/16, 14/03/16	2	B-Trees,Applications of Trees	6	TB-2 Pg 345-350

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.
MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT - IV	2015-16 Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering

The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal…) Page No___ to ___
1	16/03/16	1	Introduction to Graphs, Graph Terminology	7	TB-1 Pg 383-386
2	17/03/16, 18/03/16	2	Sequential and Linked Representation of graphs	7	TB-1 Pg 388-391
3	21/03/16, 22/03/16	2	Graph Traversal - Depth First Search implementation	7	TB-1 Pg 397-400
4	24/03/16, 28/03/16	2	Breadth First Search implementation	7	TB-1 Pg 393-396
5	29/03/16	1	Spanning Trees, Minimum Spanning Trees	7	TB-1 Pg 405-407
6	30/03/16, 31/03/16	2	Prim's Algorithm	7	TB-1 Pg 407-409
7	01/04/16	1	Kruskal's Algorithm	7	TB-1 Pg 409-412
8	04/04/16	1	Applications of graphs	2	TB-1 Pg 419-420

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.
MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	SCHEDULE OF INSTRUCTIONS UNIT - V	2015-16 Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering
The Schedule for the whole Course / Subject is::

Sl. No.	Date	No. Of Periods	Topics / Sub - Topics	Objectives & Outcome Nos.	References (Text Book, Journal…) Page No___ to ___
1	07/04/16	1	Big O Notation with examples	9	TB-1 Pg 57-59
2	11/04/16, 12/04/16	2	Linear Search & Binary search method	8	TB-1 Pg 424-428
3	13/04/16	1	Introduction to Sorting, Selection sort	9	TB-1 Pg 433,441-443
4	18/04/16	1	Bubble Sort	9	TB-1 Pg 435-437
5	19/04/16	1	Insertion Sort	9	TB-1 Pg 438-440
6	20/04/16, 21/04/16	2	Quick Sort	9	TB-1 Pg 446-450
7	22/04/16, 25/04/16	2	Merge Sort	9	TB-1 Pg 443-446

Signature of Faculty
Date

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED **BOLDLY**.
MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

	COURSE COMPLETION STATUS	2015-16
		Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma

Subject:: Data Structures

Subject Code

Department:: Computer Science and Engineering

Actual Date of Completion & Remarks, if any

Units	Remarks	Nos. of Objectives Achieved
Unit 1	Define Explain why /how	1,2,3
Unit 2	Define Procedure Reproduce Distinguish	2,3,4
Unit 3	Select Distinguish State	2,5,6,
Unit 4	Select Distinguish State	7,2
Unit 5	Select Estimate	8,9

Signature of Dean of School
Date:

Signature of Faculty
Date:

NOTE: AFTER THE COMPLETION OF EACH UNIT MENTION THE NUMBER OF OBJECTIVES ACHIEVED.

	TUTORIAL SHEETS - I	2015-16
		Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering
The Schedule for the whole Course / Subject is::

Date:

This Tutorial corresponds to Unit Nos. **1&2** Time:

1. What is data structure? Write its classification.
2. Explain Abstract Data Type.
3. Write the applications of Linked List.
4. Write the algorithm to insert the node after the given node.
5. Explain with an algorithm to delete a particular node in the linked list.
6. Write the procedure to convert IN fix expression into POST fix expression
7. Write to algorithm to evaluate post fix expression
8. Explain tower of Hanoi .
9. Explain linked representation of queues
10. Explain applications of queue.

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School
Date:

Signature of Faculty
Date:

	TUTORIAL SHEETS - II	2015-16
		Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering
The Schedule for the whole Course / Subject is::

Date:

This Tutorial corresponds to Unit Nos**. 3**
Time:

1. Explain binary tree traversal
2. Explain binary search tree
3. Explain insertion and search operation of binary search tree
4. How deletion is done in binary search tree
5. What are AVL tree, Explain with an examples?
6. Write the applications of tree

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School
Date:

Signature of Faculty
Date:

	TUTORIAL SHEETS - II	2015-16
		Regulation: R14

FACULTY DETAILS:

Name of the Faculty:: Mrs. V.Padma
Designation: Assistant Professor
Department:: Computer Science and Engineering

Date:

This Tutorial corresponds to Unit Nos**. 4&5**

Time:

1. Write the C program linked represation of garphs
2. Write the implemation of depth search
3. What breath first search
4. What is spanning tree explain minimum spanning tree with explain
5. Explain

    a) Prim's algorithm

    b) Kruskal's algorithm

2. What is big O notation , explain with examples
3. Explain binary search with C program
4. What is sorting explain inserting sorting

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the objectives to which these questions / Problems are related.

Signature of Dean of School
Date:

Signature of Faculty
Date:

	ILLUSTRATIVE VERBS FOR STATING INSTRUCTIONAL OBJECTIVES	2015-16 Regulation: R14

These verbs can also be used while framing questions for Continuous Assessment Examinations as well as for End – Semester (final) Examinations.

ILLUSTRATIVE VERBS FOR STATING **GENERAL OBJECTIVES**

Know Comprehend	Understand Apply	Analyze Design	Generate Evaluate

ILLUSTRATIVE VERBS FOR STATING **SPECIFIC OBJECTIVES:**

A. Cognitive Domain

1	2	3	4	5	6
Knowledge	**Comprehension Understanding**	**Application** of knowledge & Comprehension	**Analysis** of whole w.r.t. its constituents	**Synthesis** combination of ideas/constituents	**Evaluation** Judgement
Define	Convert	Change	Breakdown	Categorize	Appraise
Identify	Defend	Compute	Differentiate	Combine	Compare
Label	Describe (a	Demonstrate	Discriminate	Compile	Conclude
List	procedure)	Deduce	Distinguish	Compose	Contrast
Match	Distinguish	Manipulate	Separate	Create	Criticize
Reproduce	Estimate	Modify	Subdivide	Devise	Justify
Select	Explain why/how	Predict		Design	Interpret
State	Extend	Prepare		Generate	Support
	Generalize	Relate		Organize	
	Give examples	Show		Plan	
	Illustrate	Solve		Rearrange	
	Infer			Reconstruct	
	Summarize			Reorganize	
				Revise	

B. Affective Domain		**C. Psychomotor Domain (skill development)**				
Adhere	Resolve	Bend	Dissect	Insert	Perform	Straighten
Assist	Select	Calibrate	Draw	Keep	Prepare	Strengthen
Attend	Serve	Compress	Extend	Elongate	Remove	Time
Change	Share	Conduct	Feed	Limit	Replace	Transfer
Develop		Connect	File	Manipulate	Report	Type
Help		Convert	Grow	Move preciselyReset		Weigh
Influence		Decrease	Handle	Operate	Run	
Initiate		Demonstrate	Increase	Paint	Set	

	LESSON PLAN Unit-1	2015-16
		Regulation: R14

Name of the Faculty: Mrs. V.Padma

Subject DATA STRUCTURES Subject Code

Unit I

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
1	Introduction to Data Structures	50 min	TB1	Chalk & board
2	Abstract data types ,Revision of structures and pointers	50 min	TB1	Chalk & board
3	Introduction to Linked List	50 min	TB1	Chalk & board
4	Singly Linked List implementation, insertion	1hr 40 min	TB1	Chalk & board
5	Deletion and searching operations on singly linked list	1hr 40 min	TB1	Chalk & board
6	Circular Linked list implementation, insertion	1hr 40 min	TB1	Chalk & board
7	Deletion and searching operations on circular linked list	50 min	TB1	Chalk & board
8	Double Linked list implementation, insertion	1hr 40 min	TB1	Chalk & board
9	Deletion and searching operations on Double linked list	50 min	TB1	Chalk & board
10	Applications of Linked List	50 min	TB1	Chalk & board

On completion of this lesson the student shall be able to(Outcomes)

1. Understands the need for the selection of data structure before implementation

2. Implement singly linked list, circular and doubly linked list

	ASSIGNMENT **Unit-I**	2015-16
		Regulation: R14

Assignment / Questions

1. What is data structure? Write its classification.
2. Explain Abstract Data Type.
3. Write the applications of Linked List.
4. Write the algorithm to insert the node after the given node.
5. Explain with an algorithm to delete a particular node in the linked list.
6. Explain Doubly linked list.
7. Write the procedure to add a node in a circular linked list.
8. Write the procedure to search an element from a doubly linked list.

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN Unit-II	2015-16
		Regulation: R14

Name of the Faculty: Mrs. V.Padma

Subject DATA STRUCTURES Subject Code

Unit II

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
11	Introduction to stacks , Stack Operations	50 min	TB1	Chalk & board
12	Array representation of stack	50 min	TB1	Chalk & board
13	Linked representation of stack	1hr 40 min	TB1	Chalk & board
14	Stack Applications – infix to postfix conversion	50 min	TB1	Chalk & board
15	Postfix expression evaluation	1hr 40 min	TB1	Chalk & board
16	Recursion implementation	50 min	TB1	Chalk & board
17	Introduction to Queues, Operations on queues	50 min	TB1	Chalk & board
18	Array and Linked representation of queues	1hr 40 min	TB1	Chalk & board
19	Circular queue operations	1hr 40 min	TB1	Chalk & board
20	Dequeue	50 min	TB1	Chalk & board
21	Applications of queue	50 min	TB1	Chalk & board

On completion of this lesson the student shall be able to

1. Understand and implement Stacks and Queues
2. Evaluate postfix and prefix expressions
3. Implement circular queue and dequeue

	ASSIGNMENT **Unit-II**	2015-16
		Regulation: R14

Assignment / Questions

1. Write a program to implement operations of stack using arrays .
2. Write the procedure to convert IN fix expression into POST fix expression
3. Write to algorithm to evaluate post fix expression
4. Explain tower of Hanoi .
5. Explain linked representation of queues
6. Explain applications of queues
7. What is Dequeue explain briefly
8. Write the linked representation of stacks

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN Unit-III	2015-16
		Regulation: R14

Name of the Faculty: Mrs. V.Padma

Subject DATA STRUCTURES Subject Code

Unit III

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
22	Introductions to Trees, Tree Definitions	50 min	TB1	Chalk& Board
23	Types of Trees	50 min	TB1	Chalk& Board
24	Binary Tree representation and Terminology	50 min	TB1	Chalk& Board
25	Binary Tree Traversals	1hr 40 min	TB1	Chalk& Board
26	Introduction to Binary Search Tree	50 min	TB1	Chalk& Board
27	Binary Search Tree- Insertion and search operations	50 min	TB1	Chalk& Board
28	Deletion in Binary Search Trees	50 min	TB1,Ref1	Chalk& Board
29	Other operations on Binary Search Tree	1hr 40 min	TB1	Chalk& Board
30	AVL Trees	50 min	TB1	Chalk& Board
31	B-Trees,Applications of Trees	1hr 40 min	TB1	Chalk& Board

On completion of this lesson the student shall be able to(Outcomes)

1. Understand and implement Binary Search Tree
2. Understand AVL, B-Trees

	ASSIGNMENT **Unit-III**	2015-16
		Regulation: R14

Assignment / Questions

1. What is Tree? Explain with its different types
2. What binary tree explain terminology associated with it.
3. Explain binary tree traversal
4. Explain binary search tree
5. Explain insertion and search operation of binary search tree
6. How deletion is done in binary search tree
7. What are AVL tree, Explain with an examples.
8. Write the applications of tree

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN **Unit-IV**	2015-16 Regulation: R14

Name of the Faculty: Mrs. V.Padma

Subject DATA STRUCTURES Subject Code

Unit IV

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
32	Introduction to Graphs, Graph Terminology	**50 min**	**TB1,Ref1**	Chalk& Board
33	Sequential and Linked Representation of graphs	**1hr 40 min**	**TB1,Ref1**	Chalk& Board
34	Graph Traversal - Depth First Search implementation	**1hr 40 min**	**TB1,Ref1**	Chalk& Board
35	Breadth First Search implementation	**1hr 40 min**	**TB1,Ref1**	Chalk& Board
36	Spanning Trees, Minimum Spanning Trees	**50 min**	**TB1,Ref1**	Chalk& Board
37	Prim's Algorithm	**1hr 40 min**	**TB1,Ref1**	Chalk& Board
38	Kruskal's Algorithm	**50 min**	**TB1,Ref1**	Chalk& Board
39	Applications of graphs	**50 min**	**TB1**	Chalk& Board

On completion of this lesson the student shall be able to (Outcomes)

1. Implement graphs using adjacency matrix and list
2. Understand minimum spanning tree
3. Implement breadth first and depth f irst traversal

	ASSIGNMENT **Unit-IV**	2015-16 Regulation: R14

Assignment / Questions

1. Write the C program linked represation of garphs
2. Write the implemation of depth search
3. What breath first search
4. What is spanning tree explain minimum spanning tree with explain
5. Explain
    a) Prim's algorithm
    b) Kruskal's algorithm
6. Write the applications of graph

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.

	LESSON PLAN **Unit-V**	2015-16 Regulation: R14

Name of the Faculty: Mrs. V.Padma

Subject DATA STRUCTURES Subject Code

Unit V

INSTRUCTIONAL OBJECTIVES:

Session No	Topics to be covered	Time	Ref	Teaching Method
40	Big O Notation with examples	**50 min**	**TB1,Ref1**	Chalk & board
41	Linear Search & Binary search method	**1hr 40 min**	**TB1**	Chalk & board
42	Introduction to Sorting, Selection sort	**50 min**	**TB1**	Chalk & board
43	Bubble Sort	**50 min**	**TB1**	Chalk & board
44	Insertion Sort	**50 min**	**TB1**	Chalk & board
45	Quick Sort	**1hr 40 min**	**TB1**	Chalk & board
46	Merge Sort	**1hr 40 min**	**TB1**	Chalk & board

On completion of this lesson the student shall be able to (Outcomes)

1. Understand & analyse searching and sorting algorithms
2. Able to compute the running time of algorithms

	ASSIGNMENT **Unit-V**	2015-16
		Regulation: R14

Assignment / Questions

1. What is big O notation , explain with examples
2. Explain binary search with C program
3. What is sorting explain inserting sorting
4. Explain quick sort and merge sort
5. Compare all sorting algorithm

Signature of Faculty

Note: Mention for each question the relevant objectives and outcomes.