Semester Plan (Theory)

TCET/FRM/IP-02/09 **Revision: A**

Semester: III **Course: IT**

Subject: ITC- 303: Data Structure and Algorithm **Class: SE IT -B**

S.No.	Prerequisite/ Bridge course:	Duration (Week /Hrs)	Modes of Learning	Recommended Sources
1	C Programming concept: Selection statement,Iterative statement,1-D and 2- D numeric and non numeric array,function structure, pointer, pointer to structure, Fundamental Algorithms: Design and Analysis	6 hours	Self Learning/ Revision	**Textbooks:** 1. C and Data structures, Dreamtech Press. 2. Programming in C , Pradip dey, Oxford Publication

Class Room Teaching

Sr. No	Module No.	Lesson No	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
1	Module 1	L1.1	SOP-Theory,Introduction to Data structures, Need of Data structures	Power point presentation, Chalk & Board	10/07/2017	1.7.1	
2	Module 1	L1.2	SOP(OBE) Time and Space complexities	Chalk & Board, Animation	14/07/2017	1.7.5	
3	Module 1	L2.1	Order of growth functions, Asymptotic notations	Chalk & Board, Animation	18/07/2017	1.7.5	
4	Module 2	L2.2	Order of growth functions, Asymptotic notations	Chalk & Board, Animation	19/07/2017	1.7.5	
5	Module 2	L2.3	Introduction to Stack	Power point presentation, Chalk & Board	20/07/2017	2.7	
6	Module 2	L2.4	Stack as ADT, Operations on stack,	Chalk & Board, Animation	21/07/2017	2.8	
7	Module 2	L3.1	Application of stack:Reversing string	Chalk & Board, Animation	27/07/2017	2.9	
8	Module 2	L3.2	Polish notations	Chalk & Board, Animation	28/07/2017	2.9	
9	Module 2	L4.1	Polish notations	Chalk & Board, Animation	03/08/2017	2.9	
10	Module 4	L4.2	Introduction to Linked List	Chalk & Board, Animation	04/08/2017	4.8.1	
11	Module 4	L5.1	Memory allocation & de allocation of Linked list	Chalk & Board, Animation	10/08/2017	4.8.2 and 4.8.3	
12	Module 4	L5.2	Singly Linked list	Power point presentation, Chalk & Board	11/08/2017	4.8.3	
13	Module 4	L6.1	Doubly Linked list	Chalk & Board, Animation	18/08/2017	4.8.4	
14	Module 4	L7.2	Circular linked list, Operations on linked list	Chalk & Board, Animation	24/08/2017	4.8.5	
15	Module 4	L8.1	Linked representation of stack and Queue	Chalk & Board, Animation	31/08/2017	4.8.6	
16	Module 4	L8.2	Application of linked list.	Power point presentation, Chalk & Board	01/09/2017	4.8.7	
17	Module 5	L9.1	Introduction to Searching: Linear search, Binary search	Chalk & Board, Animation	07/09/2017	5.14	
18	Module 5	L9.2	Hashing Techniques, Different Hash	Chalk & Board, Animation	08/09/2017	5.15	

			functions				
19	Module 5	L10.1	Collision& Collision resolution techniques, Analysis of searching Techniques	Power point presentation, Chalk & Board	14/09/2017	5.15	
20	Module 6	L10.2	Introduction to Trees, Definitions& Tree terminologies	Chalk & Board, Animation	15/09/2017	6.6	
21	Module 6	L11.1	Binary tree representation, Operations on binary tree	Chalk & Board, Animation	21/09/2017	6.6.1	
22	Module 6	L11.2	Traversal of binary trees	Chalk & Board, Animation	22/09/2017	6.6.1	
23	Module 6	L12.1	Binary search tree, Threaded Binary tree,	Chalk & Board, Animation	05/10/2017	6.6.2 6.6.8	
24	Module 6	L12.2	Expression tree, Application of Trees	Chalk & Board, Animation	06/09/2017	6.6.8	
25	Module 1 to 6	L13.1	Revison / Practice Session for DSA Code/University Paper Discussion	Chalk & Board	12/10/2017		
Remark: **Course:**		**Syllabus Coverage:**		**Practice Session: 2**		**Content Beyond Syllabus:** Application of Linked List to organize the data on harddisk and Use of tree in File System	
No. of (lectures planned)/(lecture taken): 25/							

Advanced course: Data structure programming using Python	20 Hours	Online NPTEL videos with Hands on Training in Laboratory	**Web sources:** 1. NPTEL-https://onlinecourses.nptel.ac.in 2. www.tutorialpoint.com1. Instructor's study material,

Text Books:

1. Data structures using C by Tenenbaum, Langsam, Augenstein , Pearson.
2. Data Structures using C, ReemaThareja, Oxford.
3. C and Data structures, Prof. P.S.Deshpande, Prof. O.G.Kakde, Dreamtech Press.
4. Introduction to Data Structure and its Applications Jean-Paul Tremblay, P. G. Sorenson

Reference Books:

1. Data Structures Using C & C++, Rajesh K. Shukla, Wiley- India.
2. Data Structures and Algorithm Analysis in C ,Mark A.Weiss ,Pearson
3. ALGORITHMS Design and Analysis, Bhasin, OXFORD.
4. Computer Algorithms by Ellis Horowitz and Sartaj Sahni, Universities Press

Digital Reference:

3.1 www.nptel.ac.in

3.2 www.tutorialpoint.com

Name & Signature of Faculty **Signature of HOD** **Signature of Principal /Dean (Academics)**

Date: **Date:** **Date:**

Note:

1. Plan date and completion date should be in compliance
2. Courses are required to be taught with emphasis on resource book, course file, text books, reference books, digital references etc.
3. Planning is to be done for 15 weeks where 1st week will be SOP, 2nd -13th for effective teaching and 14th -15th week for effective university examination oriented teaching, mock practice session and semester consolidation.
4. According to university syllabus where lecture of 4 hrs/per week is mentioned minimum 55 hrs and in case of 3 lectures per week minimum 45 lectures are to be engaged are required to be engaged during the semester and therefore accordingly semester planning for delivery of theory lectures shall be planned.
5. In order to improve score in NBA, faculty members are also required to focus course teaching beyond university prescribed syllabus and measuring the outcomes w.r.t learning course and programme objectives.
6. Text books and reference books are available in syllabus. Here only additional references w.r.t. non –digital/ digital sources can be written (if applicable)
7. Technology to be used in class room during lecture shall be written below the topic planned within the bracket.