



Second semester 2015-16

CourseHandoutPartII

In addition to Part-I (General Handout for all courses appended to the timetable) this portion gives further specific details regarding the course.

Course No.: CS F211

Course Title: Data Structures & Algorithms

Instructor In Charge: Abhishek Mishra (AM)

Email: abhishek.mishra@pilani.bits-pilani.ac.in

Co-Instructor: Shyamapada Mukherjee (SM)

Email: shyama.mukherjee@pilani.bits-pilani.ac.in

Lab Instructors:

Saiyedul Islam (sislam@pilani.bits-pilani.ac.in)

Ghanshyam Verma (p2015006@pilani.bits-pilani.ac.in)

Sandhya (p2015007@pilani.bits-pilani.ac.in)

Course Objectives: To learn about various data structures and the algorithms for manipulating the data structures.

Text Book:

[T1] M.T. Goodrich, R. Tamassia, Algorithm Design: Foundations, Analysis, and Internet Examples, 2014, Wiley. ISBN: 978-81-265-0986-7

Reference Books:

[R1] Y. Langsam, M.J. Augenstein, A.M. Tenenbaum, Data Structures using C and C++, 1996, PHI.

[R2] E. Horowitz, S. Sahni, S. Anderson-Freed, Fundamentals of Data Structures in C, Universities Press, 2007.

[R3] T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein, Introduction to Algorithms, 3rd Edition, PHI, 2009.





[R4] A.V. Aho, J.E. Hopcroft, J.D. Ullman, Data Structures and Algorithms, 1983, Pearson.

[R5] Y. Narhari, Electronic Lecture Notes: Data Structures and Algorithms, 2000. Available online at: <http://lcm.csa.iisc.ernet.in/hari/dsa.pdf>

Lecture Plan:

Lecture	Topics	Teacher
1	Performance Evaluation of Programs	AM
2	Asymptotic Notations	AM
3	Abstract Data Types	AM
4	Dynamic Arrays	AM
5	Linked Lists	AM
6	Stacks	AM
7	Queues	AM
8-10	Trees	AM
11-13	Priority Queues and Heaps	AM
14-16	Dictionaries and Hash Tables	AM
17-19	Ordered Dictionaries and Binary Search Trees	AM
20	AVL Trees	AM
21-22	Divide and Conquer Algorithm Design Technique	SM
23	Merge Sort and its Performance Analysis	SM
24	Quick Sort and its Performance Analysis	SM
25	Bucket Sort and Radix Sort	SM
26	Data Structures for Graphs	SM
27	Depth-First Search	SM
28	Breadth-First Search	SM
29	Biconnected Components of a Graph	SM
30	Digraph Traversing	SM
31	Transitive Closure of a Digraph	SM
32	Directed Acyclic Graphs	SM
33 - 35	Single Source Shortest Paths in Weighted Graphs	SM
36 - 37	All Pairs Shortest Paths	SM
38 - 40	Minimum Spanning Tree Algorithms	SM

Evaluation:





Component	Mode	Weightage	Duration	Remarks
Mid Semester Exam	Closed Book	20%	90 minutes	18/3 2:00 -3:30 PM
Comprehensive Exam	20 % Closed Book, 20 % Open Book	40%	180 minutes	13/5 FN
Lab Assignments	Open Book	20%	-	There will be 10 lab assignments of 4 marks each. Marking Scheme: 4 Marks if your program gives correct output on each input. 3 Marks if your program gives incorrect output for some inputs, but it gives correct output on remaining inputs. 2 Marks if your programming approach is correct, but it is not able to give correct output on inputs. 1 Marks if you have attended the lab. 0 Marks if you are absent in the lab.
Lab Exam	Closed Book	20%	180 minutes	In April

Open Book Policy: Only hard copies are allowed (lecture notes, text book, or reference books).

Make-up Policy: Make-up exam may be arranged only in genuine cases with prior permission. No makeup for Lab Assignments

Malpractise Regulation: A student will get 0 if found cheating.

Chamber Consultation Hour: 12:00 to 13:00 on Saturdays (AM: 6121S, SM: 6121P).

Notices: All notices will be posted on Nalanda.

