Helwan University

Faculty of Computers and Information

Computer Science Department

Helwan University

2nd level

CS316 Algorithms

Spring 2017

Instructor: Dr. Ensaf Hussein, Dr. Hala Abbas

T.A.:

Text Book:

- Thomas Cormen, Charles Leiserson, Ronald Rivest, and Clifford Stein. *Introduction to Algorithms*. 3rd ed. MIT Press, 2009.
- Anany Levitin, Introduction to the design and analysis of algorithms 2nd Edition, 2007.

Grading Policy: Quizzes: 15%, Task 5%, Midterm: 20%, Final Exam: 60%

Couse Objectives: Upon the completion of course students will be able to:

1. Design algorithms using Psedocode.
2. Demonstrate and study asymptotic notations in best, worst and average case.
3. Define and analyze the complexity of recursive and non-recursive algorithms.
4. Understand, analyze and apply standard algorithms involving searching, sorting, tree, graph, greedy, backtracking and dynamic programming algorithms.

Course Syllabus

	Lecture		Exercises
	Content	Chapter	
Week 1 14 Feb	Introduction	2.2 Anany 3.2 ,3.3 rosen	
Week 2 21 Feb	Asymptotic Notations	2.2 Anany 3.2 ,3.3 rosen	
Week 3 28 Feb	Compute complexity for non-recursive algorithms - Insertion	2.3 Anany	
Week 4 6 March	Compute complexity for recursive substitution – iteration tree – merge sort	Chapter 4.1 , 4.2 Cormen	
week 5 13 March	Compute complexity for recursive iteration tree – master method	Chapter 4.3 Cormen	
Week 6 20 March	Heap Sort	Chapter 6.1, 6.2, 6.3, 6.4 Cormen	
Week 7 27 March	Midterm		
Week 8 3 April	Quick Sort, count, radix, bucket	Chapter 7.1, 7.2, 7.3 Chapter 8.2, 8.3	
Week 9 10 April	Graph: BFS, DFS	Chapter 22.1, 22.2, 22.3	
Week 10	Minimum Spanning tree: prim,	Chapter 23.2	

17 April	kruskal		
Week 11 24 April	Single-Source shortest path: Dijkstra, bellman ford	Chapter 24.1, 24.2, 24.3	
Week 12 1 May	Dynamic Programming	Chapter 16.2	
Week 13 8 May	Greedy Algorithms		
Week 14 15 May	Revision		

Academic Support

Please take advantage of the support services provided by:

piazza.com/fci_helwan_university/spring2017/cs316
Access Code : FCIHcs316

You can find a softcopy from textbook, lecture slides and homework