

1.	Course Title	Data Structure		
2.	Course Code	CCPS1043		
3.	Status	Major		
4.	Credit Hour	3 (2+1) 2 for lecture (2 hours per week x 14 weeks) 1 for lab (2 hours per week x 14 weeks)		
5.	Semester/Year	2/2		
6.	Prerequisites			
7.	Teaching method:	Lecture and lab		
8.	Evaluation	Assessment and Marking Percentage: Quizzes 10 % Assignments 10 % Interactions through discussion board 10 % Mid-Semester Exam 20 % Final Examination 50 %		
9.	Lecturer			
10.	Objective of the Subject	This subject is designed to enable students to: - Formulate abstract solutions to real life problems. - Know different types of data structures and algorithms including criteria for selecting each option based on the circumstances of the real life problems being solved. - Understand the implementation of effective programs with acceptable time and space requirements.		
11.	Learning Outcomes	Upon completion of this subject, students should be able to: - Identify and formulate basic and compound data structures. - Analyze simple application requirements and match these requirements to most efficient data structures and algorithms based on space and time complexities. - Design and constructs simple programs using the most efficient data structure . - Identify and formulate searching and sorting algorithms.		
12.	Synopsis	This subject focuses on the design and analysis of basic data structures including stacks, queues, trees, and graphs. Java implementations of selected data structures and their applications will be covered along with a tutorial of C. In addition, this course introduces algorithms for searching, sorting, and graph traversal		
13.	Topics	Details	Lecture (Hrs)	Tutorial (Hrs)
	Topic 1	Introduction to Data Structure and Algorithms / Arrays	2	2
	Topic 2	C revision	4	4
	Topic 3	General Lists, Linked Lists	4	4
	Topic 4	Stacks and Recursion	2	2
	Topic 5	Queues	2	2
	Topic 6	Trees, Binary Trees	4	4
	Topic 7	Graphs	2	2
	Topic 8	Searching strategies. Sequential, Indexed sequential, and hash files.	4	4
	Topic 9	Sorting algorithm	4	4
		Total contact hours	28	28

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		Equivalent lecture hours	28	14
		Total lecture hours	42	
		Credit hours	3	
14.	Main reference:	Larry R. Nyhoff, (2004) ADTs, Data Structures, and Problem Solving with C++ - Prentice Hall		
15	Additional References: Other Materials:	1. Deitel H. M., & Deitel, P. J. (2001) How to program C (3rd ed.). Upper Saddle River: Prentice Hall. 2. Robert K., Tondo, C. L., & Bruce L., (1997) Data structures and program design in C (2nd ed.). Upper Saddle River: Prentice Hall. 3. Standish, T. A. (1995) Data structures, algorithms and software principles in C. New York: Addison Wesley. All other materials will be available to students online.		