



University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of Computing and Information Technology
Program: B. Sc. In Computer Science

Course title	Data Structures
Course code	CS 212

Form no. (11A): Knowledge and skills matrix for a course

Course content	Week	Knowledge	Intellectual skills	Professional skills	General skills
Introduction to Data Structures	1	<ul style="list-style-type: none"> Understand how to analyze the complexity of algorithms, and to express it using asymptotic notation 	<ul style="list-style-type: none"> Compare the relative advantages of using arrays, vectors, and linked lists in solving problem efficiently. 		<ul style="list-style-type: none"> Acquire problem solving Skills
Arrays	2	<ul style="list-style-type: none"> Learn the definitions, uses, and typical implementations of array abstract data types. 		<ul style="list-style-type: none"> Write programs using abstract data types. 	<ul style="list-style-type: none"> Acquire designing Skills
Pointers and dynamic memory allocation	3		<ul style="list-style-type: none"> Use stacks, queues, trees, and graphs to solve real-life problems 		
Linked Lists	4	<ul style="list-style-type: none"> Learn the definitions, uses, and typical implementations of Linked List abstract data types. 		<ul style="list-style-type: none"> Write programs using abstract data types. 	<ul style="list-style-type: none"> Acquire designing Skills
Doubly and circular Linked Lists	5				
Stack	6	<ul style="list-style-type: none"> Learn the definitions, uses, and typical implementations of Stack abstract data types. 		<ul style="list-style-type: none"> Write programs using abstract data types. 	<ul style="list-style-type: none"> Acquire designing Skills
7th week Exam +Stack applications	7				

Stack applications	8			<ul style="list-style-type: none"> Use programming tools for compilation control, editing, version control, and debugging 	<ul style="list-style-type: none"> Acquire problem solving Skills
Queues	9	<ul style="list-style-type: none"> Learn the definitions, uses, and typical implementations of Queue abstract data types. 	<ul style="list-style-type: none"> Use stacks, queues, trees, and graphs to solve real-life problems 	<ul style="list-style-type: none"> Write programs using abstract data types. 	<ul style="list-style-type: none"> Acquire designing Skills
Trees Representation	10	<ul style="list-style-type: none"> Learn the definitions, uses, and typical implementations of Tree abstract data types. 		<ul style="list-style-type: none"> Write programs using abstract data types. 	<ul style="list-style-type: none"> Acquire designing Skills
Binary Search Trees	11				
Binary Search trees	12				
Hash Representation	13			<ul style="list-style-type: none"> Use programming tools for compilation control, editing, version control, and debugging 	
Graph Algorithms	14	<ul style="list-style-type: none"> Learn the uses, performance characteristics, and typical implementations of the classical graph algorithms 	<ul style="list-style-type: none"> Analyze the complexity of algorithms, and express it using asymptotic notation 		
Graph Traversals	15		<ul style="list-style-type: none"> Use stacks, queues, trees, and graphs to solve real-life problems 	<ul style="list-style-type: none"> Write programs using abstract data types. 	

Course Instructor

Name: **Dr Samah Senbel**

Signature:

Head of Department

Name: **Dr. Samah Senbel**

Signature: