

COMP C7013: Data Structures

Module Details	
Module Code:	COMP C7013
Full Title:	Data Structures APPROVED
Valid From::	Semester 1 - 2019/20 (June 2019)
Language of Instruction:	English
Duration:	1 Semester
Credits::	5
Module Owner::	Bernadette Brosnan
Departments:	Unknown
Module Description:	Students completing this module will be able to select and implement appropriate data structures for a range of problems.

Module Learning Outcome	
On successful completion of this module the learner will be able to:	
#	Module Learning Outcome Description
MLO1	Select and use appropriate data structures for the solution of a variety of problems.
MLO2	Implement and test a variety of data structures.
MLO3	Discuss the advantages and disadvantages of a variety of data structures.
Pre-requisite learning	
Module Recommendations <i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named DkIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>	
No recommendations listed	

Module Indicative Content
Linked Lists Comparison with arrays, creation. insert elements, delete elements.
Stacks and Queues Array and link list based implementations.
Sets Overview, implementation, hashing, chaining, collisions.
Maps Implementation, hashing, chaining, collisions.
Data Structure Analysis Big O notation, time and space efficiency analysis, data structure selection.

Module Assessment	
Assessment Breakdown	%
Course Work	60.00%
Final Examination	40.00%
Module Special Regulation	

Assessments

Full Time On Campus			
Course Work			
Assessment Type	Class Test	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	S1 Week 4	Learning Outcome	2
Duration in minutes	0		
Assessment Description	Practical test		
Assessment Type	Class Test	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	S1 Week 10	Learning Outcome	1,2
Duration in minutes	0		
Assessment Description	Practical Test		
Assessment Type	Continuous Assessment	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	Every Second Week	Learning Outcome	1,2,3
Duration in minutes	0		
Assessment Description	Formative assessment where students will work both individually and in pairs on various problems		
No Project			
No Practical			
Final Examination			
Assessment Type	Formal Exam	% of Total Mark	40
Marks Out Of	0	Pass Mark	0
Timing	End-of-Semester	Learning Outcome	1,3
Duration in minutes	0		
Assessment Description	End of semester written examination.		

Part Time On Campus			
Course Work			
Assessment Type	Class Test	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	S1 Week 4	Learning Outcome	2
Duration in minutes	0		
Assessment Description	Practical test		
Assessment Type	Class Test	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	S1 Week 10	Learning Outcome	1,2
Duration in minutes	0		
Assessment Description	Practical Test		
Assessment Type	Continuous Assessment	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	Every Second Week	Learning Outcome	1,2,3
Duration in minutes	0		
Assessment Description	Formative assessment where students will work both individually and in pairs on various problems		
No Project			
No Practical			
Final Examination			
Assessment Type	Formal Exam	% of Total Mark	40
Marks Out Of	0	Pass Mark	0

Timing	End-of-Semester	Learning Outcome	1,3
Duration in minutes	0		
Assessment Description			
End of semester written examination.			

Module Workload

Workload: Full Time On Campus

Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Practical	Contact	There will be two 2-hour sessions of lab based classes per week where theory and practical content will be integrated.	Every Week	4.00	4
Directed Reading	Non Contact	Course related materials for discussion in class.	Every Week	2.00	2
Independent Study	Non Contact	Practice to reinforce class work	Every Week	2.00	2
Total Weekly Learner Workload					8.00
Total Weekly Contact Hours					4.00

Workload: Part Time On Campus

Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Practical	Contact	There will be two 2-hour sessions of lab based classes per week where theory and practical content will be integrated.	Every Week	4.00	4
Directed Reading	Non Contact	Course related materials for discussion in class.	Every Week	2.00	2
Independent Study	Non Contact	Practice to reinforce class work	Every Week	2.00	2
Total Weekly Learner Workload					8.00
Total Weekly Contact Hours					4.00

Module Resources

Supplementary Book Resources

Dale, Joyce, Weems. (2016), Object Oriented Data Structures using Java, 4. Jones & Bartlett, [ISBN: 9781284089097].
Timothy Henry, Frank Carrano. (2015), Data Structures and Abstractions with Java, 4. Pearson, [ISBN: 978129207718].
John Lewis. (2014), Java Software Structures: Designing and Using Data Structures, 4. Pearson, [ISBN: 978-01332501].

This module does not have any article/paper resources

Other Resources

Website, Java API,
<https://docs.oracle.com>