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
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).

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

Course Work

Assessment Type	Class Test	**% of Total Mark**	20
Marks Out Of	0	**Pass Mark**	0
Timing	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	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

Course Work

Assessment Type	Class Test	**% of Total Mark**	20
Marks Out Of	0	**Pass Mark**	0
Timing	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	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

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

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