

DATA: Data Structures and Algorithms

Madula Titler			Data Structures and Algorithms			
Module litle:			Data Structures and Algorithms			
Language of Instruction:		:	English			
Credits:	ł	5				
NFQ Level:	8	8				
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Module Dell	vereu in					
Teaching & Learning Strategies:			As well as traditional lectures students will undertake problem sheets on material presented in class using pseudocode for implementation. Small group tutorials will encourage further problem solving and discussion.			
Module Aim:			To introduce the student to Data structures and Algorithms, with an emphasis on application to general problem solving.			
Learning Ou	itcomes					
On successfi	ul completion	of th	is module the learner should be able to:			
LO1	Design and implement Abstract Data Types including lists, stacks, queues, rings, maps, etc and their corresponding algorithms;					
LO2	Implement a variety of structures and algorithms for storing, searching and sorting data;					
LO3	Outline a range of algorithms for the basic data structures in the areas of graph theory.					
Pre-requisit	e learning					
Module Rec This is prior l	ommendatio earning (or a	o ns prac	tical skill) that is recommended before enrolment in this module.			
No recomme	ndations liste	ed				
Incompatible Modules These are modules which have learning outcomes that are too similar to the learning outcomes of this module.						
No incompatible modules listed						
Co-requisite Modules						
No Co-requisite modules listed						
Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.						
First year programming or equivalent Specifically Array storage						



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Module Content & Assessment

Indicative Content							
Array Algorithms Review of vectors and matrices, basic array algorithms							
Data Structure Lists, stacks, q	es and Algorithr ueues, rings, ma	ns ps, Hash tables and collision strategies					
Basic Graph Theory Definitions, Representing and applications of simple graphs, Graph theory algorithms.							
Sorting Algorithms Simple sorting, bubble, selection, insertion, radix algorithms							
Searching Alg Linear, binary a	jorithms and hashing. Also	o Graph searching.					
Assessment E	Breakdown			%			
Continuous As	sessment			20.00%		20.00%	
Project				80.00%			
Continuous A	ssessment						
Assessment Type		Assessment Description	Outcome addressed		% of total	Assessment Date	
Other		Class test either online or in-class	1,2		20.00	Week 4	
Project			·			•	
Assessment Type	Assessment D	escription	Outcome addressed		% of total	Assessment Date	
Project	Group project to design, implement and code the structures and algorithms of a given application (e.g. A Car wash application) and presented in report format		1,2,3		50.00	Week 9	
Project	Take Home sh choosing and a	eet : to solve a set of unseen problems. Will involve applying appropriate data structures and algorithms.	1,2,3		30.00	Week 12	
No Prosting!							
INO Practical							
No End of Mod	lule Formal Exam	ination					

SETU Carlow Campus reserves the right to alter the nature and timings of assessment



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Module Workload

Workload: Full Time					
Workload Type	Frequency	Average Weekly Learner Workload			
Lecture	12 Weeks per Stage	2.00			
Tutorial	12 Weeks per Stage	1.00			
Estimated Learner Hours	15 Weeks per Stage	5.93			
	Total Hours	125.00			

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_KCSOF_B	Bachelor of Science (Honours) in Software Development	3	Mandatory
CW_KCSOF_D	Bachelor of Science in Software Development	3	Mandatory
CW_KCCOM_C	Higher Certificate in Science in Computing Programming	3	Mandatory