Course Outline

Title: C PROGRAMMING, DATA STRUCTURES AND ALGORITHMS

Code: ITECH3218

Formerly: CP707

Faculty / Portfolio: Faculty of Science

Program Level:

	AQF Level of Program					
	5	**6**	**7**	**8**	**9**	**10**
Level						
Introductory						
Intermediate			✔			
Advanced						

Pre-requisites: (CP627 or CP689 or ITECH2100)

Co-requisites: Nil

Exclusions: (CP707 and CP728 and CP732)

Progress Units: 15

ASCED Code: 020103

Learning Outcomes:

Knowledge:

K1. explain programming concepts such as recursion
K2. describe common algorithms, such as sorting algorithms, and explain different ways in which they may be used
K3. describe ways in which to measure the efficiency of an algorithm
K4. explain various abstract data types and data structures;
K5. explain the C memory model which involves concepts such as the stack, free store and pointers

Skills:

S1. develop C code using a top-down approach;
S2. write correct C code and involving abstract data structures;
S3. develop program solutions utilising a range of data structures and algorithms
S4. calculate and compare the efficiency of algorithms

Application of knowledge and skills:

A1. Design, develop, test and debug program solutions given textual, informally written program specifications

Values and Graduate Attributes:

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ITECH3218 C PROGRAMMING, DATA STRUCTURES AND ALGORITHMS

Values:

V1. Continue to develop professionalism in the design and implementation of software solutions.

Graduate Attributes:

Attribute	Brief Description	Focus
Continuous Learning	In a blended learning approach facilitated by the use of the C programming language and development environment requiring planning, development and implementation of programs involving abstract data types and algorithms, students will continue to develop their knowledge and skills.	Medium
Self Reliance	Students will participate in a self-directed and collaborative learning environment to develop their theoretical and technical expertise in the field of software development.	Medium
Engaged Citizenship	Students will produce programming solutions which meet industry standards.	Medium
Social Responsibility	Students will use industry standard development environments, programming languages and development techniques to deploy software solutions.	Medium

Content:

Topics may include:

- The C programming language.
- Efficiency of Algorithms, Time and Space Complexity.
- Various versions and implementations of common algorithms.
- Abstract data types and different ways in which they may be implemented.
- Recursion: the basic concepts, various examples throughout the course, when the usage of recursive algorithms is natural and efficient.

Assessment:

Learning Outcomes Assessed	Assessment Task	Assessment Type	Weighting
K1, K2, K3, K4, K5, S1, S2, S3, S4, A1	Practical demonstration of program design and report presentation skills	Assignments, laboratory tests, projects and/or presentations	40 - 50%
K1, K2, K3, K4, K5, S1, S2, S3, S4, A1	Class attendance and exercises, reading of reference material and lecture notes	Examination(s)	50 - 60%

Adopted Reference Style:

APA

Presentation of Academic Work:

https://federation.edu.au/students/assistance-support-and-services/academic-support/general-guide-for-the-presentation-of-academic-work