

**INTI INTERNATIONAL UNIVERSITY
COURSE STRUCTURE**

PROGRAMME: DIPLOMA IN INFORMATION AND COMMUNICATIONS TECHNOLOGY

1.	NAME OF COURSE/MODULE: INTRODUCTION TO DATA STRUCTURE																						
2.	COURSE CODE: ICT2102																						
3.	RATIONALE FOR THE INCLUSION OF THE COURSE/MODULE IN THE PROGRAMME : Data structure is important for the Computer Science students to be able to organize data using appropriate algorithm so that they can perform operations on these data in an effective way.																						
4.	STUDENT LEARNING TIME (SLT)	Total Face to Face					Total Student Independent Learning Time																
		L	T	P	O	A	OL	IL															
	L = Lecture T = Tutorial P = Practical(Lab) O= Others A= Assessment OL=Online learning IL= Independent learning	28	14			5	14	59															
5.	CREDIT VALUE: 3																						
6.	PREREQUISITE (IF ANY): ICT1103 C++ Programming																						
7.	LEARNING OUTCOMES: On completion of the course, students will be able to: 1. Develop and compare various types of algorithms and its efficiency. 2. Apply the concepts of structures, arrays and pointers in various applications. 3. Describe and apply appropriate data structures concepts.																						
8.	SYNOPSIS: This course covers the basic data structures used in software development, along with algorithms for inserting, searching, sorting and accessing data. The student will be familiar with how to create and use the data structures covered and will have learned which situations are best for each, depending on the type of data to be stored.																						
9.	MODE OF DELIVERY: Lectures, Practical, Tutorials. These are conducted both face to face and online.																						
10.	ASSESSMENT METHODS AND TYPES: <table><tr><td>Method</td><td>Types</td><td>Weightage (%)</td></tr><tr><td rowspan="4">Continuous Assessment</td><td>Assignment 1</td><td>20</td></tr><tr><td>Assignment 2</td><td>20</td></tr><tr><td>Test 1</td><td>10</td></tr><tr><td>Test 2</td><td>10</td></tr><tr><td>Summative Assessment</td><td>Final Examination</td><td>40</td></tr></table>								Method	Types	Weightage (%)	Continuous Assessment	Assignment 1	20	Assignment 2	20	Test 1	10	Test 2	10	Summative Assessment	Final Examination	40
Method	Types	Weightage (%)																					
Continuous Assessment	Assignment 1	20																					
	Assignment 2	20																					
	Test 1	10																					
	Test 2	10																					
Summative Assessment	Final Examination	40																					

11.

CONTENT OUTLINE OF THE COURSE/MODULE AND THE SLT PER TOPIC:

Sessions	Topics	LO	L	T	P	OL	Total		
							O	A	IL
1-6	Introduction and Overview Basic Concepts of Data Structure, Overview of Programming Concepts, Control Structures, Functions, Array, Pointers	1	6	3		1			
7-8	Introduction to construction of a pseudocode Elements required in writing of a pseudocode Calculate the efficiency of an algorithm .	1	2	1		1			
9-10	Recursive Functions Concepts of recursive functions. Recursive	2	2	1		1			
11-14	Sorting and Searching Techniques Insertion sort, Bubble sort, Selection sort, Quick sort, Sequential Search, Binary Search.	1	4	2		2			
15-16	Pointers Pointer Basics, Parameter Passing Using Pointers, Pointers and Arrays, Dynamic Memory Allocation, Pointers and Structures.	2	2	1		1			
17-20	Linked Lists Basic Linked List Operations, Implementation of Linked List Data Structure.	3	4	2		2			
21-22	Stacks Basic Stack Operations, Implementation Using Arrays, Implementation of Stack Data Structure.	3	2	1		1			
23-24	Queue Basic Queue Operations, Implementation of Queue Data Structure.	3	2	1		1			
25-28	Trees Basic Tree Operations, Implementation of Binary Search Tree Data Structure.	3	4	2		2			
	Final								
	TOTAL		28	14		14		5	59

Lecture (L), Tutorial (T), Practical (P), O (Other), Assessment (A), Online learning(OL); Independent Learning (IL); Learning Outcome (LO)

12.

MAIN REFERENCE(S) SUPPORTING COURSE:

- Weiss, M. A. 2013, *Data Structures and Algorithms Analysis in C++*, 4th Edition, Prentice Hall.

ADDITIONAL REFERENCES (AT LEAST 2):

- Malik, D.S, 2009, *Structures using C++*, 2nd Edition, Thomson Course Technology.
- Main, M. and Savitch W. (2010), *Data Structures and Other Objects using C++*, 4th Edition, Prentice Hall.

13. **OTHER ADDITIONAL INFORMATION (IF ANY):****FINAL EXAMINATION FORMAT:**

Duration: 2 hours

Section A: Answer TWO compulsory questions.

Section B: Answer any TWO out of THREE questions.

All questions carry equal marks.

GRADING SCALE:

A+ (90-100), A (80-89), A- (75-79), B+ (70-74), B (65-69), B- (60-64), C+ (55-59), C (50-54), C- (45-49), D (40-44), F (0-39).

Resit Pass (50-100), Resit Fail (0-49).

LABORATORY WORK:

Week	Practical Work
1-4	Functions, Array, Structures, Pointers
5	Recursive Function
6-7	Searching (Sequential and Binary Search) , Sorting (Bubble, Selection)
8-10	Linked List
11-12	Stack and Queue
13-14	Binary Search Tree