INTI INTERNATIONAL UNIVERSITY
COURSE STRUCTURE

PROGRAMME: DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

1. **NAME OF COURSE/MODULE : STRUCTURED PROGRAMMING**

2. **COURSE CODE: ICT1103**

3. **RATIONALE FOR THE INCLUSION OF THE COURSE/MODULE IN THE PROGRAMME :**

   Programming students must have the knowledge and skills in structured programming concepts using C++ language. They need to be exposed to the problem solving process and make use of C++ programming tool.

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**		**28**		**6**	14	84

5. **CREDIT VALUE**: 4

6. **PREREQUISITE** (if any): ICT1101Program Logic Design

7. **LEARNING OUTCOMES:**
   On completion of the course, students will be able to:
   1. Demonstrate how to apply problem-solving process in a programming environment.
   2. Apply basic programming principles using C++ language to solve problems on hand.
   3. Apply C++ program control structures in software development.
   4. Extend the functionality of the program using other methods in C++ language.

8. **SYNOPSIS:**
   This course is aimed to introduce students to the concepts of structured programming, using C++ language. Students will learn the basic features of programming such as program control structures, functions, arrays, sorting and searching, file and structures. Students will be exposed to problem solving process and writing the C++ programs to solve the problems using C++ compiler tool such as Microsoft Visual Studio 2013.

9. **MODE OF DELIVERY**: Lectures, practical, discussion and tutorials are conducted both face to face and online.

10. **ASSESSMENT METHODS AND TYPES:**

Method	Types	Weightage (%)
Continuous Assessment	Assignment	20
	Test	15
	Online Quiz	5
	Lab Tutorial 1	10
	Lab Tutorial 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
1-2	Introduction to C++ programming – C++ environment, structure of C++ program, compile and execute a sample of C++ programs	1	2		2	1			
3-4	Basic constructs of C++ – Importance of data types and variables, the primitive data types in C++, the rules in naming variables in C++, the assignment and initialization statement, Boolean, relational, and arithmetic operators, operators precedence	2	2		2	1			
5-6	Program Control structure – Sequential structure – simple I/O in C++: cin, cout, cin.getline and getline function	3	2		2	1			
7-9	Program Control structure - Selection Structure – Three control structures: Selection structure using if, if-else, nested if-else and switch statements, develop programs using conditional operator	3	3		2	1			
10-12	Program Control structure – Looping structure – repetitive structures: while, do-while and for loop; the use of break and continue statement in looping structure – solve problem using sentinel and counter-controlled program	3	3		2	1			
13-15	Modular programming – Functions – Concept of modular program in C++, types and concept of functions, a programmer-defined functions in C++; – Built-in functions: mathematical, characters and strings, the syntax of built-in functions; develop program using built-in functions	4	3		2	2			

	16-18	Introduction to Arrays – meaning of array and types of array, declaring and using arrays, accessing arrays elements; – pass arrays to functions	4	3		4	2			
	19-21	Introduction to Searching and Sorting methods – meaning of searching and sorting, types of sorting methods: selection and bubble sort, types of searching techniques: linear and binary search	4	3		4	2			
	22-24	Introduction to Structures – Meaning of structures, abstract data types, declaring struct types and variables, concept of arrays of structures, passing structure to function	4	3		4	2			
	25-28	File processing – text file: read and write – Concept of file processing, the syntax of using file processing in C++ ; Opening and closing files, Write file: ofstream, Read file: ifstream, passing file to functions	4	4		4	1			
		TOTAL		28		28	14		6	84

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

12. **MAIN REFERENCE(S) SUPPORTING COURSE:**

- Y.D. Liang (2013). *Introduction to programming with C++, 3rd Edition*, Prentice Hall, ISBN-10: 0133252817

ADDITIONAL REFERENCES (AT LEAST 2):

- Deitel P.J. (2009), C++ *How to Program*, 7th edition, Prentice Hall, New Jersey. ISBN: 0136117260
- Malik, D.S. (2010) C++ *Programming: From Problem Analysis to program Design*, 5th edition, Course Technology. ISBN: 0538798084
- Malik D.S. (2010) *Lab Manual for Malik's C++ Programming: From Problem Analysis to Program Design*, 5th Edition, Cengage Learning, ISBN: 0538798106

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13. **OTHER ADDITIONAL INFORMATION (IF ANY):**

EXAMINATION FORMAT:
Duration: 2 hours
Students are required to answer TWO compulsory questions in Section A. Students are required to choose TWO questions out of THREE in Section B. 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:

Lab	Practical Work
1	How to Compile and Run a program
2	Arithmetic Calculations, Relational, and Logical Operators Debugging and Testing C++ programs
3	Decision Structures – if, if-else, nested if-else statements, switch statements
4	Looping structure – counter-controlled loop: for, do_while, while loop
5	Looping structure – sentinel-controlled loop: do_while and while loop
6-7	Scope of functions: built-in and programmer-defined functions
8-10	Arrays; create programs using array method; passing array to function program
11	Searching and sorting: create a sorting program; add searching element into the program
12-13	Structures; create programs using structure method; pass structure to a function program
14	File processing; create program using file concept; add the array or structure element into a file processing program

Important Note:
A student who obtains a grade C- (45 -49 marks) in a 100% coursework module is required to resubmit the coursework component determined by the lecturer and ascertained at the Exam Board. Resubmission marks will be capped at a maximum of 50 marks or a grade C.

A passing mark can only be achieved when the student attempts both the coursework and final exams.

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