Northern Technical University
Institute of Management - Nineveh
Department of Computer Systems Technologies

MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	**Programming in C++**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☒ **Practical** ☐ **Seminar**	
Module Code	**CST100**				
ECTS Credits					
SWL (hr/sem)	**44**				
Module Level		1	**Semester of Delivery**		1
Administering Department			**College**	Computer Systems Department	
Module Leader	Sura Saad Basher		**e-mail**	bashersura@ntu.edu.iq	
Module Leader's Acad. Title		assistant teacher	**Module Leader's Qualification**		Master's degree in Computer Science
Module Tutor			**e-mail**		
Peer Reviewer Name		Establish yourself in programming using the C++ language M. Ismail Ali Ahmed Al-Shahali M. Hani Abdel Rahman Saif	**e-mail**	E-mail	
Scientific Committee Approval Date		09/04/2024	**Version Number**	1.0	

Relation with other Modules العالقة مع المواد الدراسية ألخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	1. The C++ language is one of the most important programming languages in the world, and is commonly used in many fields, including: computer software development: The C++ language is one of the most important programming languages that is used in developing various computer programs, such as file management programs and game programs. , accounting programs, and others.
Module Learning Outcomes	Understand the principles of the object-oriented model. Implementing and writing in C++ and overcoming typical implementation challenges through language libraries. Prepare for the C++ Programming Language Certified Associate (CLA) certification
Indicative Contents	C++ language: How to obtain outputs from the program and inputs from the user, how to write conditional statements, nested conditional statements, and loops of all kinds. You will also learn data types in C++ and how to perform simple mathematical operations. We will also learn about some advanced skills such as how to create new functions.

Learning and Teaching Strategies	
Strategies	Intermediate level: making it ideal for performing systems programming. Simple: Simple in content, can be divided into parts, and provides many types of data. Independent: It can run on different operating systems regardless of its parts.

Student Workload (SWL)			
Structured SWL (h/sem)	16	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	-	**Unstructured SWL (h/w)**	
Total SWL (h/sem)	44		

Module Evaluation

تَوْيِيم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (20)		LO #1, 2, 5 and 6
	Assignments	2	20% (20)		LO # 2, 4, 5and 6
Summative assessment	Midterm Exam	2hr	10% (10)		LO # 1-8
	Final Exam	3hr	50% (50)		All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج ألسبوعي النظري

	Material Covered
Week 1	Abstract of programming languages • What's a program language • The date and development of programming languages • Levels of programming languages • C++ language : beginning, development, its location within Levels of programming languages
Week 2	Basic essentials for C++ language/ C++ language concepts • What's C++ program contains? • What are the basic files? Simple explanation for basic files, that C++ program include
Week 3-4	Basic element and tools of C++ language • Language symbols • Definitions name • keywords • Constant represent • Variables represent
Week 5	• Data types in C++, and the represent methods in memory

	• char type • integer type • real type • Boolean (logical) type • Converting between deferent data types
Week 5	• Expressions types in C++ language, how formulate expression: • Arithmetic expression /deferent arithmetic operation and its priorities / conversion manner of arithmetic expression to Arithmetic expression in C++ language/deferent examples
Week 6	• Relational expression/ relational operations and its priorities/ formulate Relational expression • Logical expression/ logical operation and its priorities/ formulate Logical expression • Compound expression/ priorities table of public operations/ deferent examples
Week 7-8	• Give the primary values of constants and variables • Spaces and brackets • Type of comments • Special tools
Week 9-10	• minim tools
Week 11	• Assignment statement, its types/ with explanation examples • Arithmetic expression (equation) • counters, counter types • deferent images for equations belong to C++ language
Week 12	• Formatted Input and output functions • output text • Output numeric values • Output Arithmetic expression • un Formatted Input and output functions

Week 13	• Control, conditional, and loop statements
	• cond. Statement
	  ○ Cond. Tools
	  ○ If conditional statement
	  ○ If…else statement
	  ○ Nested conditional

Week 14	• switch conditional statement • nested conditional statement

Week 15	repetition statements • for loop , Nested for
Week 16	statement while
	statement do…while
	control at repetition statement continue statement exit statement go to
	Dimensional variables : arrays and matrices One Dimensional array
	two Dimensional array, square array(as special state of two Dimensional array
	Symbolic array, and represent string type
	Functions Global and local variable Define function Call function Ways of calling functions
	• Form of retrieving values from function • parameters arguments • factors effecting at using functions
	• functions of type void • User defined functions
	Library of standards functions • String functions • Arithmetic functions • Date and time functions
	graphics and screen • Colors functions • Draw pixels functions • Draw lines functions • Draw rectangle functions • Draw Circle functions • Draw pattern functions • Types of screens
	Build workable integral system, include arrays and above mentioned functions

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered	
		• Install C++ compiler. • Define main screen • Menus • Special Keys in editing
		• Written simple C++ programs such print your name • How Execute this program • Using menus
		• Written simple C++ program that used constant and variable.
		• Written simple C++ program that used data type by taken example including most data types
		• Written simple C++ program include most Expressions types , written different expressions forms
		• Written program used Relational expression/ relational operations and its priorities/ formulate Relational expression • Written program used Logical expression/ logical operation and its priorities/ formulate Logical expression • Written program used Compound expression/ priorities table of public operations/ deferent examples
		• Written a program include Assignment statement. Also contain Arithmetic expression (equation) • Written a program include counters. • In Execute time take different input data
		• Written program used Formatted Input and output functions • Written program output text • Written program Output numeric values also Output Arithmetic expression • Written program used un Formatted Input and output functions
		• Written program used Control, conditional, and loop statements • Written program used switch conditional statement And nested conditional statement
		Written program used repetition statements • for loop • Nested for

		• Written program used while Statement, do…while statement
		Written program include control at repetition: continue statement ,exit statement and go to statement
		Written program include: arrays, One Dimensional array
		Written program include: two Dimensional array, square array(as special state of two Dimensional array)
		Written program include Define function, call function and Global and local variable Define function
		• Written program that retrieving values from function • Study factors effecting at using functions
		Written program include User defined functions such add two matrix
		Written program include Library of standards functions : String functions, Arithmetic functions, Date and time functions
		• Written program draw different shapes. • Write function to draw shapes : rectangle, Circle, lines, square. • Study screen type
		Build workable integral system, include arrays and above mentioned functions

Learning and Teaching Resources

مصادر التعلم والتدريس

		Available in the Library?
Required Texts	Establish yourself in programming using the C++ language M. Ismail Ali Ahmed Al-Shahali M. Hani Abdel Rahman Saif	NO
Recommended Texts		
Websites		

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Grading Scheme
مخطط الدرجات

Group	Grade		Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent		90 - 100	Outstanding Performance
	B - Very Good		80 - 89	Above average with some errors
	C - Good		70 - 79	Sound work with notable errors
	D - Satisfactory		60 - 69	Fair but with major shortcomings
	E - Sufficient		50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail		(45-49)	More work required but credit awarded
	F – Fail		(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.