	Ministry of Higher Education and Scientific Research - Iraq Al-Mustaqbal University College of Engineering Department of Prosthetics and Orthotics Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	برمجة حاسوب			**Module Delivery**	
Module Type	ELECTIVE			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOMU0103024				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	1		**Semester of Delivery**	2	
Administering Department	UOMU0103		**College**	UOMU01	
Module Leader	Hussain Maad Abdalkhadim		**e-mail**	Hussain.Maad.Abdalkhadim@uomus.edu.iq	
Module Leader's Acad. Title	Asst. Lect.		**Module Leader's Qualification**	MSc.	
Module Tutor					
Peer Reviewer Name			**e-mail**		
Review Committee Approval	01/06/2023		**Version Number**	1.0	

<table>
<tr><th colspan="4">Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى</th></tr>
<tr><td>Prerequisite module</td><td>None</td><td>Semester</td><td></td></tr>
<tr><td>Co-requisites module</td><td>None</td><td>Semester</td><td></td></tr>
<tr><th colspan="4">Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية</th></tr>
<tr><td>Module Aims
أهداف المادة الدراسية</td><td colspan="3">1. To understand the basics of computer programming
2. To understand how to write a C++ program
3. To learn how to solve programming problems
4. To learn the main parts that constitute a C++ program.
5. To understand how to identify and solve programming bugs.
6. To understand the basics of object oriented programming paradigm.</td></tr>
<tr><td>Module Learning Outcomes

مخرجات التعلم للمادة الدراسية</td><td colspan="3">1. Recognize how does a program compile and run in a computer.
2. To be familiar with various C++ data types and variables.
3. To be able to define and use functions in a program.
4. To recognize various arithmetic and logical operators in C++.
5. To be able to use conditional statements to make decisions using if statement.
6. To use while and for loops to control the iterations in a C++ program.
7. To recognize the implicit and explicit type conversion in C++.
8. To be able to divide a program to several functions.
9. To be able to use arrays to store, retrieve, and process data in a program.
10. To be able to use arrays as parameters in functions.
To be able to define and use classes and objects in C++.</td></tr>
<tr><td>Indicative Contents
المحتويات الإرشادية</td><td colspan="3">Indicative content includes the following.
C++ Fundamentals:
overview of programming techniques, unstructured and procedural programming, introduction to object oriented model, a sample C++ program (2hrs)
C++ Types and Variables:
C++ built-in data types, defining variables (4hrs)
Using Functions:
declaring functions, mathematical standard functions, functions without arguments, functions without return value (4hrs)
Arithmetic and Logical Operators:</td></tr>
</table>

	binary arithmetic operators, arithmetic expressions, increment and decrement operators, prefix and postfix notation, relational operators, logical operators, increment and decrement operators, prefix and postfix notation, relational operators, logical operators (4hrs) **Type Conversion:** implicit and explicit data conversions, integer promotion (4hrs) **The standard class String:** string assignments, concatenating strings (4hrs) **Control Flow 1:** simple if statement, if with multiple statements, if/else statement, nested if statement, else/if chains, loops and iteration in C++, while statement (5hrs) **Control Flow 2:** the while statement, the for statement, the do-while statement, the if/else statement/ if/else chains, jumps with break and continue, the goto statement, examples (5hrs) **Functions:** defining functions, return value of functions, passing arguments, recursive functions (4hrs) **Arrays:** defining arrays, initializing arrays, c strings, multidimensional arrays, exercises (5hrs) **Classes:** the class concept, data abstraction, data encapsulation, defining classes, defining methods, defining objects, initializing objects, using objects (4hrs)
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. Labs will be essential to dee understanding of the programming techniques.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	3, 10	All
	Assignments	5	10% (10)	Continuous	All
	Projects / Lab.	10	10% (10)	Continuous	All
	Report	2	10% (10)	-	-
Summative assessment	**Midterm Exam**	2hrs	10% (10)	10	All
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction to Computers:** computer components and organization, software and hardware **C++ Fundamentals:** overview of programming techniques, unstructured and procedural programming, introduction to object oriented model, a sample C++ program
Week 2	**C++ Types and Variables:** C++ built-in data types, defining variables
Week 3	**Using Functions:** declaring functions, mathematical standard functions, functions without arguments, functions without return value
Week 4	**Arithmetic and Logical Operators:** binary arithmetic operators, arithmetic expressions, increment and decrement operators, prefix and postfix notation, relational operators, logical operators, increment and decrement

	operators, prefix and postfix notation, relational operators, logical operators
Week 5	**Control Flow 1:** simple if statement, if with multiple statements, if/else statement, nested if statement, else/if chains,
Week 6	**Control Flow 2:** loops and iteration in C++, while statement**,** the for statement, the do-while statement
Week 7	**Control Flow 3:** jumps with break and continue, the goto statement, examples
Week 8	**Type Conversion:** implicit and explicit data conversions, integer promotion
Week 9	**The standard class String:** string assignments, concatenating strings
Week 10	**Functions:** defining functions, return value of functions, passing arguments, recursive functions
Week 11	**Arrays 1:** defining arrays, initializing arrays
Week 12	**Arrays 2:** c strings, multidimensional arrays, exercises
Week 13	**References:** reference definition, read-only references, references as parameters, arrays as parameters
Week 14	**Classes 1:** the class concept, data abstraction, data encapsulation, defining classes
Week 15	**Classes 2:** defining methods, defining objects, initializing objects, using objects

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Hello World C++ Program**
Week 2	**Area and circumference of a circle and a rectangle**
Week 3	**Distance between two points using functions, solving a second order equation**
Week 4	**Using increment and decrement operators, using logical and relational operators**
Week 5	**if statement to find if a number is odd or even, if/else statement to print ranges of a number**
Week 6	**While statement to print multiples of a number, and to print multiplication table.**
Week 7	**A for statement to calculate average of numbers, and to print triangular shapes of stars**

Week 8	**Type Conversion examples**
Week 9	**Use standard class String**
Week 10	**Defining various functions to calculate the factorial of a number, etc.**
Week 11	**Using arrays to store and retrieve a set of numbers and process them**
Week 12	**Using arrays to sort numbers, print Fibonacci series, etc.**
Week 13	**Use arrays as parameters in functions, using references.**
Week 14	**Write an account class with its data members and member functions**
Week 15	**Write a Cylinder and Circle class with their data members and member functions**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	A Complete Guide to Programming in C++; Ulla Kirch-Prinz, Peter Prinz; 2002	Yes
Recommended Texts	C++ How to Program; Paule Deitel, Harvey Deitel; Eighth Edition 2012 Fundamentals of C++ Programming, Richard L. Halterman, 2016	No
Websites	https://www.w3schools.com/cpp/cpp_intro.asp	

APPENDIX:

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

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.

ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي