



Ministry of Higher Education and  
Scientific Research - Iraq  
University of Diyala  
College of Artificial Intelligence  
Engineering Technology  
Department of Cybersecurity Engineering



## الملحق 4: وصف المادة الدراسية

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	<b>Computer Programming</b>		Module Delivery	
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	<b>CSE 102</b>			
ECTS Credits	6			
SWL (hr/sem)	<b>150</b>			
Module Level	1	Semester of Delivery		2
Administering Department	Cybersecurity Eng.	College	College of Artificial Intelligence Engineering Technology	
Module Leader	Salam Abdulkhaleq Noaman		e-mail	purecomp.salam.noaman@uodiyala.edu. iq
Module Leader's Acad. Title	Prof.		Module Leader's Qualification	PhD
Module Tutor	Name (if available)		e-mail	E-mail
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	10/11/2025	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CSE 101	Semester	1
Co-requisites module	None	Semester	



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**Module Aims, Learning Outcomes and Indicative Contents**

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Objectives</b> أهداف المادة الدراسية</p>	<p>Upon completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Define and use functions in C++ program.</li> <li>2. Learn Enumeration type with Functions</li> <li>3. Learn how to define String type with string Operations</li> <li>4. Learn define and use arrays and strings</li> <li>5. Accessing struct members, I/O structs</li> <li>6. Define pointer data types , Address of Operator (&amp;) ,Pointer Variables</li> <li>7. Analyze and model classes and their relationship.</li> <li>8. Apply recursion.</li> <li>9. Perform simple file I/O streams.</li> </ol>
<p><b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Recognize functions in C++ program and their types and how th use them in program</li> <li>2. Define the Enumeration type with Functions</li> <li>3. Identify String type with string Operations</li> <li>4. Using arrays with their types in programs and strings with functions.</li> <li>5. Using structures to define data and recognize how to use them.</li> <li>6. Applying pointer data types and classes.</li> <li>7. Apply recursion in functions</li> <li>8. Perform simple file I/O streams</li> </ol>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Review of programming fundamentals (3 hours)</p> <p>User-Defined Functions (6 hours)</p> <p>User-defined simple data types and the string type (6 hours),</p> <p>Arrays and strings (9 hours)</p> <p>Records (Structs) (6 hours)</p> <p>Pointers, Classes (6 hours)</p> <p>Recursion (3 hours)</p> <p>File Input/Output (6 hours)</p>



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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	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, homework's and examples. Practical examples help students to understand the course material.
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب ل ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	<b>78</b>	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	<b>5.2</b>
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	<b>72</b>	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	<b>4.8</b>
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>150</b>		

### Module Evaluation

#### تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	Quizzes	2	10% (5)	6 and 12	LO #2 and #7
	Assignments	2	10% (5)	4, 7 and 10	LO #3 and #8
	Projects / Lab.	1	10% (10)	Continuous	All
	Participation & Attendance	1	10% (10)	Continuous	All
<b>Summative assessment</b>	Midterm Exam	2 hr	10% (10)	9	LO #1 - #5
	Final Exam	3 hr	50% (50)	16	All
<b>Total assessment</b>			<b>100% (100 Marks)</b>		



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**Delivery Plan (Weekly Syllabus)**

المنهاج الاسبوعي النظري

	<b>Material Covered</b>
<b>Week 1</b>	Review of programming fundamentals
<b>Week 2</b>	User-Defined Functions Value-Returning Functions ,return Statements
<b>Week 3</b>	Void Functions ,Parameters
<b>Week 4</b>	Enumeration Type, Functions and Enumeration Types
<b>Week 5</b>	String Type, Additional string Operations
<b>Week 6</b>	Arrays and strings One-Dimensional Array ,Indexing
<b>Week 7</b>	Array Searching , c-Strings
<b>Week 8</b>	Parallel Arrays ,Multidimensional Arrays
<b>Week 9</b>	Records (Structs) Accessing struct Members , I/O structs
<b>Week 10</b>	Arrays vs Structs
<b>Week 11</b>	Pointers, Classes Pointer data types , Address of Operator (&) ,Pointer Variables
<b>Week 12</b>	Dynamic Arrays
<b>Week 13</b>	Recursion Direct Recursion , Indirect Recursion ,Recursion vs Iteration
<b>Week 14</b>	File Input
<b>Week 15</b>	File Output
<b>Week 16</b>	Preparatory week before the final Exam



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**Delivery Plan (Weekly Lab. Syllabus)**

المنهاج الاسبوعي للمختبر

	<b>Material Covered</b>
<b>Week 1</b>	Review of programming fundamentals
<b>Week 2</b>	Example of function definition, declaration and call . Function header and body , Function declaration ,Function call and execution Function arguments ,Passing by value or reference
<b>Week 3</b>	Math library and system library built-in functions, Mathematical functions , How can I find out what library a function is in?
<b>Week 4</b>	Learn how to create and manipulate your own simple data type called the enumeration type
<b>Week 5</b>	Explore the string data type and learn how to use the various string functions to manipulate strings
<b>Week 6</b>	Arrays Declaration ,Array elements and indexing , Assigning values to array elements
<b>Week 7</b>	Passing arrays to functions , Character arrays
<b>Week 8</b>	Multi-dimensional arrays
<b>Week 9</b>	Learn about records (structs), Examine various operations on a struct
<b>Week 10</b>	Explore ways to manipulate data using a struct, Learn about the relationship between a struct and functions, Discover how arrays are used in a struct, Learn how to create an array of struct items
<b>Week 11</b>	Learn about the pointer data type and pointer variables , Explore how to declare and manipulate pointer variables , Learn about the address of operator and the dereferencing operator, Discover dynamic arrays,
<b>Week 12</b>	Discover the peculiarities of classes with pointer member variables Examine the relationship between the address of operator and classes
<b>Week 13</b>	Learn about recursive definitions, Explore the base case and the general case of a recursive definition Learn about recursive functions
<b>Week 14</b>	Reading files
<b>Week 15</b>	writing to files



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<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	Text	Available in the Library?
<b>Required Texts</b>	C++ Programming: From Problem Analysis to Program Design, 6th Edition; D.S. Malik	Yes
<b>Recommended Texts</b>	<ul style="list-style-type: none"> <li>• Programming and problem solving with C++: comprehensive sixth edition, Nell Dale and Chip Weems.</li> <li>• Computer Science Textbook class XI, First Edition, 2019.</li> <li>• C++ Primer Plus, Sixth Edition</li> </ul>	No
<b>Websites</b>	<ul style="list-style-type: none"> <li>▪ <a href="http://www.cplusplus.com/doc/tutorial/">http://www.cplusplus.com/doc/tutorial/</a></li> </ul>	

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