

Republic of Iraq  
Ministry of Higher Education & Scientific  
Research Supervision and Scientific  
Evaluation Directorate Quality Assurance  
and Academic Accreditation International  
Accreditation Dept.

## Academic Program Specification Form


University: Diyala  
College : Engineering  
Departments : Communication Engineering  
Date of Form Completion : 17/9/2023


  
Head of the Dept.

Date : 17 /9/2023

  
Dean's Assistant  
For Scientific  
Affairs  
Date : 19 /9/2023

  
The College Quality  
Assurance and University  
Performance Manager  
Date : 19 /9/2023

  
Dean of the college  
Date : 19 /9/2023





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College of Engineering  
Department of Communications Engineering



## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	C++ Programming		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	COE 105		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	
Administering Department	BSc - COMM	College	College of Engineering
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	13/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
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. Understand computers and classify programming languages .</li> <li>2. Write simple C++ program.</li> <li>3. Learn data types, variables, arithmetic operators, assignment and input statements.</li> <li>4. Learn relational operators and logical expressions.</li> <li>5. Using selection in program like if/if...else ,block statements , switch structures.</li> <li>6. Develop executable programs by using repetition control structures: While Looping, Do...while Looping, For Looping, Break and continue Statements Define and use functions in C++ program.</li> <li>7. Learn Enumeration type with Functions</li> <li>8. Learn how to define String type with string Operations</li> <li>9. Learn define and use arrays and strings</li> <li>10. Define pointer data types , Address of Operator (&amp;) ,Pointer Variables</li> <li>11. 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 computer system and programming languages .</li> <li>2. Build simple program by using different data types.</li> <li>3. Define the relational operators and logical expressions.</li> <li>4. Adding new abilities to program by using selection control structures.</li> <li>5. Applying repetition control structures in programs.</li> <li>6. Perform , Break and continue Statements.</li> <li>7. Recognize functions in C++ program and their types and how to use them in program</li> <li>8. Define the Enumeration type with Functions</li> <li>9. Identify String type with string Operations</li> <li>10. Using arrays with their types in programs and strings with functions.</li> <li>11. Applying pointer data types and classes.</li> <li>12. Apply recursion in functions</li> <li>13. Perform simple file I/O streams</li> </ol>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Introduction to computers and Classification of programming languages (1 hours), Introduction to problem solving (3 hours), Computers and Programming Languages (3 hours), Processing a C++ Program (3 hours).</p> <p>Basics of a C++ Program, Data Types, Variables, Arithmetic Operators (3 hours) , Assignment and Input Statements ( 3 hours).</p>



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	<p>Input / Output, I/O Streams (3 hours), Predefined Functions, Output Formatting (3 hours), Control Structures I (Selection): Relational Operators, Logical Expressions (3 hours), If/If...else, Block Statements (3 hours), Switch Structures (3 hours), Control Structures I (Repetition) : While Looping, Do...while Looping (3 hours), For Looping (3 hours), Break and continue Statements (3 hours), Preparatory week before the final Exam</p> <p>User-Defined Functions (6 hours), User-defined simple data types and the string type (6 hours), Arrays and strings (6 hours), Pointers, Classes (3 hours), File Input/Output (3 hours).</p>
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

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

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	<b>64</b>	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	<b>5</b>
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	<b>61</b>	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	<b>4.06</b>
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>125</b>		



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### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	8 and 13	LO #1 to #4 and #6 to #8
	Assignments	3	10% (10)	4, 7 and 11	LO #2, #3, #4, #5 and #7,#8,#9
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	0			
Summative assessment	Midterm Exam	2 hr	10% (10)	9	LO #1 - #7
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	History of C++ Language - Typical C++ Development Environment
Week 2	The main structure of C++ programs- OOP Classes declaration
Week 3	Data types - Variable declaration - Constant declaration - Simple Input/Output, I/O Streams
Week 4	Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators
Week 5	Increment & Decrement Operators -Bitwise Operators - Misc Operators.
Week 6	Conditional (Selection) Statement: if statement - if...else statements
Week 7	Nested if statements - Switch statement
Week 8	Iteration (Repetition) statements: while statement - do/while statement
Week 9	for statement - Nested for statement- Break and continue Statements
Week 10	<b>Mid-term Exam</b>
Week 11	Array: Array declaration - Single dimensional array - Multiple –subscripted Arrays
Week 12	String (1D array of characters) - Array of strings (2D array of characters).



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<b>Week 13</b>	Functions: Function Prototypes (declaration) - Calling Function - Function Definition
<b>Week 14</b>	Passing Arguments functions.
<b>Week 15</b>	Pointers: Advantage of using pointers - pointers in array.
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Review of typical C++ Environment and program instillation package
<b>Week 2</b>	Understand structure of C++ programs- OOP Classes declaration
<b>Week 3</b>	executing examples of Data types - Variable declaration - Constant declaration - Simple Input/Output, I/O Streams
<b>Week 4</b>	Applying of Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators
<b>Week 5</b>	Applying of Increment & Decrement Operators -Bitwise Operators - Misc Operators.
<b>Week 6</b>	Using Conditional (Selection) Statement: if statement - if...else statements
<b>Week 7</b>	Utilizing Nested if statements - Switch statement
<b>Week 8</b>	Applying Iteration (Repetition) statements: while statement - do/while statement
<b>Week 9</b>	Using for statement - Nested for statement- Break and continue Statements
<b>Week 10</b>	Applying Array: Array declaration - Single dimensional array
<b>Week 11</b>	Executing of Multiple –subscripted Arrays
<b>Week 12</b>	Test String - Array of strings.
<b>Week 13</b>	Understanding Functions: Function Prototypes (declaration) - Calling Function - Function Definition
<b>Week 14</b>	Applying Passing Arguments functions.
<b>Week 15</b>	Understanding Pointers: Advantage of using pointers - pointers in array.



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### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	1. 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>	

### Grading Scheme

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

**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.