

MODULE DESCRIPTION FORM

Fundamentals of Programming

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Fundamentals of Programming		Module Delivery	
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	BCYSCE102-S1			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	1	Semester of Delivery		1
Administering Department	CYSCE	College	TECM	
Module Leader	Dr. Zakaria Noor Aldeen Mahmood		e-mail	E-mail
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.	
Module Tutor			e-mail	zakaria@ntu.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	20/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Object oriented Programming (BCYSCE107-S2)	Semester	2
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none"> 1. Introducing the fundamentals and principles of programming in C++ language. 2. Teaching the concept of Procedure Oriented Programming. 3. Starts from scratch to advance programing by improving the skills of the students through several program implementation and code writing. 4. The students should be able to define programming purposes & the required code lines to perform the needed works. 5. as well as qualifying him to use the different kinds of programming style and program functions in building & executing the projects of cyber security engineering.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Understanding the fundamentals of programming in C++ language. 2. Mastering C++ programming tools and techniques, including common integrated development environment (IDE) such as visual studio. 3. Becoming familiar with the C++ concepts such as Variables, assignments, Simple input, Main program and functions. 4. Being competent in common If-statement, Loops, Boolean Expressions & Logical operators. 5. Being able to perform Function call, Parameters, return values. 6. Being able to write C++ codes, Basics of program design & Programming style.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<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, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.</p>
-------------------	--

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation				
تقييم المادة الدراسية				
		Time/Number	Weight (Marks)	Week Due
Formative assessment	Quizzes	4	10% (10)	3,6,9,12
	Assignments	8	5% (5)	Every other week
	Projects / Lab.	14	10% (10)	Continuous
	Report	2	5% (5)	7, 14
	Seminar	1	10% (10)	15
Summative assessment	Midterm Exam	2hr	10% (10)	7
	Final Exam	3hr	50% (50)	16
Total assessment			100% (100 Marks)	

FUNDAMENTALS OF PROGRAMMING - PROGRAMME COURSE DESCRIPTION

Code BCYSCE 102-S1	Name of the Course Unit	Semester	In-Class Hours (T+P)	Credit	ECTS Credit
	Fundamentals of Programming	2	2+3		7
GENERAL INFORMATION					
Language of Instruction :		English			
Level of the Course Unit :		BACHELOR'S DEGREE			
Type of the Course :		Compulsory			
Mode of Delivery of the Course Unit		Face to Face			
Coordinator of the Course Unit		Dr. Zakaria Noor Aldeen Mahmood			
Instructor(s) of the Course Unit		Dr. Zakaria Noor Aldeen Mahmood			
OBJECTIVES AND CONTENTS					
Objectives of the Course Unit:		Introducing the fundamentals and principles of programming in C++ language. Starts from scratch to advance programing by improving the skills of the students through several program implementation and code writing. The students should be able to define programming purposes & the required code lines to perform the needed works as well as qualifying him to use the different kinds of programming style and program functions in building & executing the projects of cyber security engineering.			
Contents of the Course Unit:		1. Procedure Oriented Programming 2. Structure of a program 3. Flow Chart. 4. Variables, assignments, Simple input, Main program If-statement If-else, Boolean Expressions & Logical operators 5. Output formatting. 6. Pointers. 7. Dynamic Memory.			
	Delivery Plan (Weekly Syllabus)				
	المنهاج الاسبوعي النظري				
WEEK	KEY LEARNING OUTCOMES OF THE COURSE UNIT (On successful completion of this course unit, students/learners will or will be able to)				
1	Introduction to C++ (Structure of a program), Flow Chart.				
2	Variables, assignments, Simple input, Main program.				
3	If-statement If-else, Boolean Expressions & Logical operators.				

	Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري
WEEK	KEY LEARNING OUTCOMES OF THE COURSE UNIT (On successful completion of this course unit, students/learners will or will be able to)
4	Loops Nested Loops, and program Design.
5	Output formatting.
6	Functions, Parameters, return values.
7	Debugger.
8	Lists Methods, Nesting, Slicing, and Comprehension.
9	Strings and String Formatting.
10	Dictionary and Handle Exceptions.
11	Values and references.
12	Basics of program design & Programming style.
13	Pointers (Reference operator, dereference operator, Declaring variables of pointer types, Pointers and arrays, Pointers to pointers, void pointers, and Pointers to functions).
14	Dynamic Memory (Operators new, check if the allocation memory is successful and Operators delete).
15	review/seminar
16	Final Exam.

	Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر
	Material Covered
Week 1	Lab 1: Getting started - Structure of a program- Flow Chart.
Week 2	Lab 2: Variables, assignments, Simple input, Main program - Examples and Problems
Week 3	Lab 3: If-statement If-else, Boolean Expressions & Logical operators - Examples and Problems.
Week 4	Lab 4: Loops Nested Loops, and program Design - Examples and Problems.
Week 5	Lab 5: Loops Nested Loops, and program Design - Examples and Problems.
Week 6	Lab 6: Functions, Parameters, return values - Examples and Problems.
Week 7	Lab 7: Debugger - Examples and Problems.
Week 8	Lab 8: Lists Methods, Nesting, Slicing, and Comprehension - Examples and Problems.
Week 9	Lab 9: Dictionary and Handle Exceptions - Examples and Problems.
Week 10	Lab 10: Pointers - Examples and Problems.
Week 11	Lab 11: Strings and String Formatting - Examples and Problems.
Week 12	Lab 12: Programming style.

Week 13	Lab 13: Values and references.
Week 14	Lab 14: Dynamic Memory - Examples and Problems.
Week15	Lab 15: Review
Week 16	Final Exam

Learning and Teaching Resources				
مصادر التعلم والتدريس				
	Text			Available in the Library?
Required Texts	1. Choudhary, H. (2013). C++ Programming-Final Golden Edition. Beginners To Experts Approach Guide-With Easy Learning & Problem Analysis to Program Design & Development.			no
Recommended Texts	2. Farrell, J. (2008). Object-oriented programming using C++. Cengage Learning. 3. Object-Oriented Programming in C++, Fourth Edition.			no
Websites	4. https://www.geeksforgeeks.org/cpp 5. https://www.w3schools.com/cpp			
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	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	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.				

WORKLOAD & ECTS CREDITS OF THE COURSE UNIT Fundamentals of Programming			
Workload for Learning & Teaching Activities			
Type of the Learning Activities	Learning Activities (# of week)	Duration (hours, h)	Workload (h)
Lecture & In-Class Activities	15	2	30
Preliminary & Further Study	NA	NA	NA
Land Surveying	NA	NA	NA
Group Work	NA	NA	NA
Laboratory	15	3	45
Reading	6	1	6
Assignment (Homework)	8	2	16
Project Work	NA	NA	NA
Seminar	1	1	1
Internship	NA	NA	NA
Technical Visit	NA	NA	NA
Web Based Learning	6	2	12
Implementation/Application/Practice	NA	NA	NA
Practice at a workplace	NA	NA	NA
Occupational Activity	NA	NA	NA
Social Activity	NA	NA	NA
Thesis Work	NA	NA	NA
Field Study	NA	NA	NA
Report Writing	2	2	4
Final Exam -Theory	1	3	3
Final Exam - Practical	1	1	1
Preparation for the Final Exam- Theory	1	20	20
Preparation for the Final Exam -Practical	1	15	15
Mid-Term Exam - Theory	1	2	2
Mid-Term Exam - Practical	1	1	1
Preparation for the Mid-Term Exam	1	15	15
Short Exam (Quizzes)	4	0.5	2
Preparation for the Short Exam (Quizzes)	4	2	8
Total Workload of the Course Unit			175