



Ministry of Higher
Education
Al-Zahrawi University
Faculty of Science
Department of
Cybersecurity Sciences



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Science Fundamentals		Module Delivery
Module Type	C		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	ZU-SC-CS-1A-CS		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	
Department	امن سيبراني	College	Science
Module Leader	م.م. امير فيصل مجيد	e-mail	Ameer.faisal@alzahu.edu.iq
Module Leader's Acad. Title	مدرس مساعد	Module Leader's Qualification	
Module Tutor		e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<p>To become familiar in the following topics:</p> <ol style="list-style-type: none"> 1. How Computer evolves& its basic principles 2. Understanding Data storage and representation 3. Knowing the programing languages and all paradigms 4. Studying the software lifecycle in software engineering 5. Discussing the four phases for developing the software engineering process. 6. Recognizing the importance of documentation in software engineering. 7. Define two categories of access methods: sequential access and random access. 8. Learning Algorithms Representation 9. Understanding how to design Flowchart and pseudocode 10. Knowing Data structure and how store array and record 11. Defining a stack and Queue, the basic operations of them, their applications, and how they can be implemented. 12. Stating some known algorithms for sorting and searching
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>On successful completion of the module, students at will be able to:</p> <ol style="list-style-type: none"> 1. Understanding the Turing model of a computer and the von Neumann model of a computer. 2. Understanding how different data is stored inside the computer as bit patterns. 3. Describing how integers are stored in a computer 4. Knowing how reals are stored in a computer using the floating-point format. 5. Describing how text, audio, image, and video are stored in a computer 6. Understanding how a program in a high-level language is translated into machine language using an interpreter or a compiler. 7. Understanding the concept of the software lifecycle in software

	<p>engineering</p> <ol style="list-style-type: none"> 8. Understanding Analysis, Design, Implementation and Testing phase in software engineering. 9. Understand the structure of sequential, indexed and hashed files and how they are updated. 10. Understanding sub-algorithms and their relations to algorithms, and Distinguishing between iterative and recursive algorithms. 11. Understanding Stack and Queue and their applications. 12. Knowing the concept of sorting and understand the mechanisms behind three primitive sorting algorithms. 13. Knowing the concept of searching and understand the mechanisms behind two common searching algorithms.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <p><u>Computer Evolving</u> Turing model and von Neumann model</p> <p><u>Data Storage and Representation</u> Integer, Real numbers, text, image, audio and video</p> <p><u>Programming Languages</u> Translation, Programming Languages paradigms</p> <p><u>Software Engineering</u> Software life cycle, Software Phases and documentation.</p> <p><u>File Structure</u> Sequential, indexed and hashed files</p> <p><u>Algorithms</u> Flowchart, pseudocode and sub algorithms</p> <p><u>Data Structure</u> Stack, Queue, Sorting and Searching</p>

<p>Learning and Teaching Strategies استراتيجيات التعلم والتعليم</p>	
<p>Strategies</p>	<ol style="list-style-type: none"> 1- Lectures (Present by using PowerPoint and pdf) 2- Discussion. 3- Practical training.

	<p>4- Interaction between the Instructor and the students by questions.</p> <p>5- e-Quizzes.</p>
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Student Workload (SWL) الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	30% (30)	3, 6 and 12	LO #1- 3, LO#5-8 and #10-11
	Assignments	2	10% (10)	5 and 12	LO #4- 11
	Projects / Lab.	-	-	-	-
	Report	-	-	-	-
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #1 - 7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Course Overview
Week 2	Turing Model, Von Neumann Model and Computer history

Week 3	Data Storage and Representation: Integer numbers
Week 4	Float numbers, IEEE float32, 64 bit model
Week 5	Text, Image, Audio and Video Representation
Week 6	Programming Languages: Evolution, compiler and interpreter
Week 7	Programming Languages paradigms: procedural, object oriented, declarative and functional
Week 8	Midterm Exam
Week 9	Software engineering: The software life cycle, Analysis, Design, Implementation and Testing phase and Documentation
Week 10	File Storage: Sequential, indexed and Hashed files
Week 11	Algorithms: Formal Definition, Three Constructs, Flowcharts, pseudocode
Week 12	Data structure: Array Records and Link List storage
Week 13	Abstract Data Types: Stack and Queue
Week 14	Sorting: Selection, Insertion and Bubble Sort Algorithms
Week 15	Searching: Sequential and Binary Search+ Sub algorithms: Iterative and Recursion
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Foundations of Computer Science 4th edition by BEHROUZ FOROUZAN, CENGUG Learning EMA, 2018, Australia.	Yes
Recommended Texts	Introduction to Computer Science: A Textbook for Beginners in Informatics, 2 nd edition, Gilbert Brands, 2015, University of Cambridge.	Yes
Websites	https://www.coursera.org/learn/computer-science-foundations	

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

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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.