

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Principles		Module Delivery
Module Type	Support		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	ICE		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	first	Semester of Delivery	
Administering Department	ICE	College	KHW
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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>	<ol style="list-style-type: none">1. Learn about computers, particularly their components and their usage in software engineering.2. Exploring Hardware and Software Principles, Number systems, architecture of a computer, operating systems, programming language, compiler and network are some important hardware principles while software principals include operating systems, programming language, compiler and network.3. The program should be focused on giving students practical skills they need when working with computers in the modern world of Internet, so that students would master every-day use of computers as a standard instrument for their work.4. Improve communication and collaboration with the colleagues in the workplace; thus ensuring proper team work.5. Prepare students on security aspects and operating environments of software systems, enabling them to make sound judgments about system security and adjustability.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Students will acquire comprehensive knowledge about the core notions relating to hardware, OS, applications, and usable interfaces in computers systems.2. Students are expected to identify and expound hardware concepts e.g., the number systems and computer architecture and also software aspects like operating systems, programming languages, compiler, network and human/computer interaction.3. This course develops necessary knowledge on how to use and maintain computer systems through internet. Therefore, students are equipped with competence on moving around the digital marketplace.4. After the course completion, the student is assured of communicating professionally with IT staff members.5. This will enable students to appreciate and participate in development of secure software and secure management of systems.6. Students would gain practical understanding with crucial information essential for effective work within the changing demands of the IT sector.7. This will help students understand how various parts function together in the operation of some software systems and thus have an entire picture on what comprises the computer system.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><u>Part A – Introduction to Computer Systems</u></p> <ul style="list-style-type: none">• Basic components: Hardware System, Software System—Operating System• Software and Application Software, Network System• Evolution of Computer Systems• Brief History• Applications of Computer Systems

- Data Representation in a Computer System
 - Bits and Bytes
 - Number Systems integer and floating-point data – representation and operations
 - Other data formats, character, image, audio, video
 - Hardware Systems
 - Processor and Memory
 - Processor Basics; Types of Memory
 - Instructions and Instruction Cycle
 - Peripherals, Connecting Peripherals, Buses;
 - Input/Output Devices
 - I/O Interrupts
 - Storage Devices
 - Disk Controller Interfaces; Mass Storage
 - Putting Together the Hardware Components
 - Improving Computer Performance
 - Moore's Law , Bottlenecks [15 hrs]

Part B- System Software

- Operating System
 - Layers of Software, BIOS.
 - Process Control, CPU and Memory Management
 - Role and Scheduling;
 - Memory management;
- Device Management and Configuration
 - Interrupt Handling;
 - Hardware Attributes;
 - Configuration
- Resource Sharing
 - Virtual Memory; File and Printer Sharing
- File Systems
 - File Organization and Allocation
 - File Access Permissions
- User Interface
 - Graphical User Interface
 - Command Line Interface
- Application Software
 - Software Basics
 - Using Software Systems
 - Batch Script Files
 - Advanced Command-Line Functions; Batch File Commands
 - Databases
 - SQL
- Software Engineering
 - Issues in Large-Scale Software; Open Source Model; Tools for Software Creation and Management
- Software Tools [15 hrs]

Part C- Network and Computer Security Systems

- Network Systems
- Internet Basics
 - MIME Types; Internet Languages;

	<ul style="list-style-type: none"> – Local and Wide Area Networks • Communication Strategies <ul style="list-style-type: none"> – Client-Server Framework – Peer-to-Peer Networking • Data Transfer Technologies • Internet Architecture <ul style="list-style-type: none"> – Routers and TCP/IP; Domain Name Service; Connectivity; Internet Service Providers • Computer Security • Security Threats <ul style="list-style-type: none"> – Identity Theft and Privacy Violation; Malicious Software; Denial of Service • Security Technologies <ul style="list-style-type: none"> – Encryption; Applications of Encryption; Authentication • Prevention, Detection, and Recovery <ul style="list-style-type: none"> – Firewall; Intrusion Detection Tools; Data Recovery; Summary of Security Tips [10 Hrs]
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>Type something like: 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>
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب ل ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	25% (25)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	5% (5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	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	Introduction to Computer Systems Basic components: Hardware System, Software System—Operating System Computer Systems and Current Technology. How dose computer work.
Week 2	Basic Structure of Computers. Overview of computer organization and architecture. Historical perspective and evolution of computer systems.
Week 3	Hardware Systems Processor and Memory. Processor Basics; Types of Memory. Instructions and Instruction Cycle. Peripherals, Connecting Peripherals, Buses.
Week 4	Memory Hierarchy: Memory types (RAM, ROM, cache, etc.). Memory organization and addressing. Cache memory and its organization. Virtual memory and paging.
Week 5	Input/Output organization I/O Interrupts. Storage Devices. Disk Controller Interfaces; Mass Storage.
Week 6	Putting Together the Hardware Components Improving Computer Performance Moore's Law, Bottlenecks
Week 7	Mid-term exam Multiprocessor and Parallel processing Parallel processing and multi-core architectures. Distributed computing.
Week 8	Introduction to Programming Languages:

	Overview of programming languages. Evolution and classification of programming languages.
Week 9	Overview of system analysis and design. The role of a systems analyst. Systems development life cycle (SDLC).
Week 10	Requirements Gathering and Analysis: Gathering and documenting user requirements. Design documentation and specifications. User interface design.
Week 11	Software Engineering Issues in Large-Scale Software; Open-Source Model; Tools for Software Creation and Management Software Tools
Week 12	Computer networks and web technologies basic networking concepts, including mobile networks; and. Internet and Web Technology concepts.
Week 13	Computer Security Security Threats Identity Theft and Privacy Violation; Malicious Software; Denial of Service
Week 14	Security Technologies Encryption; Applications of Encryption; Authentication Prevention, Detection, and Recovery Firewall; Intrusion Detection Tools; Data Recovery; Summary of Security Tips
Week 15	Applications and implications of information and communications technology. Information processing.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	

Week 13	
Week 14	
Week 15	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	<ul style="list-style-type: none"> – Gupta, C. P., & Goyal, K. K. (2020). Computer Concepts and Management Information Systems. Computer Concepts and Management Information Systems. De Gruyter. https://doi.org/10.1515/9781683925842. – William Stallings, “Computer Organization and Architecture – Designing for Performance”, Pearson Education. – Structured computer organization / Andrew S. Tanenbaum, Todd Austin. -- 6th ed 	No
Recommended Texts	N. I. Sarkar, “Introduction to Computer Networking and Hardware Concepts,” Tools for Teaching Computer Networking and Hardware Concepts, pp. 1–20, doi: 10.4018/978-1-59140-735-5.ch001.	Yes
Websites	Introduce to Computer Science (cs50) Harvard College. http://cs50.net	

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.