




Academic Program Description Form

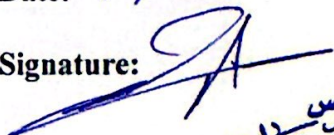


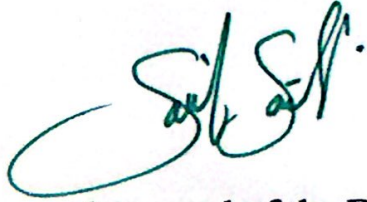
University Name: Wasit University
Faculty/Institute: Computer science and IT faculty
Scientific Department: Computer science
Academic or Professional Program Name: Computer science
Final Certificate Name: Computer science
Academic System: Bologna process
Description Preparation Date:
File Completion Date:

Signature: 
Head of Department Name: أ.م.د. علي فاضل الياسري
Date: رئيس قسم علوم الحاسوب
2024/3/10

Signature: 
Scientific Associate Name:
Date: 10/03/2024
Dr. Ahmad Shaker Abdalrada
Assistant of Dean for Scientific Affairs

The file is checked by the Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department

Date: 10/3/2024
Signature:  Ali Kereem
م.م. علي كرم جبار
علي كرم جبار


Approval of the Dean

2024.3.10.

Asst. Prof. Dr
Saif Ali Albaidi
Dean college of computer
science & Information Technology

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Architecture		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 type="checkbox"/> Seminar
Module Code	cs-104		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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	
Module Objectives أهداف المادة الدراسية	A- Aims: Goal: The main goal of this course is to provide students with the knowledge related to digital design, computer architecture and assembly language. Objectives: • Understand Logic gates • Design Combinational and Sequential Circuits • Write and Analyze Assembly programs
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	this course introduces students to basic concepts about computer architecture from security perspectives. Its emphasis is on the lower level abstraction of a computer system. Topics included: digital logic, instruction set, ALU design, memory and assembly language programming. The course offers programming practice with an assembly language to provide practical application of concepts presented in class
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. - <u>Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to ...</u> <u>A-Knowledge and understanding: with the ability to ...</u> <u>A1) Understand the Boolean algebra theorems and properties.</u> <u>A2) Understand the main concepts of gate-level minimization.</u> <u>A3) Understand the combinational logical circuits.</u> <u>A4) Understand the sequential logical circuits.</u> <u>A5) Understand the main components of a computer system.</u> <u>A6) Understand the information representation in a computer</u> <u>A7) Understand the main structure of an assembly language.</u> <u>A8) Understand the main concept of a virtual memory.</u> - <u>B- Intellectual skills: with the ability to ...</u> <u>B1) Simplify Circuits</u> <u>B2) Convert Boolean functions into standard and canonical forms</u> <u>B3) Link truth table, Boolean functions and circuit diagrams together.</u> <u>B4) Identify the different types of circuits.</u> <u>B5) Identify the different types of registers.</u> <u>B6) Relate C programs into Assembly language.</u> <u>B7) Identify the different parts of a virtual memory.</u> <u>B8) Identify the different encoding of information.</u> <u>B9) Identify different types of overflow attacks.</u> <u>C- Subject specific skills – with ability to ...</u> <u>C1) Design combinational circuits</u> <u>C2) Design sequential circuits.</u> <u>C3) Develop an assembly program.</u> <u>C4) Analyze and Debug a C and Assembly programs.</u> <u>D- Transferable skills – with ability to</u> <u>D1) Debug and Analyze programs in Linux OS</u>

	<p>Components and active devices – Components vs elements and circuit modeling, real and ideal elements. Introduction to sensors and actuators, self-generating vs modulating type sensors, simple circuit interfacing. [7 hrs]</p> <p>Diodes and Diode circuits – Diode characteristics and equations, ideal vs real. Signal conditioning, clamping and clipping, rectification and peak detection, photodiodes, LEDs, Zener diodes, voltage stabilization, voltage reference, power supplies. [15 hrs]</p>
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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>
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	105	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
	Midterm Exam	2hr	10% (10)	7	LO #1 - #7

Summative assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	digital Systems and Binary Numbers
Week 2	boolean Algebra and Logic Gates
Week 3	gate Level Minimization
Week 4	Combinational Circuits
Week 5	Sequential Circuits.
Week 6	Register and Memory
Week 7	Mid-term Exam
Week 8	Introduction to Computer System
Week 9	Introduction to Computer System
Week 10	Information Representation: Integer and Float
Week 11	Program Representation: Data Movement and Control
Week 12	Program Representation: Function and Virtual Memory
Week 13	Program Representation: Heap and Data
Week 14	System Calls
Week 15	Revision
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	(1). Construct an Arithmetic Unit capable of performing 4-bit subtraction and Addition using 2's complement method. Use Parallel Adders and other necessary logic gates.
Week 2	2). Construct a logical Unit using logic gates capable of performing 4-bit, Bitwise ORing, ANDing, XORing and inversion.

Week 3	Construct an 4-bit ALU unit which can perform the following operation;
Week 4	Construct a 2-bit Carry Look Ahead Adder using logic gates.
Week 5	Study and Construct a 1-digit BCD/Decimal adder using parallel adders and other necessary logic gates
Week 6	Construct a Binary Multiplier using basic logic gates.
Week 7	Mid-term Exam
Week 8	Construct a Binary Divider using basic logic gates.
Week 9	Subtraction with 1's complement method using parallel adders and other necessary logic gates.
Week 10	Construction of BCD Subtractor with 9'S complement method using parallel adders and logic gate
Week 11	Construction of BCD Subtractor with 10'S complement method using parallel adders and logic gates
Week 12	Binary magnitude comparators (up to 4 bits) using parallel adder and logic gates
Week 13	Construct a Binary 4-bit and 8-bit adder using logic gates.
Week 14	Construct a Serial in Serial out 4-Bit register.
Week 15	Construct a 4-Bit Universal Shift register.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1. Digital Design, M. Mano and Michael D. Ciletti, Pearson, 6th edition, 2019	Yes
Recommended Texts	2. Randal E. Bryant and David R. O'Hallaron, Computer Systems A Programmer's Perspective, 3rd edition, Pearson, 2016.	yes
Websites	Google, Course website: elearning.ju.edu.jo	

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.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Organization		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 type="checkbox"/> Seminar
Module Code	cs-101		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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	
Module Objectives أهداف المادة الدراسية	<p>Computer organization refers to the way in which the hardware components of a computer system are arranged and interconnected. It implements the provided computer architecture and covers the “How to do?” aspect of computer design. The aim of computer organization is to provide a clear understanding of the operation of a computer system.</p>
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ul style="list-style-type: none"> • Discussing the organization of computer-based systems and how a range of design choices are influenced by applications. • Understanding different processor architectures and system-level design processes. • Understanding the structure, function and characteristics of computer systems. • Understanding the design of the various functional units and components of computers. • Identifying the elements of modern instructions sets and their impact on processor design. • Explaining the function of each element of a memory hierarchy. • Identifying and comparing different methods for computer I/O. • Grasping the basic elements of logic circuits and other higher level modules. • Demonstrating computer organization & its programming consideration.
Indicative Contents المحتويات الإرشادية	<p>A- Aims: The main goal of this course is to teach students the foundation of computer organization, the structure and behavior of the various functional units of the computer and how they interact to provide the processing needs of the user. The course aims to provide students with sufficient background necessary to understand the hardware operation of digital computers. Objectives include enabling students to:</p> <ol style="list-style-type: none"> 1. Learn about computer functional modules. 2. Understand the algorithms used in computer arithmetic. 3. Understand the techniques used in designing a digital computer. 4. Understand the concepts related to computer architecture. 5. Understand the basics of parallel processing <p>B- Intended Learning Outcomes (ILOs): A- Knowledge and Understanding: Students should ... A1) Learn the concepts of computer organization. A2) Know the important principles and definitions of computer architecture. B- Intellectual skills: with the ability to ... B1) Compare and analyse the techniques used in the different computer functional modules. B2) Apply the appropriate tools to a digital computer design. C- Subject specific skills – with ability to ... C1) Work on the implementation of the algorithms of the computer arithmetic. C2) Translate the learned concepts and ideas into practice. C3) Understand the main attributes of a computer system architecture. D- Transferable skills – with ability to D1)</p>

	Possess good knowledge of the concepts of computer architecture. D2) Develop advanced techniques, tools and algorithms into complete projects. D3) Choose the appropriate computer functional module for a certain project
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	105	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	45	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	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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	basic Structure of Computers (Qualitative Discussion)
Week 2	Register Transfer and Micro-operation
Week 3	basic Computer Organization and Design
Week 4	CPU Organization
Week 5	Control Unit Hardwired Control Unit, Micro-programmed Control Unit: Control memory, Address Sequencing, conditional branching, mapping of instructions, subroutine, Design of Control Unit.
Week 6	CPU Registers Program Counter, Stack Pointer Register, Memory Address Register, Instruction Register,
Week 7	Mid-term Exam
Week 8	Instructions. Operational Code, Operands, Zero, One, Two and Three Address Instruction, Instruction Types, Addressing modes, Data Transfer and Manipulation instructions, Program control instructions.
Week 9	CISC and RISC processors Introduction, relative merits and De-merits.
Week 10	Computer Peripherals VDU, Keyboard, Mouse, Printer, Scanner (Qualitative approach).
Week 11	Memory Primary memory: ROM, PROM, EPROM, EEPROM, Flash memory
Week 12	Memory RAM: SRAM, DRAM, Asynchronous DRAMs, Synchronous DRAMs, Structure of Larger Memories, RAMBUS Memory, Cache Memory:
Week 13	memory Mapping Functions, Replacement Algorithms, interleaving, Hit and Rate penalty, Virtual memories, Address Translation, Memory
Week 14	memory Management requirements, Secondary Storage: Magnetic Hard Disks, Optical Disks, Magnetic Tape Systems.
Week 15	computer Peripherals VDU, Keyboard, Mouse, Printer, Scanner (Qualitative approach).

Week 16	Preparatory week before the final Exam
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Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Principle of Windows I
Week 2	Principle of WindowsII
Week 3	Principle of Windows IV
Week 4	Format pc I
Week 5	Format pc II
Week 6	Microsoft Office
Week 7	Office WORD I
Week 8	Office WORD II
Week 9	Office excel sheet I
Week 10	Office excel sheet II
Week 11	Office excel sheet IV
Week 12	Power point I
Week 13	Power point II.
Week 14	Power point IV.
Week 15	Final

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	- Computer System Architecture, Mano, Latest edition,	Yes
Recommended Texts	• Computer Organization, Hamacher, McGraw-Hill. • Structured computer organization, Tanenbaum, Prentice Hall	yes
Websites	google	

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.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English		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 type="checkbox"/> Seminar
Module Code	Uni-101		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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

Module Objectives أهداف المادة الدراسية	Students will focus on English at a pre-intermediate level concentrating on the receptive skills of reading and listening and the productive skills of writing and speaking. These will include such things as comparatives and superlatives, quantifiers, possessive adjectives and pronouns, vocabulary building, roleplay activities for speaking, reading comprehension and writing short descriptive paragraphs.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Teaching the four English skills(reading, writing, speaking ,listening and translation)
Indicative Contents المحتويات الإرشادية	active contents in learning English refer to the factual points that candidates are expected to know and understand in order to pass an exam or course.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	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.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	15	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
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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 computer user
Week 2	Digital camera
Week 3	Computer architecture Processor CPU
Week 4	Computer architecture Binary system
Week 5	Computer architecture Hard disk
Week 6	Computer application Speed trap
Week 7	Mid-term Exam
Week 8	Computer application ATM, Data base , barcode
Week 9	Peripheral
Week 10	Peripheral
Week 11	Former student Higer national certificated
Week 12	Former student Higer national certificated
Week 13	Operating system

Week 14	Operating system
Week 15	Graphic user interface
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Oxford English in INFORMATION TECHNOLOGH	Yes
Recommended Texts	Interchange by Jack C. Richards	yes
Websites	A junior English Grammar and Composition	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Human Right		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 type="checkbox"/> Seminar
Module Code	Uni-102		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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	
Module Objectives أهداف المادة الدراسية	In order to educate the new generation about Democracy, because these concepts are of great importance, which is clearly evident in Iraq, because one of the most important reasons for the collapse of the security situation in Iraq is the absence of full awareness of the importance of these concepts
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and Understanding A1: Knowing the facts about the concept of Democracy and how this concept is applied at the level of countries B- B- Subject-specific skills B1: The student compares and analyzes the reality of democracy in his country and how these concepts are applied internationally to know the weaknesses and negatives of application in his country
Indicative Contents المحتويات الإرشادية	That the student uses these concepts of the subject he learned in his practical and professional life

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	15	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	75		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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	concept of Rights(DefinitionCharacteristics-Categories)
Week 2	Human rights in the divine laws (Christian, Jewish and Islamic religions
Week 3	man rights sources (ainternational sources
Week 4	human Rights Sources (BNational Sources
Week 5	Human rights guarantees (a - guarantees at the national level
Week 6	Human rights guarantees at the international level
Week 7	Mid-term Exam
Week 8	The concept of democracy - forms of democracy (1 - direct democracy
Week 9	Parliamentary democracy (the concept of the representative system - the pillars of the representative system)
Week 10	Forms of the parliamentary system (1- the council system, 2- the presidential system)
Week 11	- Parliamentary system
Week 12	Parliament* (the mechanism of the parliamentary system “election” - the concept of election - the electorate)
Week 13	The concept of semi-direct democracy - manifestations of semi-direct democracy
Week 14	Organizing the election process
Week 15	Organizing the election process

Week 16	Preparatory week before the final Exam
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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Human rights, children and democracy Dr. Maher Saleh	Yes
Recommended Texts	Allawi Al-Jubouri and others - Lectures on democracy - Dr. Faisal Shatnawi	yes
Websites	Google	

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.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Math 1		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 type="checkbox"/> Seminar
Module Code	cs-103		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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

Module Objectives أهداف المادة الدراسية	This course studies the mathematical elements of computer science. Topics include propositional logic; predicate logic; mathematical reasoning; techniques of proof; mathematical induction; set theory; number theory; matrices; sequences and summations; functions, relations and their properties, elementary graph theory, and tree.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Learning outcomes are concise descriptions of what students will learn and how that learning will be assessed.
Indicative Contents المحتويات الإرشادية	In general, mathematics is the study of numbers, quantities, and shapes ² . It is a subject that is used in everyday life and is essential in many careers such as engineering, science, and finance ³ .

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	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.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	105	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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 plane geometry
Week 2	function and graph
Week 3	slope of curves
Week 4	derivative of function
Week 5	computations of derivatives-sum,
Week 6	product, and quotient formulas
Week 7	Mid-term Exam
Week 8	chain rule
Week 9	implicit differentiation, applications of derivatives to optimization problems and related rate problems
Week 10	implicit differentiation, applications of derivatives to optimization problems and related rate problems
Week 11	mean-value theorem;
Week 12	definite integrals and fundamental theorem of calculus application of definite integrals to computations of areas (length, surface) and volumes.
Week 13	application of definite integrals to computations of areas (length)
Week 14	application of definite integrals to computations of areas surface
Week 15	application of definite integrals to computations of areas volumes.

Week 16	Preparatory week before the final Exam
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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Thomas Calculus", 12thED, George B. Thomas Jr., Maurice D. Weir, Joel R. Hass, 2009 Differential Equations (Schaum's Outlin Series).	Yes
Recommended Texts	2. Calculus (Howard Anton).	yes
Websites	3. Advanced Engineering Mathematics (Erwin Kreyszig)	

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.				

2MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Program languages 1		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 type="checkbox"/> Seminar
Module Code	cs-102		
ECTS Credits	6		
SWL (hr/sem)	105		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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

Module Objectives أهداف المادة الدراسية	1- Learn the classification of programming techniques and the operations of computer. 2- Study the basic knowledge about fundamentals of programming languages
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Study the Classification of programming, the structure and operations of a computer, basic of arithmetic operations and control structure.
Indicative Contents المحتويات الإرشادية	The indicative contents of a study program language can vary depending on the institution and the specific program. However, most programming languages courses cover the basics of programming concepts such as data types, variables, control structures, functions, and algorithms. They also cover more advanced topics such as object-oriented programming, software engineering principles, and web development.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	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.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	105	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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 programming language describing how to display text, add integers
Week 2	Defining memory concepts, Arithmetic, Equality and relational Operators
Week 3	Introduction to classes and objects.
Week 4	Defining and declaring a class with a method,
Week 5	Declaring a method with a parameter
Week 6	Introducing instance variables
Week 7	Mid-term Exam
Week 8	Introducing instance variables, set methods, get methods
Week 9	Initializing Objects with constructors
Week 10	Defining floating-point numbers and type double
Week 11	Control Statements Part I - Conditional statements, repetition using while statement
Week 12	Control Statements Part I - Conditional statements, repetition using while statement
Week 13	types of repetitions, nested repetition
Week 14	compound assignment statement
Week 15	increment and decrement operators.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to programming language describing how to display text, add integers
Week 2	Defining memory concepts, Arithmetic, Equality and relational Operators
Week 3	Introduction to classes and objects.
Week 4	Defining and declaring a class with a method,
Week 5	Declaring a method with a parameter in c++
Week 6	Introducing instance variables in c++
Week 7	Mid-term Exam
Week 8	Introducing instance variables, set methods, get methods
Week 9	Initializing Objects with constructors
Week 10	Defining floating-point numbers and type double
Week 11	Control Statements Part I - Conditional statements, repetition using while statement
Week 12	Control Statements Part I - Conditional statements, repetition using while statement
Week 13	types of repetitions, nested repetition
Week 14	compound assignment statement
Week 15	increment and decrement operators.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Schildt, Herbert, C++ (Computer program language), McGraw-Hill, New York: 2008.	Yes
Recommended Texts	Savitch, Walter Problem solving with C++: The object of programming/ C++, Pearson Addison Wesley, 2005.	yes
Websites	Malik, D S, C++ programming: From Problem Analysis to Program Design / C plus plus programming, Course Technology, 2009	

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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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Data structure		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input 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	Sc-124		
ECTS Credits	6		
SWL (hr./sem.)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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

Module Objectives

أهداف المادة الدراسية

The objectives of a data structure module typically include:

1. Understanding the fundamental concepts of data structures: This includes understanding the different types of data structures (e.g., arrays, linked lists, stacks, queues, trees, graphs, etc.), their properties, and how they are used to solve various problems.
2. Implementing data structures: This involves writing code to implement data structures in a specific programming language, such as C++, Java, Python, or JavaScript.
3. Analyzing data structures: This includes analyzing the time and space complexity of operations performed on data structures, such as insertion, deletion, searching, and sorting.
4. Choosing appropriate data structures: This involves selecting the most appropriate data structure for a given problem based on its time and space complexity requirements and other factors such as ease of use, maintainability, and scalability.
5. Applying data structures: This involves using data structures to solve real-world problems, such as database management, network routing, and image processing.
6. Understanding data structure algorithms: This includes understanding the algorithms used to implement data structures, such as binary search trees, hash tables, and graph traversal algorithms.
7. Designing efficient algorithms: This involves designing algorithms that are both correct and efficient, taking into account the specific data structures used and the problem to be solved.

Overall, the objectives of a data structure module are to provide students with a deep understanding of how data structures work, how they are implemented and analyzed, and how they can be used to solve real-world problems efficiently and effectively.

<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>The learning outcomes of a data structure module typically include:</p> <ol style="list-style-type: none"> 1. Knowledge of fundamental data structures: Students should be able to demonstrate an understanding of the different types of data structures, their properties, and how they are used to solve various problems. 2. Ability to implement data structures: Students should be able to write code to implement data structures in a specific programming language, such as C++, Java, Python, or JavaScript. 3. Analytical skills: Students should be able to analyze the time and space complexity of operations performed on data structures, such as insertion, deletion, searching, and sorting. 4. Ability to choose appropriate data structures: Students should be able to select the most appropriate data structure for a given problem based on its time and space complexity requirements and other factors such as ease of use, maintainability, and scalability. 5. Problem-solving skills: Students should be able to apply data structures to solve real-world problems, such as database management, network routing, and image processing. 6. Understanding of data structure algorithms: Students should be able to demonstrate an understanding of the algorithms used to implement data structures, such as binary search trees, hash tables, and graph traversal algorithms. 7. Ability to design efficient algorithms: Students should be able to design algorithms that are both correct and efficient, taking into account the specific data structures used and the problem to be solved. <p>Overall, the learning outcomes of a data structure module are to equip students with the knowledge, skills, and abilities necessary to understand, implement, analyze, and apply data structures and related algorithms to solve real-world problems efficiently and effectively.</p>
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>The indicative contents of a data structure module typically include:</p> <ol style="list-style-type: none"> 1. Introduction to data structures: This includes an overview of data structures, their properties, and how they are used to solve various problems. 2. Arrays: This includes an introduction to arrays, their properties, and how they are used to store and manipulate data.

	<p>3. Linked Lists: This includes an introduction to linked lists, their properties, and how they are used to store and manipulate data.</p> <p>4. Stacks and Queues: This includes an introduction to stacks and queues, their properties, and how they are used to store and manipulate data.</p> <p>5. Trees: This includes an introduction to trees, their properties, and how they are used to store and manipulate hierarchical data.</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>There are several strategies that can be used when working with data structures:</p> <ol style="list-style-type: none"> 1. Choosing the right data structure: One of the most important strategies is to choose the right data structure for the problem at hand. This involves understanding the properties and trade-offs of different data structures and selecting the one that is most appropriate for the specific problem. 2. Analyzing the time and space complexity: It is important to analyze the time and space complexity of operations performed on data structures. This involves understanding how the data structure is implemented and the cost of each operation in terms of time and memory. 3. Implementing data structures efficiently: When implementing data structures, it is important to use efficient algorithms and data structures that minimize the time and space complexity of the operations performed on them. 4. Testing and debugging: As with any software development, testing and debugging are critical when working with data structures. It is important to test the data structure with a variety of inputs and edge cases to ensure that it works correctly and efficiently. 5. Modularizing code: Modularizing code can make it easier to work with data structures by breaking down complex tasks into smaller, more manageable pieces. This can make it easier to test and debug code, and can also make it easier to reuse code in other projects. <p>Overall, the key strategies for working with data structures include choosing the right data structure, analyzing the time and space complexity, implementing efficiently, testing and debugging, modularizing code, and documenting code.</p>

Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا			
Structured SWL (h/sem.) الحمل الدراسي المنتظم للطلاب خلال الفصل	105	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	7
Unstructured SWL (h/sem.) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	45	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	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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	
	Here is a possible delivery plan for a 15-week syllabus on data structures:
Week 1	<p>Week 1: Introduction to Data Structures</p> <ul style="list-style-type: none"> Overview of data structures and their properties Types of data structures: arrays, linked lists, stacks, queues, trees, and graphs Basic operations on data structures: searching, insertion, deletion, and sorting Implementing a simple data structure in a programming language

Week 2	<p>Week 2: Arrays and Linked Lists</p> <ul style="list-style-type: none"> • Introduction to arrays and linked lists • Implementing arrays and linked lists in a programming language • Basic operations on arrays and linked lists: searching, insertion, deletion, and sorting
Week 3	<p>Week 3: Stacks and Queues</p> <ul style="list-style-type: none"> • Introduction to stacks and queues • Implementing stacks and queues in a programming language • Basic operations on stacks and queues: push, pop, enqueue, and dequeue
Week 4	<p>Week 4: Trees</p> <ul style="list-style-type: none"> • Introduction to trees • Types of trees: binary trees, binary search trees, AVL trees, and B-trees • Implementing trees in a programming language • Basic operations on trees: searching, insertion, deletion, and traversal
Week 5	<p>Week 5: Graphs</p> <ul style="list-style-type: none"> • Introduction to graphs • Types of graphs: directed and undirected graphs, weighted and unweighted graphs • Implementing graphs in a programming language • Basic operations on graphs: searching, traversal, shortest path, and minimum spanning tree
Week 6	<p>Week 6: Hash Tables</p> <ul style="list-style-type: none"> • Introduction to hash tables • Implementing hash tables in a programming language • Basic operations on hash tables: searching, insertion, and deletion

Week 7	Week 7: Advanced Data Structures <ul style="list-style-type: none"> • Introduction to advanced data structures: priority queues, heaps, tries, and suffix trees • Implementing advanced data structures in a programming language • Basic operations on advanced data structures: searching, insertion, deletion, and sorting
Week 8	Week 8: Algorithm Analysis <ul style="list-style-type: none"> • Analyzing the time and space complexity of algorithms • Big O notation and other complexity measures • Techniques for improving algorithm efficiency
Week 9	Week 9: Sorting Algorithms <ul style="list-style-type: none"> • Introduction to sorting algorithms: bubble sort, insertion sort, selection sort, merge sort, quicksort, and heap sort • Implementing sorting algorithms in a programming language • Analyzing the time and space complexity of sorting algorithms
Week 10	Week 10: Searching Algorithms <ul style="list-style-type: none"> • Introduction to searching algorithms: linear search, binary search, hash search • Implementing searching algorithms in a programming language • Analyzing the time and space complexity of searching algorithms
Week 11	Week 11: Advanced Graph Algorithms <ul style="list-style-type: none"> • Introduction to advanced graph algorithms: Dijkstra's algorithm, Bellman-Ford algorithm, Floyd-Warshall algorithm • Implementing advanced graph algorithms in a programming language • Analyzing the time and space complexity of advanced graph algorithms
Week 12	Week 12: Dynamic Programming <ul style="list-style-type: none"> • Introduction to dynamic programming • Implementing dynamic programming algorithms in a programming language • Analyzing the time and space complexity of dynamic programming algorithms

Week 13	Week 13: Divide and Conquer <ul style="list-style-type: none"> • Introduction to divide and conquer algorithms • Implementing divide and conquer algorithms in a programming language • Analyzing the time and space complexity of divide and conquer algorithms
Week 14	Week 14: Backtracking <ul style="list-style-type: none"> • Introduction to backtracking algorithms • Implementing backtracking algorithms in a programming language • Analyzing the time and space complexity of backtracking algorithms
Week 15	Week 15: Review and Project <ul style="list-style-type: none"> • Review of all data structures and algorithms covered in the course • Final project to apply data structures and algorithms to a real-world problem
Week 16	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Here is a possible delivery plan for a 7-lab-week syllabus on data structures
Week 1	Lab Week 1: Introduction to Data Structures <ul style="list-style-type: none"> • Overview of data structures and their properties • Types of data structures: arrays, linked lists, stacks, queues, trees, and graphs • Basic operations on data structures: searching, insertion, deletion, and sorting • Implementing a simple data structure in a programming language
Week 2	Lab Week 2: Arrays and Linked Lists <ul style="list-style-type: none"> • Introduction to arrays and linked lists • Implementing arrays and linked lists in a programming language • Basic operations on arrays and linked lists: searching, insertion, deletion, and sorting
Week 3	Lab Week 3: Stacks and Queues <ul style="list-style-type: none"> • Introduction to stacks and queues • Implementing stacks and queues in a programming language • Basic operations on stacks and queues: push, pop, enqueue, and dequeue

Week 4	Lab Week 4: Trees <ul style="list-style-type: none"> • Introduction to trees • Types of trees: binary trees, binary search trees, AVL trees, and B-trees • Implementing trees in a programming language
Week 5	Lab Week 5: Graphs <ul style="list-style-type: none"> • Introduction to graphs • Types of graphs: directed and undirected graphs, weighted and unweighted graphs • Implementing graphs in a programming language • Basic operations on graphs: searching, traversal, shortest path, and minimum spanning tree
Week 6	Lab Week 6: Hash Tables <ul style="list-style-type: none"> • Introduction to hash tables • Implementing hash tables in a programming language • Basic operations on hash tables: searching, insertion, and deletion
Week 7	Lab Week 7: Advanced Data Structures <ul style="list-style-type: none"> • Introduction to advanced data structures: priority queues, heaps, tries, and suffix trees • Implementing advanced data structures in a programming language • Basic operations on advanced data structures: searching, insertion, deletion, and sorting

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	"Data Structures and Algorithms in Java", "Introduction to Algorithms" , "Data Structures and Algorithms in Python" , Data Structures: Abstraction and Design Using Java", "Data Structures and Algorithms Made Easy: Data Structures and Algorithmic Puzzles"	Yes
Recommended Texts	<p>Here are some recommended texts on data structures:</p> <p>1. "Data Structures and Algorithms in Java" by Robert La fore This book covers a wide range of data structures and algorithms, and provides clear explanations and examples using the Java programming language.</p> <p>2. "Data Structures and Algorithm Analysis in C++" by Mark Allen Weiss - This book provides a clear introduction to data structures and algorithms using the C++ programming language.</p> <p>3. "Data Structures and Algorithms with JavaScript" by Michael McMillan - This book provides an introduction to data structures and algorithms using the JavaScript programming language, and includes exercises and examples to help students build their programming skills.</p> <p>These texts are well-regarded in the field of data structures and algorithms, and can provide a solid foundation for students looking to learn about this important topic.</p>	yes
Websites		

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.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Logic design		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input 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	cs-101		
ECTS Credits	6		
SWL (hr./sem.)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	
Peer Reviewer Name	Name	e-mail	
Scientific Committee Approval Date	/ /2023	Version Number	

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>The module objectives of logic design typically include the following:</p> <ol style="list-style-type: none"> 1. Understanding Boolean algebra: Logic design involves the use of Boolean algebra to manipulate logical expressions and design digital circuits. Students should be familiar with the basic principles of Boolean algebra, including Boolean operators, truth tables, and Boolean laws. 2. Designing combinational circuits: Combinational circuits are digital circuits that produce an output based on the current input values. Students should be able to design combinational circuits using basic logic gates such as AND, OR, and NOT gates. 3. Designing sequential circuits: Sequential circuits are digital circuits that use memory to store information and produce an output based on the current input and the stored information. Students should be able to design sequential circuits using flip-flops and other sequential logic components. 4. Analyzing and optimizing digital circuits: Students should be able to analyze the behavior of digital circuits using truth tables, timing diagrams, and other tools. They should also be able to optimize digital circuits for speed, power consumption, or other performance metrics. 5. Using computer-aided design (CAD) tools: Logic design often involves the use of computer-aided design (CAD) tools to simulate and validate digital circuits. Students should be familiar with popular CAD tools such as Verilog, VHDL, and SPICE. 6. Understanding the limitations of digital circuits: Digital circuits are subject to various limitations such as noise, propagation delay, and power dissipation. Students should be aware of these limitations and understand how to mitigate them in their designs.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>The module learning outcomes of logic design may include the following:</p> <ol style="list-style-type: none"> 1. Demonstrate an understanding of Boolean algebra and its application to digital circuit design. 2. Design and implement combinational circuits using basic logic gates such as AND, OR, and NOT gates. 3. Design and implement sequential circuits using flip-flops and other sequential logic components. 4. Analyze the behavior of digital circuits using truth tables, timing diagrams, and other tools.

	<p>5.Optimize digital circuits for speed, power consumption, or other performance metrics.</p> <p>6.Use computer-aided design (CAD) tools such as Verilog, VHDL, and SPICE to simulate and validate digital circuits.</p> <p>7.Understand the limitations of digital circuits and how to mitigate them in designs.</p> <p>8.Identify and analyze different types of digital circuits, such as adders, counters, and memory circuits.</p> <p>9.Design and implement digital circuits for specific applications, such as data processing, control systems, or communication systems.</p> <p>10.Communicate effectively about digital circuit design, including the ability to read and write technical documents, present designs, and collaborate with others.</p>
<p>Indicative contents</p>	<p>The indicative contents of logic design may include the following:</p> <p>1.Introduction to digital circuits and logic gates: This includes an overview of digital circuits, logic gates, Boolean algebra, and truth tables.</p> <p>2.Combinational logic design: This includes designing combinational circuits using basic logic gates, Karnaugh maps, and Boolean algebra.</p> <p>3.Sequential logic design: This includes designing sequential circuits using flip-flops, registers, counters, and other sequential logic components.</p> <p>4.Analysis and optimization of digital circuits: This includes analyzing digital circuits using truth tables, timing diagrams, and other tools, as well as optimizing circuits for speed, power consumption, or other performance metrics.</p> <p>5.Computer-aided design (CAD) tools: This includes using popular CAD tools such as Verilog, VHDL, and SPICE to simulate and validate digital circuits.</p>

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	the strategies of logic design involve a systematic approach to problem-solving, with an emphasis on simplifying the logic function and optimizing the circuit for performance. Effective documentation and testing are also important to ensure that the circuit meets the requirements and performs as expected.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem.) الحمل الدراسي المنتظم للطلاب خلال الفصل	105	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	7
Unstructured SWL (h/sem.) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	45	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
	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
Formative assessment	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	continuous	All
	Report	1	10% (10)	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) المناهج الاسبوعي النظري	
	Material Covered
Week 1	Week 1: Introduction to digital circuits and logic gates . Overview of digital circuits and their applications . Introduction to logic gates and Boolean algebra . Truth tables and logic function simplification
Week 2	Week 2: Combinational logic design . Designing combinational circuits using basic logic gates . Karnaugh maps and Boolean algebra for circuit simplification
Week 3	Week 3: Combinational logic design (continued) . Implementing combinational circuits using logic gates . Testing and validating combinational circuits using simulation tools
Week 4	Week 4: Sequential logic design . Introduction to sequential circuits and flip-flops . Designing sequential circuits using flip-flops and registers
Week 5	Week 5: Sequential logic design (continued) . Counters and other sequential logic components . Analysis and optimization of sequential circuits
Week 6	Week 6: Memory circuits . Designing memory circuits such as RAM and ROM . Understanding the limitations of memory circuits
Week 7	Week 7: Arithmetic circuits . Designing arithmetic circuits such as adders and subtractors. . Multipliers and dividers
Week 8	Week 8: Communication circuits . Digital circuits for communication systems, such as encoders, decoders, and serial/parallel converters . Understanding digital communications protocols
Week 9	Week 9: Control circuits . Digital circuits for control systems, such as timers, counters, and state machines . Applications of control circuits in industrial and consumer systems
Week 10	Week 10: Computer-aided design (CAD) tools . Introduction to popular CAD tools such as Verilog, VHDL, and SPICE . Simulation and validation of digital circuits using CAD tools
Week 11	Week 11: Limitations and challenges of digital circuits . Understanding the limitations of digital circuits such as noise, propagation delay, and power dissipation . Techniques for mitigating these limitations in design

Week 12	Week 12: Project work . Applying the concepts and skills learned in the module to design and implement a digital circuit for a specific application . Documenting the project and presenting the results
Week 13	Week 12: Project work . Applying the concepts and skills learned in the module to design and implement a digital circuit for a specific application . Documenting the project and presenting the results
Week 14	Week 14: Review and exam preparation . Review of key concepts and skills covered in the module . Practice exams and exam preparation strategies
Week 15	Week 15: Exam . covering the material from the module . Review of exam results and feedback
Week 16	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Here's a suggested delivery plan for a 7-week lab course on Logic Design:
Week 1	Week 1 - Introduction to Digital Logic and Boolean Algebra <ul style="list-style-type: none"> • Introduction to digital logic and digital circuits • Boolean algebra and its laws • Combinational logic circuits: AND, OR, NOT, XOR, NAND, NOR, and XNOR gates • Lab 1: Introduction to logic gates and Boolean algebra
Week 2	Week 2 - Combinational Logic Design <ul style="list-style-type: none"> • Simplification of Boolean expressions using Karnaugh maps • Logic minimization techniques: Quine-McCluskey method • Combinational circuit design: adders, multiplexers, decoders, encoders, and comparators • Lab 2: Design and implementation of combinational circuits using logic gates
Week 3	Week 3 - Sequential Logic Design <ul style="list-style-type: none"> • Sequential circuits: flip-flops, registers, and counters • Synchronous and asynchronous sequential circuits • State diagrams and state tables • Lab 3: Design and implementation of sequential circuits using flip-flops

Week 4	Week 4 - Finite State Machines <ul style="list-style-type: none"> Finite state machines (FSMs) and their applications Moore and Mealy machines State minimization and optimization Lab 4: Design and implementation of FSMs using flip-flops and combinational circuits
Week 5	Week 5 - Timing and Clocking <ul style="list-style-type: none"> Timing constraints and clock signals Clock skew and jitter Synchronization techniques Lab 5: Timing analysis and clocking of sequential circuits
Week 6	Week 6 - Memory and Programmable Logic <ul style="list-style-type: none"> Memory devices: RAM and ROM Programmable logic devices: CPLD and FPGA Hardware description languages: VHDL and Verilog Lab 6: Design and implementation of memory and programmable logic circuits
Week 7	Week 7 - System-on-Chip Design <ul style="list-style-type: none"> Overview of SoC design Integration of digital circuits with analog and mixed-signal components Design challenges and trade-offs Lab 7: Design and implementation of a simple SoC using FPGA and peripherals

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	"Digital Design: Principles and Practices", "Fundamentals of Digital Logic with Verilog Design", "Introduction to Digital Systems", "Digital Electronics: Principles, Devices and Applications", "Logic and Computer Design Fundamentals", "Digital Logic Design: A Rigorous Approach", "Digital Systems Design Using VHDL"	Yes
Recommended Texts	"Digital Design: With an Introduction to the Verilog HDL", "Logic Design: A Review of Theory and Practice", "Digital Systems: Principles and Applications", "Digital Logic Circuit Analysis and Design", "Fundamentals of Digital Logic and Microcomputer Design", "Digital Electronics: Principles, Devices and Applications"	yes
Websites		

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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.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<u>Programming 2</u>		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 type="checkbox"/> Seminar
Module Code	cs-122		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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	
Module Objectives أهداف المادة الدراسية	<p>This course aims to introduce students to fundamental concepts of object oriented programming with Java, gives an introduction to event driven programming and graphical user interface, exception handling, files manipulation and recursion. The topics covered in this course provide a foundation for more advanced courses in Computer Science and Information Systems.</p>
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>A. Knowledge and Understanding A1. Concepts and Theories: 1. Lists the concepts of OOP 2. Lists the concepts of Inheritance 3. Lists the concepts of GUI 4. Lists the concepts of File management and Exception handling A2. Professional Responsibility: - Abide by laws and regulations when using computer networks.</p> <p>B. Subject-specific skills B1. Problem solving skills: - Supply the student with the ability to solve different problems related to the topics B2. Modeling and Design: - Learn how to design a complete java project B3. Application of Methods and Tools: - Learn how to implement a complete java project</p> <p>C. Critical-Thinking Skills C1. Analytic skills: - Learn how to analyze a problem C2. Strategic Thinking: - Understand the required strategy to solve problems C3. Creative thinking and innovation: - Design the student's GUI according to a given problem</p> <p>D. General and Transferable Skills (other skills relevant to employability and personal development) D1. Communication: - Express and communicate ideas in written and oral forms. D2. Teamwork and Leadership: - Be cooperative members of a team D3. Organizational and Developmental Skills: - Plan for automating of systems D4. Ethical and Social Responsibility: - Understand that they are accountable for their actions and there must be a balance between economic growth and the welfare of the society and environment.</p>
Indicative Contents المحتويات الإرشادية	<p>A. Knowledge and Understanding A1. Concepts and Theories: 1. Lists the concepts of OOP 2. Lists the concepts of Inheritance 3. Lists the concepts of GUI 4. Lists the concepts of File management and Exception handling A2. Professional Responsibility: - Abide by laws and regulations when using computer networks.</p>

	<p>B. Subject-specific skills</p> <p>B1. Problem solving skills: - Supply the student with the ability to solve different problems related to the topics</p> <p>B2. Modeling and Design: - Learn how to design a complete java project</p> <p>B3. Application of Methods and Tools: - Learn how to implement a complete java project</p> <p>C. Critical-Thinking Skills</p> <p>C1. Analytic skills: - Learn how to analyze a problem</p> <p>C2. Strategic Thinking: - Understand the required strategy to solve problems</p> <p>C3. Creative thinking and innovation: - Design the student's GUI according to a given problem</p> <p>General and Transferable Skills (other skills relevant to employability and personal development)</p> <p>D1. Communication: - Express and communicate ideas in written and oral forms.</p> <p>D2. Teamwork and Leadership: - Be cooperative members of a team</p> <p>D3. Organizational and Developmental Skills: - Plan for automating of systems</p> <p>D4. Ethical and Social Responsibility: - Understand that they are accountable for their actions and there must be a balance between economic growth and the welfare of the society and environment.</p>
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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>

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6

Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	200
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Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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	controlling access to members, using this reference
Week 2	Composition enumerations
Week 3	Introduction, to define a function and return statement.
Week 4	garbage collection and method finalize, static class members
Week 5	Passing parameters. passing by value, passing by reference, type of functions
Week 6	final instance variables
Week 7	Mid-term Exam
Week 8	Functions and types of argument
Week 9	data abstraction and encapsulation
Week 10	sequential text files
Week 11	String , member functions of string , string liberties
Week 12	relationship between super- and sub-classes
Week 13	Structures, types of defined structures , structures with structures, array of structures
Week 14	Polymorphism – polymorphism examples

Week 15	creating and using interfaces
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	controlling access to members, using this reference
Week 2	Composition enumerations
Week 3	Introduction, to define a function and return statement.
Week 4	garbage collection and method finalize, static class members
Week 5	Passing parameters. passing by value, passing by reference, type of functions
Week 6	final instance variables
Week 7	Mid-term Exam
Week 8	Functions and types of argument
Week 9	data abstraction and encapsulation
Week 10	sequential text files
Week 11	String , member functions of string , string liberties
Week 12	relationship between super- and sub-classes
Week 13	Structures, types of defined structures , structures with structures, array of structures
Week 14	Polymorphism – polymorphism examples
Week 15	Final

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	-Daniel Liang, 2012, Introduction to Java Programming. 9th ed. Prentice Hall	Yes
Recommended Texts	Problem Solving with Java / Koffman, Elliot B. 2nd ed Addison-Wesley, 2002, ISBN: 0- 201-72214-3	yes

Websites	Google
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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.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<u>Work Ethics</u>		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 type="checkbox"/> Seminar
Module Code	uni-104		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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	
Module Objectives أهداف المادة الدراسية	<p>Professional ethics is a set of rules, principles and standards of conduct</p> <p>He must be accompanied by it, and the owner of the profession undertakes to practice it in his profession towards the work and its clients</p> <p>Colleagues, subordinates, superiors, profession, society, self and self, and prepare their comments</p> <p>He remained one of the most eloquent men of his time.</p> <p>Varieties with this term, a mixture of all subjects experienced with it.</p>
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>First, by defining “ethics” and then defining it. It is better for us, as we review the ethics of the profession, to begin.</p> <p>(profession) linguistically and idiomatically, and in order for this to be a prelude to what comes after that, morals are an integrated system</p> <p>All human relations are organized, and upon them social, economic and political life is based.</p>
Indicative Contents المحتويات الإرشادية	<p>1.1 Compliance and Ethics Professionals strictly refrain from assisting with Acts of misconduct, instigation or participation in it.</p> <p>2.1 Compliance and Ethics Professionals are obligated to take the necessary steps</p> <p>To prevent acts of misconduct by affiliated employers she has.</p> <p>3.1 Compliance and Ethics Professionals must exercise judgment proper with regard to answering or participating in all investigations</p> <p>The official and legal government of the affiliated employer or for inquiries about it.</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Professional work ethics or professional ethics is defined as the living conscience of professional work, so that business performance is not limited to fulfilling its minimum responsibilities only, but rather depends on the system of right versus wrong and the impact of this action on the individual, the company and the society to which the system is affiliated.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	15	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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	The concept of professional ethics
Week 2	The honesty
Week 3	Challenges and their impact on professional ethics
Week 4	Sources of professional ethics
Week 5	General constituents of professional ethics
Week 6	Means of establishing professional ethics
Week 7	Mid-term Exam
Week 8	Good example
Week 9	Challenges and their impact on professional ethics
Week 10	Social responsibility
Week 11	The basic foundations of professional ethics
Week 12	Regulations, laws and legislation
Week 13	Humility and good dealing
Week 14	Accuracy in setting regulations and instructions
Week 15	Conflict of interest
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	religious source , social source	Yes
Recommended Texts	Professional political resource	yes
Websites	Google	

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.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	اللغة العربية		Module Delivery
Module Type	Core		<input type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	uni-103		
ECTS Credits	3		
SWL (hr./sem.)	75		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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	
Module Objectives أهداف المادة الدراسية	<p>تتضمن أهداف المادة الدراسية للغة العربية العديد من الأهداف الرئيسية التي يجب على الطلاب تحقيقها ومن بين هذه الأهداف:</p> <ol style="list-style-type: none"> 1- تعلم اللغة العربية بطلاقة وفهم قواعدها النحوية والصرفية والإملائية. 2- تطوير مهارات القراءة والكتابة والاستماع والتحدث باللغة العربية. 3- فهم التراث اللغوي والثقافي العربي وتطبيقه في الحياة اليومية. 4- تحسين قدرة الطلاب على التواصل بشكل فعال مع الآخرين في المواقف الاجتماعية والأكاديمية. 5- تنمية المهارات البحثية والتحليلية والنقدية.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>تشمل نتائج التعلم لمادة اللغة العربية العديد من المهارات والمعارف التي يجب على الطلاب اكتسابها، ويمكن تلخيصها فيما يلي:</p> <ol style="list-style-type: none"> 1- القدرة على فهم وتحليل النصوص الأدبية والعلمية باللغة العربية. 2- تحسين مهارات القراءة والكتابة والاستماع والتحدث باللغة العربية. 3- تطوير القدرة على التواصل بشكل فعال مع الآخرين باللغة العربية. 4- فهم التراث اللغوي والثقافي العربي وتطبيقه في الحياة اليومية. 5- تنمية المهارات البحثية والتحليلية والنقدية والابتكارية.
Indicative Contents المحتويات الإرشادية	<p>تشمل المحتويات الإرشادية لمادة اللغة العربية العديد من النواحي المختلفة للغة العربية، وتشمل بشكل عام:</p> <ol style="list-style-type: none"> 1- الحروف والأصوات العربية والأرقام. 2- النحو والصرف والإملاء. 3- الأدب والثقافة العربية. 4- القراءة والكتابة والاستماع والتحدث باللغة العربية. 5- البلاغة والإعراب والتراكيب اللغوية. 6- اللغة العربية لأغراض خاصة، مثل اللغة العربية في المجالات العلمية والأكاديمية والاجتماعية والتجارية.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	تتمثل الإستراتيجية الرئيسية التي سيتم تبنيها في تقديم هذه الوحدة في تشجيع الطلاب على المشاركة في التدريبات ، مع تحسين مهارات التفكير النقدي لديهم وتوسيعها في نفس الوقت. سيتم تحقيق ذلك من خلال الفصول والبرامج التعليمية التفاعلية ومن خلال النظر في أنواع التجارب البسيطة التي تتضمن بعض أنشطة أخذ العينات التي تهم الطلاب.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem.) الحمل الدراسي المنتظم للطلاب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem.) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	15	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem.) الحمل الدراسي الكلي للطلاب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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	
Week 1	دراسة الحروف والأصوات العربية والأرقام
Week 2	دراسة النحو والصرف، وتعلم القواعد النحوية والصرفية الأساسية.
Week 3	تعلم القواعد الإملائية والترقيم الصحيح، وتدريب الطلاب على الإملاء الصحيح للكلمات والجمل.
Week 4	دراسة الأدب والثقافة العربية الأساسية، وتعريف الطلاب بالتراث اللغوي والثقافي العربي.
Week 5	تطوير مهارات القراءة والكتابة، وتدريب الطلاب على فهم النصوص الأدبية والعلمية والتعبير عن أفكارهم بشكل دقيق.
Week 6	البلاغة والإعراب والتراكيب اللغوية، وتعليم الطلاب كيفية استخدام هذه الأدوات بشكل صحيح في الكتابة
Week 7	تطوير مهارات الاستماع والتحدث باللغة العربية، وتحسين قدرة الطلاب على التواصل بشكل فعال مع الآخرين في مختلف المواقف الاجتماعية والأكاديمية.
Week 8	مراجعة عامة للمواد الدراسية وتدريب الطلاب على امتحانات النهاية، وإجراء تقييم شامل لأداء الطلاب خلال الفصل الدراسي.
Week 9	تحسين قدرة الطلاب على التواصل بشكل فعال مع الآخرين في المواقف الاجتماعية والأكاديمية.
Week 10	فهم التراث اللغوي والثقافي العربي وتطبيقه في الحياة اليومية
Week 11	تنمية المهارات البحثية والتحليلية والنقدية والابتكارية
Week 12	اللغة العربية لأغراض خاصة، مثل اللغة العربية في المجالات العلمية والأكاديمية والاجتماعية والتجارية.
Week 13	البلاغة والإعراب والتراكيب اللغوية
Week 14	دراسة النحو والصرف، وتعلم القواعد النحوية والصرفية الأساسية.
Week 15	تعلم القواعد الإملائية والترقيم الصحيح، وتدريب الطلاب على الإملاء الصحيح للكلمات والجمل.
Week 16	التحضير والمراجعة للامتحان النهائي

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	النحو, اقسام الكلام, الاسم , الفعل , الحرف, انواع المعارف , العلم , الضمائر,اسماء الاشارة , الاسماء الموصولة, المعرف بال, المعرف بالاضافة , المثنى و اعرابه, الجمع, جمع مذكر السالم, جمع مؤنث السالم , الادب , معلقة زهير مع الشرح , بواعث النهضة الادبية في العصر الحديث , موسوعة العشر الحر , بدر شاكر السياب, نازك الملائكة, التاء المربوطة و التاء المبسوطة , علامات الترقيم , الغاء الضاء و الضاد	Yes
Recommended Texts	النصوص الادبية القديمة والقصص القصيره الحديثه والنصوص الصحفية والاعلامية والنصوص العلمية والاكاديمية	yes
Websites	Googl.com	

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.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<u>Numerical Analysis</u>		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 type="checkbox"/> Seminar
Module Code	cs-123		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	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	
Module Objectives أهداف المادة الدراسية	<p>A- The Goal: The main goal of this course is to enable students to understand, develop, analyze approximate solutions to algebraic, transcendental, differential equations, derivatives, integral, and hard problems; and implement the solutions using software such as MATLAB. ABET: The main Students Outcome as in ABET:</p> <ol style="list-style-type: none"> 1- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions. 2- 2- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline. 3- 3- Apply computer science theory and software development fundamentals to produce computing-based solutions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>A- Knowledge and Understanding</p> <p>A1: The ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must take into account the impact of engineering solutions in global, economic, environmental and societal contexts</p> <p>A2: Ability to work effectively in a team whose members provide leadership together, create a collaborative and inclusive environment, set goals, plan tasks, and achieve goals</p> <p>A3: The ability to develop and conduct appropriate experiments, analyze and interpret data, and use engineering judgment to draw conclusions</p> <p>A4: The ability to acquire and apply new knowledge as needed, using appropriate learning strategies. 1</p> <p>A5: The ability to communicate effectively with a range of audiences</p> <p>B- Subject-specific skills</p> <p>B1: The ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics</p> <p>B2: The ability to apply engineering design to produce solutions that meet specific needs while taking into account public health, safety and welfare, as well as global, cultural, social, environmental and economic factors.</p>
Indicative Contents المحتويات الإرشادية	<p>This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.</p>

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	daily exams

	Quarterly exams practical exams Attendance and active participation in the lecture Online exams and assignments Prepare the required reports according to the given topic
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	150	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	150	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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 and explanation curriculum vocabulary Solution of non-linear equations, Newton Raphson method for approximating, Lagrange approximation.
Week 2	Numerical differentiation and numerical integration, The Solutions

Week 3	of Integral equations, Trapezoidal method Simpsons method
Week 4	Simpsons method(3/8))
Week 5	Fourier series for odd and even functions ,Half range Fourier sin and cosine series
Week 6	Formation of Partial differential equations
Week 7	Mid-term Exam
Week 8	Types of partial differential equations,wave equation,heat equation
Week 9	Numerical differentiation, Euler method, modified Euler method
Week 10	Rung Kutta method, Rung Kutta-merson method
Week 11	Numerical analysis,Elimination and iterative methods
Week 12	Cramer's rule, solve by inverse matrices
Week 13	Exercises review and solutions
Week 14	Exercises review and solutions
Week 15	Lecture Asynchronous AS/Teams
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	A- Required book(s), assigned reading and audio-visuals: A.1 Text Book: Stephen C. Chapra and Rymond P. Canale, Numerical Methods for Engineerins, Edition 8, Mc Craw Hill Education, 2018. A.2 MATLAB USER MANUAL from Moler, Cleve B. (2004), Numerical Computing with Matlab, 2004, SIAM, Philadelphia, PA. It can be downloaded along with software from http://www.mathworks.com/moler/	Yes
Recommended Texts	A- Recommended books, materials and media: 2. Todd Young and Martin J. Mohlenkamp (2012), Introduction to Numerical Methods and Matlab Programming for Engineers, Department of Mathematics, Ohio University, Athens. http://www2.mansfield.edu/mathematics/program-course-goals-objectives-and-outcomes/index.cfm	yes
Websites	Google	

Grading Scheme مخطط الدرجات				
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