MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	**Object oriented programming I**	**Module Delivery**	
Module Type	Core	Theory ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code			
ECTS Credits	**8**		
SWL (hr/sem)			
Module Level	2	**Semester of Delivery**	1
Administering Department	cs	**College**	It
Module Leader	Name	**e-mail**	E-mail
Module Leader's Acad. Title		**Module Leader's Qualification**	
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 Aims أهداف المادة الدراسية	THIS COURSE WILL PROVIDE A BASIC UNDERSTANDING OF THE METHODS AND TECHNIQUES OF DEVELOPING A SIMPLE TO MODERATELY COMPLEX WEB SITE. USING THE CURRENT STANDARD WEB PAGE LANGUAGE, STUDENTS WILL BE INSTRUCTED ON CREATING AND MAINTAINING A SIMPLE WEB SITE. AFT ER THE FOUNDATION LANGUAGE HAS BEEN ESTABLISHED, THE AID OF AN WEB EDITOR WILL BE INTRODUCED. THIS COURSE WILL PROVIDE A RIGOROUS TREATMENT OF OBJECT - ORIENTED CONCEPTS (DESIGN AND IMPLEMENTATION OF OBJECTS, CLASS CONSTRUCTION AND DESTRUCTION, ENCAPSULATION, INHERITANCE, AND POLYMORPHISM) USING JAVA AS AN EXAMPLE LANGUAGE.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	DEVELOPMENT OF SOUND PROGRAMMING AND DESIGN SKILLS, PROBLEM SOLVING AND MODELING OF REAL-WORLD PROBLEMS FROM SCIENC E, ENGINEERING, AND ECONOMICS USING THE OBJECT-ORIENTED PARADIGM.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1 Programming style 2 Basic statements with looping and repetitions 3 One dimensional Arrays 4 Two dimensional Arrays 5 Classes and methods 6 Constructors, Variable types, Overloading 7 UML diagrams 8 Programming by contract: preconditions, postconditions and invariants 9 Designing interfaces 10 Polymorphism 11 Encapsulation 12 Inheritance

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	102	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	98	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Programming style
Week 2	Basic statements with looping and repetitions

Week 3	One dimensional Arrays
Week 4	Two dimensional Arrays
Week 5	Classes and methods
Week 6	Classes and methods
Week 7	Constructors, Variable types,
Week 8	, Overloading
Week 9	UML diagrams
Week 10	Programming by contract: preconditions,
Week 11	postconditions and invariants
Week 12	Designing interfaces
Week 13	Polymorphism
Week 14	Encapsulation
Week 15	Inheritance
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Programming style,Basic statements with looping and repetitions
Week 2	Lab 2: One dimensional Arrays
Week 3	Lab 3: two dimensional Arrays
Week 4	Lab 4: Classes and methods
Week 5	Lab 5: Constructors, Variable types,, Overloading
Week 6	Lab 6: Programming by contract: preconditions,postconditions and invariants
Week 7	Lab 7: Polymorphism,Encapsulation,Inheritance

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**

Required Texts	C. Thomas Wu (2010). An Introduction to Object-Oriented Programming with Java. Fifth Edition. McGraw-Hill.	Yes
Recommended Texts	2] Herbert Schildt (2007). Java: The Complete Reference. Seventh Edition. McGraw-Hill.	No
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	Data Structures and Algorithms I	Module Delivery	
Module Type	Core	☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	CS202		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	1
Administering Department	CS	College	CSIT
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CS106	Semester	2
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. Understand the importance and types of data structures. 2. Learn about array representation and operations. 3. Gain knowledge of string manipulation and algorithms. 4. Understand the concept and implementation of linked lists. 5. Learn about stack operations and practical uses. 6. Comprehend the concept and applications of recursion. 7. Understand queue operations and their applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize and explain the importance of data structures in programming. 2. Demonstrate proficiency in array manipulation and accessing elements. 3. Apply string manipulation techniques and algorithms to solve problems. 4. Implement and utilize linked lists for efficient data management. 5. Apply stack operations and utilize stacks in various problem-solving scenarios. 6. Implement recursive functions and apply recursion to solve problems effectively. 7. Implement and utilize queues for efficient data handling and problem-solving.
Indicative Contents المحتويات الإرشادية	• Introduction to Data Structures • Classification of Data Structures • Arrays • Strings • Linked lists • Stacks and Its Application • Recursion • Queues

	Learning and Teaching Strategies
	استراتيجيات التعلم والتعليم
Strategies	1. Lectures and interactive discussions 2. Practical laboratory sessions 3. Problem-solving exercises and tutorials 4. Simulation tools and software 5. Assessments (exams, projects) with feedback

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	73	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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	6% (6)	4, 12	LO #1,2 and 5
	Assignments	2	7% (7)	8, 15	LO # 3,4, 6 and 7
	Projects / Lab.	1	17% (17)	Continuous	
Summative assessment	Exam	2 hr	20% (20)	7	LO # 1-4
	Final Lab	2 hr	17% (17)		All
	Final Exam	2hr	33% (33)	16	All
Total assessment		100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - **Types of Data types, type of data structures**
Week 2	Arrays DS: definition, features, logic, physical structure, access equations of one dimensional array.
Week 3	Arrays DS: logic, physical structure, access equations of two dimensional arrays.

Week 4	Arrays DS: logic, physical structure, access equation of three and multi-dimensional arrays and triangle arrays.
Week 5	Strings DS: definition, basic representations in memory, create String object
Week 6	Linked Lists DS: definition, advantage and disadvantage of arrays and linked lists, basic operations of linked lists, types of linked lists.
Week 7	**Exam**
Week 8	Implementation of linked lists
Week 9	Stack DS: definition, features, implementation using linked lists and Arrays
Week 10	Stack DS: Application-recursion
Week 11	Stack DS: Application- Expression Conversion
Week 12	Stack DS: Application- evaluating expressions
Week 13	Queue DS: definition, features, implementation using linked lists
Week 14	Queue DS: definition, features, implementation using Arrays
Week 15	Queue DS: types of queues
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Arrays classes in java package
Week 2	Lab 2: tasks in Arrays
Week 3	Lab 3: Strings methods in java package
Week 4	Lab 4: tasks in Strings
Week 5	Lab 4: tasks in Strings **(1st Quiz)**
Week 6	Lab 5: Linked Lists class in java package

Week 7	Lab 6: tasks in linked lists (single and circular linked lists)
Week 8	Lab7: tasks in linked lists (double and Circular Double Linked Lists)
Week 9	Lab 8: Stack class in java package
Week 10	Lab 9: Stack to evaluate expression
Week 11	Lab 10: Stack class in java package
Week 12	Lab 10: Stack class in java package (2nd Quiz)
Week 13	Lab 11: implement queue using arrays
Week 14	Lab 12: implement queue using linked lists

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Data Structures and Algorithms in Java. Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser. 6th Edition. 2014 John Wiley & Sons, Inc.	No
Recommended Texts	Data Structures and Abstractions with Java™. Frank M. Carrano and Timothy M. Henry. Fifth Edition 2019 Pearson Education, Inc.	No
Websites	https://www.javatpoint.com/data-structure-tutorial	

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
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

System Analysis and Design-CS204

Module Information		
معلومات المادة الدراسية		
Module Title	**Systems Analysis and Design**	**Module Delivery**
Module Type	**Core**	☒ Theory
Module Code	CS204	☒ Lecture ☐ Lab
ECTS Credits	**6**	☒ Tutorial
SWL (hr/sem)	**150**	☐ Practical ☐ Seminar

Module Level	2	**Semester of Delivery**		2	
Administering Department	Computer Science	**College**	College of Information Technology		
Module Leader	Baida'a AbdulQader Khudor	**e-mail**	Baidaa.khudor@uobasrah.edu.iq		
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**		Ms.c.	
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		**Semester**	
Co-requisites module	Database Systems	**Semester**	2

Module Aims, Learning Outcomes and Indicative Contents

	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Aims أهداف المادة الدراسية	The objective of this course is to provide students with the concepts, process, and tools of systems analysis and systems design, learn new technique and approaches to develop systems more effectively and efficiently. The students learn that all information systems projects move through the four phases of planning, analysis, design, and implementations; all projects require analyst to gathering requirements, model the business needs, and create blueprints for how the systems should be built, and all projects require an understanding of organizational behavior concepts like change management and team building.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the fundamental concepts and terms of system analysis and system design 2. Describe SDLC model and explain all phases in systems development. 3. Discuss various approaches of systems analysis and design also explain their strengths and weaknesses. 4. Understand how to plan for the project by using scheduling techniques (Break down structure) 5. Understand and explain how to use Gantt and Pert Chart 6. Explain information gathering techniques (interview, questionnaire) 7. Understand how to estimate time, effort and the number of staff 8. Identify the capabilities and experiences that must be available in the work team 9. Developing the student's vision of the reality of the traditional systems used and looking at them in a scientific and systematic way, and this is reflected even on non-computer systems or projects in terms of the feasibility study and the possibility of developing them and achieving the required profitability 10. Achieving steps towards the future to provide a systems analyst
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A – Introduction to System Analysis & Design** The system analyst, The system development life cycle (SDLC), Building an information system steps, SDLC fundamental phases. **Planning**, Goal, Steps, Deliverable, **Analysis,** Goal, Steps, Deliverable. **Design**, Goal, Steps, Deliverable, **Implementation,** Goal, Steps, Deliverable, **Systems development methodologies**, Systems analysis and design methodology (SADM), Methodologies source, Categorize methodologies, Process-centered, Data-centered, Object oriented. **Structured Design(SSADM),**

Waterfall development technique, Advantages, Disadvantages,
Parallel **development** technique, Advantages, Disadvantages.
Rapid Application Development (RAD),
Phased development technique, Advantages, Disadvantages.
Prototyping technique, Advantages, Disadvantages,
Throwaway prototyping technique, Advantages, Disadvantages.
Agile Development,
Extreme programming technique, Advantages, Disadvantages,
Selecting appropriate development methodology,
Project Team Roles and Skills**,**
Business Analyst, Roles, Skills, Interests, Phases,
Systems Analyst, Roles, Skills, Interests, Phases,
Infrastructure Analyst, Roles, Skills, Interests, Phases,
Change Management Analyst, Roles, Skills, Interests, Phases,
Project Manager, Roles, Skills, Interests, Phases   [20 hrs]

Weekly Tutorial
General Discussion, **Assignments 1**
Evaluation
Evaluation   [8 hrs]

Part B – The Relational Algebra
Project Management,
Identifying Project Size,
Estimate System Size,
Function point approach,
Total Unadjusted Function Points (TUFP),
Adjusted Project Complexity (APC),
Total Adjusted Function Points (TAFP),
Complexity
Estimate Required Effort,
Estimate Time Required,
Estimate the Number of Staff,
Exercises
Creating and Managing the Work plan,
Identifying Tasks,
Work Breakdown Structure (WBS),
Constructing a WBS,
Reasons for creating a WBS
Diagram,
Gantt Chart,
Pert Chart
Critical path method (CPM),
Staffing the project   [10 hrs]

Weekly Tutorial
General Discussion, **Assignments 1**
Evaluation
Evaluation   [7 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The module is delivered through a series of lectures. The lecture sessions discuss and explain to students the theoretical underpinnings of how software systems are analyzed and designed. Assessment is divided into four elements. First there are at least two quizzes that assess the student's competency in specific topics, also students will be ready for about five assignments evaluation, there is also a midterm class test, finally, there is an end of semester exam that tests the understanding of students for the theoretical material.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	88	**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)	4, 9	LO #1,2,.....,8,9
	Assignments	5	15% (10)	2,3,5,6,8,9,11,12,14,15	LO #1,2,....., 14,15
	Project/ Lab.				
	Midterm Exam	2hr	25% (10)	7,11	LO #1,2,......,10,11
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	**Introduction to Systems Analysis** The system analyst, The system development life cycle (SDLC), Building an information system steps, SDLC fundamental phases
Week 2	**Planning**, Goal, Steps, Deliverable, **Analysis,** Goal, Steps, Deliverable
Week 3	**Design**, Goal, Steps, Deliverable, **Implementation,** Goal, Steps, Deliverable,
Week 4	**Systems development methodologies**, Systems analysis and design methodology (SADM), Methodologies source, Categorize methodologies, Process-centered, Data-centered, Object oriented
Week 5	**Structured Design(SSADM), Waterfall** development technique, Advantages, Disadvantages, Parallel **development** technique, Advantages, Disadvantages
Week 6	**Rapid Application Development (RAD), Phased** development technique, Advantages, Disadvantages
Week 7	**Prototyping** technique, Advantages, Disadvantages, **Throwaway prototyping** technique, Advantages, Disadvantages
Week 8	**Agile Development, Extreme programming** technique, Advantages, Disadvantages,
Week 9	**Selecting appropriate development methodology,** Project Team Roles and Skills**, Business Analyst,** Roles, Skills, Interests, Phases,
Week 10	**Systems Analyst,** Roles, Skills, Interests, Phases, **Infrastructure Analyst,** Roles, Skills, Interests, Phases, **Change Management Analyst,** Roles, Skills, Interests, Phases, **Project Manager,** Roles, Skills, Interests, Phases
Week 11	**Project Management,** Identifying Project Size, **Estimate System Size**, Function point approach, Total Unadjusted Function Points (TUFP), Adjusted Project Complexity (APC), Total Adjusted Function Points (TAFP), Complexity
Week 12	**Estimate Required Effort, Estimate Time Required, Estimate the Number of Staff, Exercises**
Week 13	**Creating and Managing the Work plan,** Identifying Tasks, Work Breakdown Structure (WBS), Constructing a WBS, Reasons for creating a WBS
Week 14	**Diagram,** Gantt Chart, Pert Chart
Week 15	Critical path method (CPM), Staffing the project
Week 16	**Preparatory week before the final Exam**

| Delivery Plan (Weekly Tut. Syllabus) |
| المنهاج الاسبوعي للمناقشة |

	Material Covered
Week 1	General Discussion, **Assignments 1**
Week 2	**Evaluation**
Week 3	**Evaluation**
Week 4	General Discussion, **Assignments 2**
Week 5	**Evaluation**
Week 6	**Evaluation**

Week 7	General Discussion, **Assignments 3**
Week 8	**Evaluation**
Week 9	**Evaluation**
Week 10	General Discussion, **Assignments 4**
Week 11	**Evaluation**
Week 12	**Evaluation**
Week 13	General Discussion, **Assignments 5**
Week 14	**Evaluation**
Week 15	**Evaluation**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• System Analysis Design UML Version 2. An Object-Oriented Approach 3rd Edition, Alan Dennis	No
Recommended Texts	• System Analysis Design UML Version 2. An Object-Oriented Approach 3rd Edition, Alan Dennis	No
Websites	https://www.edouniversity.edu.ng/oerrepository/articles/system_analysis_and_design_ lecture_note.pdf	

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
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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

<table>
<tr><td colspan="5" align="center">Module Information
معلومات المادة الدراسية</td></tr>
<tr><td>Module Title</td><td colspan="2" align="center">Computer Organization and Architecture</td><td colspan="2">Module Delivery</td></tr>
<tr><td>Module Type</td><td colspan="2" align="center">Core</td><td colspan="2" rowspan="4">☒ Theory
☒ Lecture
☒ Lab
☐ Tutorial
☐ Practical
☐ Seminar</td></tr>
<tr><td>Module Code</td><td colspan="2" align="center">UoB12345</td></tr>
<tr><td>ECTS Credits</td><td colspan="2" align="center">5</td></tr>
<tr><td>SWL (hr/sem)</td><td colspan="2" align="center">125</td></tr>
<tr><td>Module Level</td><td>2</td><td>Semester of Delivery</td><td colspan="2">1</td></tr>
<tr><td>Administering Department</td><td>Type Dept. Code</td><td>College</td><td colspan="2">Type College Code</td></tr>
<tr><td>Module Leader</td><td>Name</td><td>e-mail</td><td colspan="2">E-mail</td></tr>
<tr><td>Module Leader's Acad. Title</td><td>Professor</td><td>Module Leader's Qualification</td><td colspan="2">Ph.D.</td></tr>
<tr><td>Module Tutor</td><td>Name (if available)</td><td>e-mail</td><td colspan="2">E-mail</td></tr>
<tr><td>Peer Reviewer Name</td><td>Name</td><td>e-mail</td><td colspan="2">E-mail</td></tr>
<tr><td>Scientific Committee Approval Date</td><td>01/06/2023</td><td>Version Number</td><td colspan="2">1.0</td></tr>
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<table>
<tr><td colspan="3" align="center">Relation with other Modules
العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td>None</td><td>Semester</td><td></td></tr>
<tr><td>Co-requisites module</td><td>None</td><td>Semester</td><td></td></tr>
</table>

	Module Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Aims أهداف المادة الدراسية	Here are some module aims typically associated with a Computer Organization & Architecture course. These aims describe the overarching goals and objectives of the course: 1. To provide students with a solid understanding of the fundamental concepts and principles of computer organization and architecture. 2. To introduce students to the components and operation of a computer system, including the CPU, memory, and I/O subsystems. 3. To familiarize students with the Von Neumann architecture and its role in modern computer systems. 4. To develop students' understanding of digital logic and Boolean algebra, enabling them to design and analyze combinational and sequential logic circuits. 5. To introduce students to different number systems and their representations in digital systems. 6. To explore the principles of data representation and arithmetic, including signed number representations and arithmetic operations. 7. To introduce students to the concepts and techniques of instruction-level parallelism and pipelining. 8. To enable students to analyze and resolve hazards and dependencies in pipelined architectures. 9. To provide students with a comprehensive understanding of memory systems, including cache memory organization and virtual memory concepts. 10. To introduce students to I/O systems, interfaces, and programming techniques. 11. To familiarize students with microprocessor architecture and programming, including instruction set architecture (ISA) and assembly language programming. 12. To develop students' ability to evaluate and optimize the performance of computer systems. 13. To introduce students to parallel processing and multicore architectures, including the principles of cache coherence and synchronization. 14. To explore emerging trends and technologies in computer organization and architecture, such as quantum computing and cloud computing. This module aims to provide a broad overview of the goals and objectives of a Computer Organization & Architecture course.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Here are some module learning outcomes that are typically associated with a Computer Organization & Architecture course. These outcomes represent the knowledge, skills, and competencies that students are expected to achieve upon completing the course: 1. Understand the fundamental components and principles of computer organization and architecture. 2. Demonstrate knowledge of the Von Neumann architecture and its components. 3. Explain the instruction execution cycle and the role of the CPU. 4. Analyze and design combinational and sequential logic circuits. 5. Demonstrate an understanding of number systems and their representations in digital systems.

	6. Explain the principles of data representation and arithmetic operations. 7. Understand the concepts and techniques of instruction-level parallelism and pipelining. 8. Analyze and resolve hazards and dependencies in pipelined architectures. 9. Describe the organization and hierarchy of memory systems, including cache memory. 10. Understand virtual memory concepts and address translation mechanisms. 11. Explain I/O systems, interfaces, and programming techniques. 12. Understand the principles of microprocessor architecture and programming. 13. Analyze and evaluate the performance of computer systems. 14. Understand the principles and techniques of parallel processing and multicore architectures. 15. Identify and discuss emerging trends and technologies in computer organization and architecture. These module learning outcomes reflect the core knowledge and skills that students are expected to gain throughout the course. 2.

Indicative Contents
المحتويات الإرشادية
	Here are some indicative contents for a Computer Organization & Architecture course targeted at beginners. These contents cover the fundamental concepts and topics typically included in such a course:
	
	1. Introduction to Computer Systems
	   • Overview of computer organization and architecture
	   • Basic components of a computer system
	   • Von Neumann architecture and its principles
	2. Number Systems and Digital Logic
	   • Binary, decimal, and hexadecimal number systems
	   • Boolean algebra and logic gates
	   • Combinational and sequential logic circuits
	3. Data Representation
	   • Binary representation of integers and characters
	   • Signed number representation (sign-magnitude, one's complement, two's complement)
	   • Floating-point representation
	4. Central Processing Unit (CPU)
	   • CPU components and organization
	   • Instruction execution cycle
	   • CPU performance and factors affecting it.
	5. Memory Systems
	   • Memory hierarchy and its importance
	   • Primary memory (RAM, ROM) and secondary storage (hard drives, solid-state drives)
	   • Caches and cache organization
	6. Instruction Set Architecture (ISA)
	   • Overview of instruction sets and their formats.
	   • Addressing modes and instruction types
	   • Instruction decoding and execution.
	7. Input/Output Systems
	   • I/O devices and interfaces
	   • I/O communication methods (programmed I/O, interrupt driven. I/O, DMA)
	   • I/O performance and bottlenecks

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8. Processor Design and Organization
   - Basic CPU design principles (fetch-decode-execute cycle)
   - Instruction pipelining and hazards.
   - Control unit and microprogramming
9. Computer Arithmetic
   - Binary arithmetic operations (addition, subtraction, multiplication, division)
   - Fixed-point and floating-point arithmetic
   - Arithmetic logic unit (ALU) design
10. Introduction to Assembly Language Programming
    - Basics of assembly language programming
    - Instruction syntax and addressing modes.
    - Simple assembly programs and debugging
11. Introduction to Parallel Processing
    - Concepts of parallel processing and its importance
    - Flynn's taxonomy (SISD, SIMD, MISD, MIMD)
    - Multicore processors and their organization
12. Emerging Trends in Computer Architecture
    - Introduction to emerging technologies (quantum computing, neuromorphic computing)
    - Cloud computing and virtualization
    - Energy-efficient computing and green computing concepts

These indicative contents provide beginners with a solid foundation in computer organization and architecture.

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Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

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<td>Strategies</td>
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When teaching a Computer Organization & Architecture course to beginners, it's important to adopt strategies that cater to their foundational understanding and gradually build their knowledge and skills. Here are some effective learning and teaching strategies for beginners in a Computer Organization & Architecture course:

1. Visual Aids and Analogies: Use visual aids such as diagrams, charts, and illustrations to simplify complex concepts. Analogies comparing computer components to familiar real-world objects can make abstract ideas more relatable and easier to understand.
2. Step-by-Step Approach: Break down complex topics into smaller, manageable steps. Present the material in a sequential manner, building upon previously covered concepts. This helps beginners grasp the fundamentals before moving on to more advanced topics.
3. Direct Activities: Provide firsthand activities that allow beginners to interact with hardware components or simulation software. This can include assembling simple computer systems, performing basic circuit simulations, or writing simple programs. Direct activities reinforce learning and make abstract concepts more tangible.
4. Practical Examples: Use practical examples and real-life scenarios to demonstrate the relevance and application of the concepts being taught. Relate the material to everyday situations or commonly used technologies to help beginners connect theory to practice.

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5. Scaffolding: Provide scaffolding support by gradually reducing assistance as students gain confidence and proficiency. Start with guided exercises and gradually increase the level of complexity and autonomy. This helps beginners develop their critical thinking skills and independent thinking.
6. Interactive Discussions: Encourage interactive discussions to promote active engagement and peer learning. Beginners can ask questions, share their perspectives, and learn from their classmates' experiences. This fosters a supportive learning environment where beginners can build their understanding collaboratively.
7. Concept Mapping and Summarizing: Encourage beginners to create concept maps or summaries of the material covered. Concept maps visually organize the relationships between different concepts, while summaries help reinforce understanding and retention.
8. Concrete Examples: Use concrete examples and familiar scenarios to explain abstract concepts. Relate computer organization and architecture to everyday experiences, such as explaining how a CPU functions like the brain of a computer or how cache memory is like a high-speed storage closet.
9. Incremental Assessments: Break assessments into smaller, incremental tasks to evaluate and reinforce learning along the way. This can include quizzes, short assignments, or mini projects that gradually increase in complexity as beginners progress through the course.
10. Encourage Questions: Create a supportive environment that encourages beginners to ask questions without hesitation. Answer questions patiently and provide explanations in a clear and accessible manner. This helps beginners clarify their doubts and deepen their understanding.
11. Provide Additional Resources: Offer supplementary resources, such as textbooks, online tutorials, and reference materials, to support beginners' learning outside the classroom. These resources can provide alternative explanations, additional examples, and further practice opportunities.
12. Regular Feedback and Guidance: Provide timely and constructive feedback on assignments and assessments to guide beginners' progress. Highlight their strengths and provide specific suggestions for improvement to help them grow and build confidence.

By employing these strategies, you can create an inclusive and supportive learning environment for beginners in a Computer Organization & Architecture course. Adjust the pace and depth of the course to accommodate their learning needs and gradually build their knowledge and skills in the subject.

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Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	80	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Introduction to Computer Systems • Basic components of a computer system • Overview of computer architecture and organization
Week 2	Number Systems and Digital Logic • Binary, decimal, and hexadecimal number systems • Logic gates and Boolean algebra • Combinational and sequential logic circuits
Week 3	Basic Computer Organization • Von Neumann architecture • CPU, memory, and I/O subsystems • Instruction execution cycle
Week 4	Machine Language and Assembly Programming • Machine language instructions • Assembly language programming concepts • Introduction to an assembly language (e.g., MIPS, x86)
Week 5	Central Processing Unit (CPU) Design • CPU components and their functions • Instruction set architecture (ISA) • CPU Datapath and control unit
Week 6	1. Memory Systems • Memory hierarchy • Cache memory organization and mapping techniques • Virtual memory concepts
Week 7	Mid-term Exam
Week 8	Microprocessors and Microcontrollers • Introduction to microprocessors and microcontrollers • Architecture and features of popular microprocessors (e.g., Intel 8086, ARM Cortex-M)

Week 9	Instruction Set Architecture (ISA) • Types of instruction formats • Addressing modes • Assembly language programming for the chosen ISA
Week 10	Input/Output Systems • I/O interfaces and devices • Interrupts and DMA (Direct Memory Access) • I/O programming techniques
Week 11	Computer Arithmetic • Binary and hexadecimal arithmetic • Integer and floating-point representations • Arithmetic operations and algorithms
Week 12	Pipelining and Superscalar Techniques • Pipelined CPU architecture • Instruction pipelining and hazards. • Superscalar and out-of-order execution
Week 13	Advanced Topics in Computer Architecture • Parallel processing and multiprocessors
Week 14	Advanced Topics in Computer Architecture • Memory management and protection • Performance evaluation and optimization techniques
Week 15	General Discussion
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1:
Week 2	Lab 2:
Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:
Week 6	Lab 6:
Week 7	Lab 7:

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**

Required Texts	**"Computer Organization and Architecture: Designing for Performance" by William Stallings:** ➢ This textbook provides a comprehensive introduction to computer organization and architecture, with a focus on performance design principles. It covers topics such as CPU organization, memory hierarchy, instruction set architecture, and I/O systems. The book includes numerous examples, illustrations, and exercises to reinforce concepts.	
Recommended Texts	**"Structured Computer Organization" by Andrew S. Tanenbaum and Todd Austin:** ➢ This book provides a structured approach to computer organization and architecture. It covers fundamental concepts, including digital logic, data representation, CPU organization, memory systems, and I/O systems. The text emphasizes the importance of hierarchical organization in computer systems and includes numerous examples and exercises to reinforce learning.	
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	**Probability and Statistics**	**Module Delivery**
Module Type	Core	☒ Theory ☒ Lecture ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	**It 201**	
ECTS Credits	**8**	
SWL (hr/sem)	**200**	

Module Level	2	**Semester of Delivery**	1
Administering Department	Computer science	**College**	Computer science and information technology
Module Leader	Mayada Mahdi hussien	**e-mail**	Maymaty6@gmail.com
Module Leader's Acad. Title	Ass.lech	**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	Mathematics of computing	**Semester**	1

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. It gives the student a broader idea of the possibility of things happening . 2. The probability of things gives more opportunity for imagination. 3. The moment- generating function gives him more opportunity to deal with the derivative of the moment- generating function. 4. The student will be qualified in the next stage to deal with probability and statistics, especially in the subject of simulation .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	3. Understand the vocabulary of probability and statistics . 4. Understanding the nature of statistics as an integrated system of knowledge. 5. Developing student's statistical concepts. 6. An attempt to reach the concepts of probability and statistics . 7. The ability to solve complex statistical problems.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – permutations and combinations Permutations mean dealing with ordered things, but harmonics, the order is unimportant. Part B- Probability Probability is a measure of the possibility of an event occurring. Probability is measured as a number between zero and one, where zero indicates impossibility and one indicates certainty. The higher the probability of an event, the greater the possibility of that event occurring. Part C- Distributions Connected and discreet distributions and how to deal with them.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	102	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	98	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - permutations and combinations
Week 2	Probability
Week 3	Conditional probability and bay's theorem
Week 4	Connected random variables
Week 5	Discrete random variables
Week 6	Functions of random variables
Week 7	Expectations
Week 8	Variances
Week 9	Moment – generating function

Week 10	Joint distributions and marginal distributions
Week 11	Discrete distributions
Week 12	Continuous distributions
Week 13	First exam
Week 14	Second exam
Week 15	Review important topics
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	كتاب سلسلة من الاحتمالات تأليف سيمور ليبشتز	Yes
Recommended Texts	كتاب مقدمة في الإحصاء الرياضي تأليف الدكتور صباح داود سليم.	yes
Websites	Adobe reader-[simue-pdf] Probability et statistique cours et problemes series schaum	

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	**Object oriented programming II**	**Module Delivery**
Module Type	Core	**Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code		
ECTS Credits	**8**	
SWL (hr/sem)		

Module Level	2	**Semester of Delivery**		1
Administering Department	Cs	**College**	It	
Module Leader	Name	**e-mail**	E-mail	
Module Leader's Acad. Title		**Module Leader's Qualification**		
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 Aims أهداف المادة الدراسية	THIS COURSE WILL PROVIDE A BASIC UNDERSTANDING OF THE METHODS AND TECHNIQUES OF DEVELOPING A SIMPLE TO MODERATELY COMPLEX WEB SITE. USING THE CURRENT STANDARD WEB PAGE LANGUAGE, STUDENTS WILL BE INSTRUCTED ON CREATING AND MAINTAINING A SIMPLE WEB SITE. AFT ER THE FOUNDATION LANGUAGE HAS BEEN ESTABLISHED, THE AID OF AN WEB EDITOR WILL BE INTRODUCED. THIS COURSE WILL PROVIDE A RIGOROUS TREATMENT OF OBJECT - ORIENTED CONCEPTS (DESIGN AND IMPLEMENTATION OF OBJECTS, CLASS CONSTRUCTION AND DESTRUCTION, ENCAPSULATION, INHERITANCE, AND POLYMORPHISM) USING JAVA AS AN EXAMPLE LANGUAGE.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Introducing advanced entity programming. ➢ How to use objects within programming as a modern concept and develop students' ability to programmatically ➢ Enhancing the student's ability to think in abstract terms when solving computer science problems and diversity in solution problems in different ways and how to relate them to reality ➢ Addressing advanced new concepts in programming such as multithreading, graphical user interface, and others.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1-Wrapper classes 2-Inner classes 3-Multithreading 4-Generics 5-GUI design 6-Data base access 7-Distribution

	Learning and Teaching Strategies
	استراتيجيات التعلم والتعليم
Strategies	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 type of simple experiments involving some sampling activities that are interesting to the students.

<table>
<tr><td colspan="4">Student Workload (SWL)
الحمل الدراسي للطالب</td></tr>
<tr><td>Structured SWL (h/sem)
الحمل الدراسي المنتظم للطالب خلال الفصل</td><td>102</td><td>Structured SWL (h/w)
الحمل الدراسي المنتظم للطالب أسبوعيا</td><td>7</td></tr>
<tr><td>Unstructured SWL (h/sem)
الحمل الدراسي غير المنتظم للطالب خلال الفصل</td><td>98</td><td>Unstructured SWL (h/w)
الحمل الدراسي غير المنتظم للطالب أسبوعيا</td><td>6.5</td></tr>
<tr><td>Total SWL (h/sem)
الحمل الدراسي الكلي للطالب خلال الفصل</td><td>200</td><td></td><td></td></tr>
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<tr><td colspan="6">Module Evaluation
تقييم المادة الدراسية</td></tr>
<tr><td></td><td></td><td>Time/Number</td><td>Weight (Marks)</td><td>Week Due</td><td>Relevant Learning Outcome</td></tr>
<tr><td rowspan="4">Formative assessment</td><td>Quizzes</td><td>2</td><td>10% (10)</td><td>5, 10</td><td>LO #1, 2, 10 and 11</td></tr>
<tr><td>Assignments</td><td>2</td><td>10% (10)</td><td>2, 12</td><td>LO # 3, 4, 6 and 7</td></tr>
<tr><td>Projects / Lab.</td><td>1</td><td>10% (10)</td><td>Continuous</td><td></td></tr>
<tr><td>Report</td><td>1</td><td>10% (10)</td><td>13</td><td>LO # 5, 8 and 10</td></tr>
<tr><td rowspan="2">Summative assessment</td><td>Midterm Exam</td><td>2 hr</td><td>10% (10)</td><td>7</td><td>LO # 1-7</td></tr>
<tr><td>Final Exam</td><td>2hr</td><td>50% (50)</td><td>16</td><td>All</td></tr>
<tr><td colspan="2">Total assessment</td><td colspan="2">100% (100 Marks)</td><td></td><td></td></tr>
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<tr><td colspan="2">Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري</td></tr>
<tr><td></td><td>Material Covered</td></tr>
<tr><td>Week 1</td><td>Wrapper classes</td></tr>
<tr><td>Week 2</td><td>Wrapper classes</td></tr>
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Week 3	Inner classes
Week 4	Inner classes
Week 5	Multithreading
Week 6	Multithreading
Week 7	Multithreading
Week 8	Generics
Week 9	Generics
Week 10	GUI design
Week 11	GUI design
Week 12	GUI design
Week 13	Data base access
Week 14	Data base access
Week 15	Distribution
Week 16	Distribution

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1:Wrapper classes
Week 2	Lab 2: Inner classes
Week 3	Lab 3: -Multithreading
Week 4	Lab 4: Generics
Week 5	Lab 5: GUI design
Week 6	Lab 6: Data base access
Week 7	Lab 7: Distribution

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**

Required Texts	C. Thomas Wu (2010). An Introduction to Object-Oriented Programming with Java. Fifth Edition. McGraw-Hill.	Yes
Recommended Texts	2] Herbert Schildt (2007). Java: The Complete Reference. Seventh Edition. McGraw-Hill.	No
Websites		

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	Data Structures and Algorithms II	**Module Delivery**	
Module Type	Core	☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	CS207		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	**Semester of Delivery**	2
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	CS202	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	5. Master sorting and searching algorithms. 6. Understand tree structures and traversal. 7. Explore graph data structures and traversals. 8. Learn efficient data storage and retrieval. 9. Utilize versatile data structures. 10. Study heap data structures and priority queues. 11. Learn string matching algorithms. 12. Analyze time and space complexity.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	8. Apply sorting and searching algorithms effectively. 9. Utilize tree structures and perform traversals. 10. Analyze and solve problems using graph data structures and traversals. 11. Implement efficient data storage and retrieval with hash tables. 12. Employ maps, sets, multisets, and multimaps for various problem-solving scenarios. 13. Utilize heaps and priority queues for efficient data organization. 14. Apply string matching algorithms for text processing tasks. 15. Analyze algorithm complexity in terms of time and space
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Sorting and Searching Algorithms [2 weeks] 2. Trees [2 weeks] 3. Graphs [2 weeks] 4. Hash Tables [1 week] 5. Maps, Sets, Multisets, and Multimaps [1 week] 6. Heaps [2 weeks] 7. Text Processing [2 weeks] 8. Algorithm Analysis [2 weeks]

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	1. Lectures and interactive discussions 2. Practical laboratory sessions 3. Problem-solving exercises and tutorials 4. Simulation tools and software 5. Assessments (exams, projects) with feedback

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	75	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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	6% (6)	6, 13	LO #1-3 and 7
	Assignments	2	7% (7)	8, 15	LO # 4-6 and 8
	Projects / Lab.	1	17% (17)	Continuous	
	Report				
Summative assessment	Exam	2 hr	20% (20)	7	LO # 1-5
	Final Lab	2 hr	17% (17)		All
	Final Exam	3hr	33% (33)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Weeks 1-2	Sorting and Searching: Bubble Sort, Quick Sort, Merge Sort, Sequential Search, Interval Search
Weeks 3-4	Trees: General trees, Binary trees, Tree traversal, Balanced Trees
Weeks 5-6	Graphs: Data Structures for Graphs, Graph Traversals, Shortest Paths
Week 7	Hash Tables
Week 8	Maps, Sets, Multisets, and Multimaps
Week 9	Exam I

Weeks 10-11	Heaps: The Heap Data Structure, Implementing a Priority Queue, with a Heap, Analysis of a Heap-Based Priority Queue, Bottom-Up Heap Construction
Weeks 12-13	Text Processing: String Matching algorithms
Weeks 14-15	Algorithm Analysis: Time Complexity, Space Complexity
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Sorting
Week 2	Lab 2: Searching
Week 3	Lab 3: Trees
Week 4	Lab 4: Trees
Week 5	Lab 5: Graphs
Week 6	Lab 6: Graphs
Week 7	Lab 7: Hash Tables
Week 8	Lab 8: Maps
Week 9	Lab 9: Sets
Week 10	Lab 10: Heaps
Week 11	Lab 11: Heaps
Week 12	Lab 12: Text Processing
Week 13	Lab 13: Text Processing
Week 14	Lab 14: Algorithm Analysis
Week 15	Lab 15: Algorithm Analysis

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Data Structures and Algorithms in Java. Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser. 6th Edition. 2014 John Wiley & Sons, Inc.	No

Recommended Texts	Data Structures and Abstractions with Java™. Frank M. Carrano and Timothy M. Henry. Fifth Edition 2019 Pearson Education, Inc.	No
Websites	https://www.javatpoint.com/data-structure-tutorial	

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	**Computation Theory**	**Module Delivery**
Module Type	Core	☒ Theory
Module Code	**CS205**	☒ Lecture
ECTS Credits	**5**	☐ Lab
SWL (hr/sem)	**125**	☐ Tutorial ☐ Practical ☐ Seminar

Module Level	2	Semester of Delivery		2
Administering Department	Computer Science dept.	**College**	College of computer science and information technology	
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	/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 Aims أهداف المادة الدراسية	The aim of this course is to introduce students to the fundamental area of computer science which enables students to focus on the study of abstract models of computation. These abstract models allow the students to assess via formal reasoning what could be achieved through computing when they are using it to solve problems in science and engineering. The goal is to allow them to answer fundamental questions about problems, such as whether they can or not be computed. The course introduces basic computation models and their properties. The students will be able to express computer science problems as mathematical statements and to formulate proofs.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and understanding : - Clarifying the basic concepts in computational theory through a set of tools. -Gaining skills in problem-solving. -Acquisition of basic skills as an introduction to building languages. -Acquisition of theoretical concepts to deal with RE's, DFA's, NFA's, Stack's, Turing machines, and Grammars. B- Subject-specific skills : B1 - The ability to design (FAs, NFAs, Grammar, languages modelling, small compilers basics). B2 - The ability to think about solving the problem according to specific rules. B3 - Writing scientific reports B4 - Know the comparison between (Natural and Formal Languages).
Indicative Contents المحتويات الإرشادية	- In theoretical computer science, the theory of computation is the branch that deals with whether and how efficiently problems can be solved on a model of computation, using an algorithm. The field is divided into three major branches: automata theory, computability theory and computational complexity theory . - The main purpose of the theory of computation is to develop a formal mathematical model of computation that reflects the real world. computers. - The student can read about these basic topics in order to guide him in the subject of computational theory. These topics are: (Theory of computation, Language Concepts, Grammar Concepts, Finite State Machine, Deterministic finite automaton, Non-

	deterministic Finite State Machine, Regular Languages, Regular Expression, pumping Lemma, Context Free Grammar, FSM Summary, Context-Free Languages, Ambiguity).

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	- Readings, self-learning, panel discussions. - Classroom exercises and activities. - Guiding students to some websites to benefit from them to develop abilities. - Holding research seminars through which some problems are explained and analyzed and the mechanism for finding solutions. 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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	80	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	- General information about Computation. - Representing Information. - Computational Problems. - Characteristics of computational problems - Theory of computation
Week 2	- Language Concepts - Grammar Concepts - Chomsky Classification of Grammars - Finite State Machine - How does a Automaton work ?
Week 3	- Machine view of FA - How to define a FA - FA diagrams - Characteristics of state machine - Deterministic finite automaton DFA - Examples of DFA .
Week 4	- Non deterministic Finite State Machine (NFA) - NFA operation - Examples of NFA - DFA Vs. NFA
Week 5	- Equivalence of Machines - Example of equivalent machines - Proof by construction

Week 6	- Properties of Regular Languages - Definition (Regular Languages) - Union Operation & Examples - Concatenation Operation & Examples - Star Operation & Examples
Week 7	- Reversal Operation & Examples - Complement Operation & Examples - Intersection Operation & Examples - De Morgan's Law & Example
Week 8	- DFA Minimization - Equivalence theorem. - Draw the equivalent DFA - Minimization of DFA Table Filling Method
Week 9	- Myhill-Nerode Theorem - Regular Languages & examples - Regular Expression & examples.
Week 10	- automata theory (Basics , Inductions , Precedence of Operators , Examples , Identities , Facts) - Equivalence of RE's and Automata .
Week 11	- Converting a RE to an ε-NFA - Form of ε-NFA s Constructed - RE to ε-NFA : (Union, Concatenation, Closure, Examples) - DFA to RE - Algebraic Laws for RE's
Week 12	- Convert Automata into RegEx using State Elimination - pumping Lemma - Theorem to Proof Language is Regular - Theorem to Proof Language is Not Regular - Pigeonhole Principle and FSA
Week 13	- Theorem – Long Strings - Line of Reasoning - Examples of Pumping Lemma
Week 14	- Context Free Grammar - FSM Summary - Context-Free Languages - Chomsky Hierarchy
Week 15	- Derivation of Context-Free Languages - Derivation Trees , Examples - Ambiguity , Examples .
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	none

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	(Michael Sipser), Introduction to the Theory of computation (Third Edition).	Yes
Recommended Texts	Theory of Computation Simplified , (Varsha H. Patil ، Vaishali S. Pawar ،Swati A. Bhavsar) , 2022 .	No
Websites	https://elc.uobasrah.edu.iq/enrol/index.php?id=72	

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

Database Systems-CS209

Module Information		
معلومات المادة الدراسية		
Module Title	**Database Systems**	**Module Delivery**
Module Type	**Core**	☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CSITCS209	
ECTS Credits	**6**	
SWL (hr/sem)	**150**	

Module Level	2	**Semester of Delivery**	3
Administering Department	Computer Science	**College**	College of Information Technology
Module Leader	Baida'a AbdulQader Khudor	**e-mail**	Baidaa.khudur@uobasrah.edi.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ms.c.
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	CSITCS204-System analysis and design	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Aims أهداف المادة الدراسية	The objective of this course is to introduce students to database management systems. It helps the student to present an actual practical project on realistic interaction and acquisition of skills by collecting information and dealing with a real institution through open discussion with the professor and his fellow students. Topics include 1. Data, Information, and File system 2. Database and database users 3. Database system concepts and architecture 4. Data modeling using the Entity Relationship Diagram (ERD) 5. The relational data model and relational data constraints 6. Functional dependencies and normalization for relational databases 7. The Relational Algebra, 8. Relational database design for ER to relational mapping 9. Organization records in the file 9. Disk storage, basic file structure and hashing, 10. SQL schema definition, constraints, queries and views. 11. Acquisition of skills by using some functions of MSAccess.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	11. Understanding the concept of relational databases. 12. Describe database concepts and architecture including query processing and optimization. 13. Design logical and mathematical models to organize data within a database. 14. Learn about the capabilities of Microsoft Access in designing Database. 15. Preparing the student to design a database of medium complexity using Access tools. 16. The student gains self-confidence as a result of acquiring knowledge of how to deal with data and organize them into tables that facilitate the process of storage and retrieval. 17. Develop skills to work in a group project to produce quality deliverables. 18. At the end of the chapter, the student achieves theoretical knowledge and practical capabilities in building an integrated database system
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Part A – Introduction to Database** Data, Information, Data Base (DB), Relational Data Base (RDB), Data Base Management System (DBMS). Characteristics of Database, Advantages and Disadvantages, Main phases of database design, Constructing an ER model, ER Diagram Symbols and Notations, Cardinality and Ordinality, How to Draw ER Diagrams, ER Diagram Best Practices. [14 hrs] Getting to know the Access interface, Create Database, Create & Design tables, Create table relationships, Make a dropdown list, Create & Design Query, Change the name of a field within the query, Add a calculated field to the query table, & Evaluation. [8 hrs] **Part B – The Relational Algebra**

THE RELATIONAL ALGEBRA, Unary relational operations: SELECT and PROJECT, Sequences of Operations and the RENAME Operation, Operations from set theory, The Cartesian product Operation, Binary Relational Operations. [8 hrs]

Using **Datepart** function, Using **DateDiff** function to find the difference between two dates, Create compound conditions, Using Logical operators, comparative and Like operators, & Evaluation.[8 hrs]

Part C – Files and Records
Files and Records, Organizing records in the file, Organizing Files on Disk, File Headers, Hashing Techniques, & Hashing Function. [8 hrs]

Using **IIF** function, Using **Switch** function, & Evaluation.[6 hrs]

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 thinking skills. This will be achieved through classes, Labs. and interactive discussions.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	73	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.86
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, 10	LO #1,2,3,4,5,6,7,8
	Assignments	1	5% (5)	12	LO #1,2,3,4,5,6,7,8
	Assignments Lab.	1	10% (10)	Continuous	
	Midterm Exam	2hr	25% (10)	8,12	LO #12,3,4,5,6,7,8
Summative assessment	Final Exam	3hr	35% (50)	16	All
	Final Lab. Exam	1hr	15%(15)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction to Database** Data, Information, Data Base (DB), Relational Data Base (RDB), Data Base Management System (DBMS)
Week 2	**Characteristics of Database**, Advantages and Disadvantages
Week 3	**Main phases of database design** Phase1, Phase2, ER Diagram, Main components of ER Diagram, Entities, Entity Attributes, Domain
Week 4	**Main phases of database design** Primary Key, Foreign Keys, Types of Relation Ships, Phase3, Phase4
Week 5	**Constructing an ER model** Attributes Types, Single, Multivalued, Compound, Derived, Stored, Key & Optional Attribute.
Week 6	**ER Diagram Symbols and Notations** Entity, Weak Entity, Attribute, Multivalued Attribute, Derived Attribute, Key Attribute, Relationship. **Cardinality and Ordinality**
Week 7	How to Draw ER Diagrams, ER Diagram Best Practices, Exercises.
Week 8	**THE RELATIONAL ALGEBRA** Unary Relational Operations: SELECT and PROJECT, Sequences of Operations and the RENAME Operation
Week 9	**THE RELATION AL ALGEBRA** Relational Algebra Operations from Set Theory: A. UNION, INTERSECTION, and MINUS B. The CARTESIAN PRODUCT (CROSS PRODUCT) Operation
Week 10	**THE RELATIONAL ALGEBRA** Binary Relational Operations: JOIN and DIVISION 1. The Join Operation A. Inner join, Variations of JOIN (The EQUIJOIN and NATURAL JOIN)
Week 11	**THE RELATIONAL ALGEBRA** B. Outer join: Left Outer Join, Right Outer Join Precedence of relational Operations 2. The Division Operation
Week 12	**Files and Records** Records and Record Types, Fixed Length Records, Formatting records of a file of Fixed length records, Variable Length Records, Formatting records of a file of variable-length records (Other options), Formatted a file of records with optional fields, Formatting A repeating field, Formatting file that includes records of different types
Week 13	**Organizing records in the file** Record Blocking and Spanned *vs* Un spanned Records **Organizing Files on Disk** Allocating File Blocks on Disk: Contiguous allocation, Linked allocation, Indexed allocation
Week 14	**File Headers,** Files of Unordered Records (Heap Files)**,**Files of Ordered Records (Sorted Files)
Week 15	**Hashing Techniques:** Hash table, The idea behind hashing **Hashing Function:** Direct, Subtraction, & Modulo Division Hashing
Week 16	**Preparatory week before the final Exam**

	Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered	
Week 1	Lab 1: Introduction to MS-Access, Getting to know the Access interface, Create Database,	
Week 2	Lab 2: Create & Design tables, Create tables relationships	
Week 3	**Lab 3: Evaluation**	
Week 4	Lab 4**:** Make a dropdown list, Create & Design Query	
Week 5	Lab 5: Using zoom window and write some codes, Change the name of a field within a query	
Week 6	**Lab 6:** Add a calculated field to the query table	
Week 7	**Lab 7: Evaluation**	
Week 8	**Lab 8:** Using **Datepart** function	
Week 9	Lab 9: Using **DateDiff** function to find the difference between two dates	
Week 10	Lab 10: Create compound conditions, Using Logical operators, comparative and Like operators	
Week 11	**Lab 11: Evaluation**	
Week 12	Lab 12: Using **IIF** function	
Week 13	**Lab 13: Evaluation**	
Week 14	Lab 14: Using **Switch** function	
Week 15	**Lab 15: Evaluation**	

	Learning and Teaching Resources مصادر التعلم والتدريس	
	Text	**Available in the Library?**
Required Texts	• Database System Concepts Fourth Edition" by Abraham Silberschatz Henry F. Korth S. Sudarshan , McGraw-Hill ISBN 0-07-255481-9 • Database Concepts 6th Edition, David M. Kroenke,David J. Auer	No
Recommended Texts	• Access 2013 the missing manual, Matthew macdonald • FUNDAMENTALS OF Database Systems 6th EDITION, Ramez Elmasri	No
Websites	https://link.springer.com/book/10.1007/978-3-540-48399-1	

<table>
<tr><td colspan="5">Grading Scheme
مخطط الدرجات</td></tr>
<tr><td>Group</td><td>Grade</td><td>التقدير</td><td>Marks (%)</td><td>Definition</td></tr>
<tr><td rowspan="5">Success Group (50 - 100)</td><td>A - Excellent</td><td>امتياز</td><td>90 - 100</td><td>Outstanding Performance</td></tr>
<tr><td>B - Very Good</td><td>جيد جدا</td><td>80 - 89</td><td>Above average with some errors</td></tr>
<tr><td>C – Good</td><td>جيد</td><td>70 - 79</td><td>Sound work with notable errors</td></tr>
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<tr><td>E - Sufficient</td><td>مقبول</td><td>50 - 59</td><td>Work meets minimum criteria</td></tr>
<tr><td rowspan="2">Fail Group (0 – 49)</td><td>FX – Fail</td><td>راسب (قيد المعالجة)</td><td>(45-49)</td><td>More work required but credit awarded</td></tr>
<tr><td>F – Fail</td><td>راسب</td><td>(0-44)</td><td>Considerable amount of work required</td></tr>
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</table>

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	**Web Development**		**Module Delivery**	
Module Type	Core		☒Theory	
Module Code			☒Lecture	
ECTS Credits	**6**		☒Lab	
SWL (hr/sem)	**150**		☐Tutorial	
			☐Practical	
			☐Seminar	
Module Level	2	**Semester of Delivery**		2
Administering Department		**College**	CSIT	
Module Leader	Dr. Raad A. Muhajjar	**e-mail**	Raad.muhajjar@uobasrah.edu.iq	
Module Leader's Acad. Title	Lecturer	**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	15/06/2023	**Version Number**	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	1
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. Understand the concept of static web design and its advantages and limitations. 2. Gain proficiency in HTML (Hypertext Markup Language) and CSS (Cascading Style Sheets) as the primary technologies for creating static web pages. 3. Learn the fundamental structure of HTML, including tags, elements, attributes, and their usage in creating web content. 4. Develop skills in creating and formatting different types of content, such as text, images, links, lists, tables, and forms using HTML. 5. Explore the principles of CSS and learn how to apply styles to HTML elements, including fonts, colors, backgrounds, margins, and padding. 6. Understand the box model in CSS and its significance in controlling the layout and positioning of elements on a web page. 7. Learn techniques for creating responsive web designs that adapt to different screen sizes and devices.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	When completing a web programming module focused on PHP, the student can gain the following learning outcomes: 1. Demonstrate a solid understanding of the concept of static web design and its purpose in creating websites. 2. Create well-structured and semantically correct HTML markup for static web pages. 3. Apply CSS styles effectively to enhance the visual presentation and layout of web content. 4. Construct responsive web designs that adapt gracefully to different screen sizes and devices. 5. Implement navigation menus, headers, footers, and other common components of static websites. 6. Optimize web graphics and images for faster loading times without sacrificing quality. 7. Incorporate accessibility considerations into web design to ensure inclusivity and compliance with accessibility standards. 8. Test and debug static web pages to ensure proper functionality across different browsers and devices. 9. Organize and manage website files and directories efficiently for ease of maintenance and scalability. 10. Demonstrate knowledge of best practices in static web design, including code documentation, version control, and collaboration techniques. 11. These learning outcomes reflect the skills and knowledge you should acquire upon completing the module on static web design. Mastery of these outcomes will enable you to design and build visually appealing, functional, and accessible static websites using HTML and CSS.
Indicative Contents المحتويات الإرشادية	1. Introduction to Static Web Design: • Overview of static web design and its role in website development. • Understanding the differences between static and dynamic websites. • Exploring the benefits and limitations of static web design. 2. HTML Fundamentals: • Introduction to HTML markup and its structure.

- Understanding HTML tags, elements, and attributes.
- Creating and formatting text, headings, paragraphs, and lists.
- Working with links, images, and multimedia content.
- Creating tables for data representation.

3. CSS Basics:

- Introduction to CSS and its role in styling web pages.
- Understanding CSS syntax, selectors, and properties.
- Applying colors, backgrounds, and borders to elements.
- Controlling typography and font styles.
- Managing spacing and layout using margins, padding, and the box model.

4. Layout and Responsive Design:

- Creating multi-column layouts using CSS.
- Understanding the concept of responsive web design.
- Using media queries to adapt layouts for different screen sizes.
- Implementing flexible grids and fluid images.
- Applying responsive techniques to navigation menus and other elements.

5. Web Graphics and Optimization:

- Optimizing images for web display, including compression techniques.
- Working with icon fonts and scalable vector graphics (SVG).
- Understanding the impact of file formats and sizes on page load times.
- Implementing techniques to improve web performance, such as caching and minification.

6. Accessibility and Best Practices:

- Understanding the importance of web accessibility.
- Implementing accessibility features, such as alternative text for images and proper semantic markup.
- Following best practices for clean and maintainable code.
- Introduction to version control systems and collaboration tools.

7. Testing, Debugging, and Deployment:

- Testing web pages for cross-browser compatibility and responsiveness.
- Using browser developer tools for debugging and troubleshooting.
- Preparing web pages for deployment and publishing.
- Hosting and maintaining static websites.

8. Project Work:

- Applying the learned concepts and skills to create a complete static website.
- Incorporating responsive design, optimized graphics, and accessibility features.

	• Testing, debugging, and refining the website based on feedback and evaluation.

Learning and Teaching Strategies	
استراتيجيات التعلم والتعليم	
Strategies	Employing these strategies can create a comprehensive and engaging learning experience in a web programming module, such as lectures, interactive discussions, hands-on lab sessions, case studies, assignments, projects, guest lectures, online resources, assessments, group projects, and continuous support.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (hr/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (hr/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (hr/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	75	**Unstructured SWL (hr/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (hr/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation				
تقييم المادة الدراسية				
	Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Quizzes	2	10% (10)	5 and 10	#1, #2 and #3

Formative assessment	Assignments	2	10% (10)	2 and 12	#3, #4 and #6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	#5, #6
Summative assessment	Midterm Exam	2hr	10% (10)	7	#1 - #4
	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 Static Web Design: • Overview of static web design and its role in website development. • Understanding the differences between static and dynamic websites. • Exploring the benefits and limitations of static web design.
Week 2	HTML Fundamentals: • Introduction to HTML markup and its structure. • Understanding HTML tags, elements, and attributes. • Creating and formatting text, headings, paragraphs, and lists.
Week 3	HTML Fundamentals: • Working with links, images, and multimedia content. • Creating tables for data representation.
Week 4	CSS Basics: • Introduction to CSS and its role in styling web pages. • Understanding CSS syntax, selectors, and properties. • Applying colors, backgrounds, and borders to elements.
Week 5	CSS Basics: • Controlling typography and font styles.

	• Managing spacing and layout using margins, padding, and the box model.
Week 6	Layout and Responsive Design: • Creating multi-column layouts using CSS. • Understanding the concept of responsive web design. • Using media queries to adapt layouts for different screen sizes.
Week 7	Layout and Responsive Design: • Implementing flexible grids and fluid images. • Applying responsive techniques to navigation menus and other elements.
Week 8	Web Graphics and Optimization: • Optimizing images for web display, including compression techniques. • Working with icon fonts and scalable vector graphics (SVG).
Week 9	Web Graphics and Optimization: • Understanding the impact of file formats and sizes on page load times. • Implementing techniques to improve web performance, such as caching and minification.
Week 10	Accessibility and Best Practices: • Understanding the importance of web accessibility. • Implementing accessibility features, such as alternative text for images and proper semantic markup.
Week 11	Accessibility and Best Practices: • Following best practices for clean and maintainable code. • Introduction to version control systems and collaboration tools.
Week 12	Testing, Debugging, and Deployment: • Testing web pages for cross-browser compatibility and responsiveness. • Using browser developer tools for debugging and troubleshooting.

Week 13	Testing, Debugging, and Deployment:
	
	    • Preparing web pages for deployment and publishing.
	    • Hosting and maintaining static websites.

Week 14	Project Work:
	
	    • Applying the learned concepts and skills to create a complete static website.
	    • Incorporating responsive design, optimized graphics, and accessibility features.

Week 15	Project Work: • Testing, debugging, and refining the website based on feedback and evaluation.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered

Week 1	Lab 1: Introduction to HTML
	
	    • Setting up the development environment
	    • Creating the basic structure of an HTML document
	    • Working with text, headings, and paragraphs
	    • Creating lists and adding images

Week 2	Lab 2: HTML Advanced Concepts
	
	    • Creating hyperlinks and navigation menus
	    • Formatting tables for data representation
	    • Embedding multimedia content (audio, video)
	    • Introduction to forms and form elements

Week 3	Lab 3: CSS Basics
	
	    • Introduction to CSS and linking stylesheets
	    • Applying colors, backgrounds, and borders

Week 4	Lab 4: CSS Basics • Controlling typography and fonts • Managing spacing and layout using margins, padding, and the box model
Week 5	Lab 5: CSS Layouts and Positioning • Creating multi-column layouts • Implementing float and clear properties
Week 6	Lab 6: CSS Layouts and Positioning • Using flexbox for flexible layouts • Positioning elements (relative, absolute, fixed)
Week 7	Lab 7: Responsive Web Design • Understanding responsive design principles • Using media queries for different screen sizes
Week 8	Lab 8: Responsive Web Design • Creating flexible grids and fluid images • Designing responsive navigation menus
Week 9	Lab 9: Web Graphics and Optimization • Optimizing images for the web (compression, formats) • Working with icon fonts and scalable vector graphics (SVG)
Week 10	Lab 10: Web Graphics and Optimization • Implementing performance optimization techniques • Caching and minification of web assets
Week 11	Lab 11: Accessibility and Best Practices • Introduction to web accessibility guidelines • Implementing accessibility features (alternative text, semantic markup)
Week 12	Lab 12: Accessibility and Best Practices • Following best practices for clean and maintainable code • Version control and collaboration using Git
Week 13	Lab 8: Testing, Debugging, and Deployment • Testing web pages for cross-browser compatibility • Using browser developer tools for debugging and troubleshooting • Preparing web pages for deployment and publishing • Hosting and maintaining static websites

Week14	Lab Project: Complete Static Website Development • Applying the learned concepts and skills to create a full static website • Incorporating responsive design, optimized graphics, and accessibility features • Testing, debugging, and refining the website based on feedback and evaluation • Documentation and final deployment of the website
Week15	• Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Textbook: 1. "Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics" by Jennifer Niederst Robbins, 5th edition, published in October 2018. 2. "HTML and CSS: Design and Build Websites" by Jon Duckett, 2th edition , published in November 2014.	Yes (E-copy)
Recommended Texts	"HTML and CSS: Visual QuickStart Guide" by Elizabeth Castro and Bruce Hyslop, 8th edition, published in September 2013.	Yes (E-copy)
Websites	https://www.w3schools.com/html/ , https://www.w3schools.com/css/default.asp	

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.