

**Ministry of Higher Education and Scientific Research Scientific
Supervision and Scientific Evaluation Apparatus Directorate of
Quality Assurance and Academic Accreditation Accreditation
Department**



Academic Program and Course Description Guide

2025-2026

Academic Program Description Form

University Name: Wasit University

Faculty/Institute: College of Computer Science and Information Technology

Scientific Department: Computer Science Department

Academic or Professional Program Name: Bachelor's degree. Computer Science

Final Certificate Name: Bachelor of Science in Computer Science

Academic System: Semesters (Second Semester)

Description Preparation Date: 22/2/2026

File Completion Date: 1/3/2026

Signature:

Head of Department Name:

Dr. Mohamed H. Galeb

Date: 1/3/2026

Signature:

Scientific Associate Name:

Dr. Abdul Hadi M. Alaidi

Date: 1/3/2026

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:



Approval of the Dean

1/3/2026

Prof. Dr.

Saif Ali Alkaidi

Dean College of Computer Science
& Information Technology

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Fundamentals of Programming 2		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☐ Seminar	
Module Code	cs-121			
ECTS Credits	8			
SWL (hr/sem)	200			
Module Level	UGI	Semester of Delivery		two
Administering Department	Computer science	College	CSIT	
Module Leader	Abdul Hadi Mohammed		e-mail	alaidi@uowasit.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.	
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/2/2026	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Introduction to Computer Programming 1 (cs-101)	Semester	First
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives	This module aims to extend students' programming knowledge by introducing more advanced concepts in Python programming. The course focuses on developing structured and modular programming skills through the use of

أهداف المادة الدراسية	functions and file handling techniques. It also aims to introduce students to object-oriented programming concepts such as classes and objects, enabling them to design more organized and reusable programs. In addition, the module seeks to familiarize students with the basics of graphical user interface (GUI) programming in Python, allowing them to build simple interactive applications. Through these topics, students will strengthen their problem-solving abilities and gain practical experience in developing more complex Python programs. Upon completion of this course, the student will be able to: 1. Understand the concept of modular programming and develop programs using functions in Python. 2. Define and use user-defined functions with parameters and return values. 3. Apply variable scope and function reuse to create structured and organized programs. 4. Read from and write to files in Python to store and retrieve program data. 5. Apply object-oriented programming concepts including classes, objects, attributes, and methods. 6. Design simple programs using object-oriented programming techniques. 7. Develop basic graphical user interface (GUI) applications using Python libraries. 8. Integrate functions, file handling, and object-oriented programming to build small practical applications. 9. Debug and test Python programs to ensure correctness and efficiency. 10. Apply programming concepts to solve intermediate-level computational problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students will be able to design and implement Python programs using modular and object-oriented programming concepts. They will demonstrate an understanding of functions, parameter passing, and variable scope. Students will also be able to work with files for reading and writing data, and apply object-oriented programming concepts such as classes and objects. In addition, they will develop simple graphical user interface (GUI) applications and integrate different programming concepts to build small practical software solutions.
Indicative Contents المحتويات الإرشادية	The module introduces intermediate and advanced programming concepts in Python. Topics include defining and using functions, parameter passing, return values, and variable scope. The course also covers file handling in Python, including reading from and writing to files. Students will be introduced to object-oriented programming concepts such as classes, objects, attributes, and methods. In addition, the module introduces basic graphical user interface (GUI) programming using Python to create simple interactive applications.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The teaching strategy focuses on developing students' programming and problem-solving abilities through a combination of theoretical explanations and practical exercises. Interactive lectures, live coding demonstrations, laboratory
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	sessions, and homework assignments will be used to reinforce learning. Students will be encouraged to practice writing functions, managing files, designing classes, and developing simple GUI applications. Practical projects and programming tasks will help students apply the concepts learned and build functional Python programs.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	136	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	9
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	10 minutes / 2	10% (10)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Review of basic Python concepts (variables, conditions, loops, strings). Introduction to Functions in Python .
Week 2	Defining and calling functions, parameters and arguments.
Week 3	Return values, multiple parameters, and built-in functions.
Week 4	Variable scope (local and global variables) and modular programming.
Week 5	Practical exercises on functions and problem solving using functions.

Week 6	Introduction to File Handling : opening and closing files, reading text files.
Week 7	Mid-term Exam
Week 8	Writing data to files, appending data, and working with file paths.
Week 9	Practical exercises using files and functions together.
Week 10	Introduction to Object-Oriented Programming (OOP) concepts.
Week 11	Creating classes and objects , attributes and methods.
Week 12	Constructors (<code>__init__</code>), object interaction, and simple OOP program design.
Week 13	Introduction to GUI Programming in Python (basic GUI concepts and tools such as Tkinter).
Week 14	Creating simple GUI applications (buttons, labels, input fields, events).
Week 15	Final practical project or review integrating functions, files, OOP, and GUI programming.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Running Python programs, reviewing variables, input/output, conditions, and loops.
Week 2	Writing simple functions, calling functions, and passing parameters.
Week 3	Creating functions with return values and solving small problems using functions.
Week 4	Practice with local and global variables and modular program design.
Week 5	Writing programs that divide tasks into multiple functions.
Week 6	Opening files, reading text files, and displaying file content.
Week 7	Mid-term Lab Test
Week 8	Writing and appending data to files and storing program results.
Week 9	Programs that read data from files, process it, and write results to new files.
Week 10	Creating simple classes and objects in Python.
Week 11	Writing class methods and accessing object attributes.
Week 12	Using <code>__init__</code> and building simple object-oriented programs.
Week 13	Creating a simple window using Tkinter and adding labels and buttons.
Week 14	Adding input fields, buttons, and handling user events.
Week 15	Developing a small application combining functions, files, OOP, or GUI concepts.

Learning and Teaching Resources
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مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Introduction to Programming Using Python by Liang, Y. D. (2013), Pearson.	
Recommended Texts	Programming and problem solving with Python: comprehensive sixth edition, Nell Dale and Chip Weems. Computer Science Textbook class XI, First Edition, 2019. Python Primer Plus, Sixth Edition	
Websites	https://alaidi.net/ https://realpython.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	Logic Design		Module Delivery	
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	Cs-122			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGI	Semester of Delivery		
Administering Department	Computer science	College	CSIT	
Module Leader	Zainab Mohanad issa Ansaf		e-mail	Zansaf@uowasit.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.	
Module Tutor		e-mail	E-mail	
Peer Reviewer Name		e-mail	E-mail	
Scientific Committee Approval Date	1/2/2026	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. Understanding Digital Systems: Learn and understand the core principles of digital systems and how they function. 2. Binary Logic Mastery: Gain a clear understanding of binary logic and how it forms the basis for digital computing and design.

	3. Comprehension of Logic Gates: Understand the functioning of basic logic gates (AND, OR, NOT) and more complex gates (NAND, NOR, XOR, XNOR), as well as how to combine these gates to create digital circuits. 4. Boolean Algebra Proficiency: Develop a strong understanding of Boolean algebra, including how to simplify Boolean expressions and how these expressions are used in logic design. 5. Sequential and Combinational Logic: Learn the difference between sequential and combinational logic, and how to design circuits using each type of logic. 6. Logic Minimization Techniques: Understand and apply logic minimization techniques, such as Karnaugh maps and Quine-McCluskey method, to simplify logic designs. 7. Design and Analysis: Gain the ability to design and analyze various types of digital circuits, including adders, multiplexers, decoders, memory units, and more. 8. Understanding of Flip Flops and Memory Elements: Develop a comprehension of various types of flip-flops and memory elements, and understand their use in creating larger systems such as registers and counters. 9. Problem-Solving Skills: Enhance problem-solving skills, critical thinking, and creativity in the context of digital logic design.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding Fundamental Concepts: The students will have a firm grasp of binary systems, digital signals, logic gates, and Boolean algebra. 2. Proficiency in Logic Minimization Techniques: Students will know how to use Karnaugh maps and Quine-McCluskey method to simplify logic circuits. 3. Hands-On Experience: Students will gain practical experience in implementing logic circuits, either physically with electronic components or virtually using design and simulation software. 4. Knowledge of Different Logic Families: Students will learn about different logic families (like TTL, CMOS), their characteristics, and the advantages and disadvantages of each. 5. Design and Analysis of Logic Circuits: Students will be able to design and analyze combinational and sequential circuits. This includes basic gates, adders, multiplexers, decoders, and other digital circuits. 6. Problem-Solving Skills: Students will develop strong problem-solving skills, allowing them to tackle complex logic design problems effectively. 7. Understanding of Memory Elements: Students will understand the operation of different types of flip-flops, latches, and other memory elements. They will also know how these elements are used to design registers, counters, and more complex memory structures. 8. Ability to Work in Teams: If collaborative projects are included in the course, students will gain experience in working as part of a team to design and implement complex logic circuits. 9. Relating Theory to Practice: Students will be able to relate theoretical concepts to practical real-world applications, recognizing the significance and utility of logic design in various technological applications. 10. Understanding of Timing Issues: Students will understand timing issues in digital circuits, including setup and hold times for flip-flops, and how to

	design circuits that meet timing requirements.
Indicative Contents المحتويات الإرشادية	1. Introduction to Digital Systems: Discussion of what digital systems are and how they function, including basics of analog vs digital signals. 2. Binary Systems and Codes: Understanding of binary numbers, binary arithmetic, binary codes like Gray Code, BCD, etc. 3. Logic Gates and Circuits: Introduction to basic logic gates (AND, OR, NOT), universal gates (NAND, NOR), and more complex gates (XOR, XNOR). 4. Boolean Algebra and Logic Simplification: An in-depth look at Boolean algebra, its laws and rules, and its application to logic design. Techniques for logic simplification, such as De Morgan's laws and Karnaugh maps, would also be included. 5. Combinational Logic Circuits: Study of combinational logic design, including adders, subtractors, multiplexers, decoders, and encoders. 6. Sequential Logic Circuits: Discussion of sequential logic, flip-flops, latches, counters, and registers. 7. Memory and Programmable Logic Devices: Examination of memory units, memory organization, and devices like Read-Only Memory (ROM), Programmable Read-Only Memory (PROM), and Programmable Logic Arrays (PLA). 8. Logic Families: Introduction to different logic families like TTL, ECL, and CMOS, and comparison of their characteristics and applications. 9. Finite State Machines: Explanation of the concept of state, state diagrams, state tables, and how to design finite state machines. 10. Introduction to VHDL/Verilog: Basics of hardware description languages, their syntax, and semantics, and how they are used to design and test digital circuits.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Learning and teaching logic design, particularly digital logic design, requires a deep understanding of binary systems, gates, Boolean algebra, and much more. Here are some effective strategies to facilitate learning and teaching of this subject. 2. Using Visual Tools: Visual representations can greatly enhance understanding in this field. Using diagrams to explain concepts such as truth tables, Karnaugh maps, and logic gates. Software like Circuit maker can be used to virtually design and test digital circuits. 3. Starting with basic binary arithmetic, explaining the importance of 0s and 1s in digital logic design. Moving to basic logic gates (AND, OR, NOT), and gradually introduce more complex ones (NAND, NOR, XOR, XNOR). 4. Utilizing Hands-On Learning: Incorporating practical exercises whenever possible. This could involve using breadboards and basic electronic components or using software to design and simulate circuits. 5. Learning and teaching logic design, particularly digital logic design, requires a deep understanding of binary systems, gates, Boolean algebra, and much

	more. Here are some effective strategies to facilitate learning and teaching of this subject. - Using Visual Tools: Visual representations can greatly enhance understanding in this field. Using diagrams to explain concepts such as truth tables, Karnaugh maps, and logic gates. Software like Circuit maker can be used to virtually design and test digital circuits. - Starting with basic binary arithmetic, explaining the importance of 0s and 1s in digital logic design. Moving to basic logic gates (AND, OR, NOT), and gradually introduce more complex ones (NAND, NOR, XOR, XNOR). - Utilizing Hands-On Learning: Incorporating practical exercises whenever possible. This could involve using breadboards and basic electronic components or using software to design and simulate circuits.
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Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	86	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	10 minutes / 2	10% (10)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Numbering systems (Decimal, Binary, Octal and Hexadecimal)
Week 2,3	Base conversion (Decimal, Binary, Octal and Hexadecimal, Gray, BCD, EX-3)
Week 4	Arithmetic Operation (Addition, Subtraction: Normal, 1's complement, 2's complement)
Week 5	Arithmetic Operation (Multiplication, Division), Quizzes.
Week 6	Basic logic gates (AND, OR, NOT, NAND, NOR, EXOR, XNOR), Assignments.
Week 7	Logic circuit simplification using Boolean algebra
Week 8	Mid-term Exam
Week 9	Logic circuit simplification using Karnaugh map
Week 10	Digital logic design circuits, Quizzes.
Week 11	Arithmetic circuits (Adders, Subtractors , Comparator)
Week 12	Decoders, Encoders, Multiplexers, De-Multiplexers
Week 13	Latches and Flip Flops, Assignments.
Week 14	Asynchronous counters, synchronous counters
Week 15	Shift registers (PIPO,SIPO,PISO and SISO)

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1,2	Application of Basic logic gates (AND, OR, NOT) and their Truth Table, Boolean Expression, Function
Week 3	Application of Basic logic gates (NAND,NOR,XOR,XNOR) and their Truth Table, Boolean Expression, Function
Week 4	Application of Boolean Algebra
Week 5	Standard form of Boolean expression (SOP,POS)
Week 6	Application of De-Morgan theorem
Week 7	Application of Combinational Circuits
Week 8	Application of Combinational Circuits simplification using Boolean Algebra
Week 9	Application of Combinational Circuits simplification using Karnaugh map
Week 10	Application of Digital logic design circuits
Week 11	Application of Binary adders (Half-Full adders, Half-Full Subtractor)
Week 12	Application of Decoder, Encoder, Multiplexer, De-Multiplexer
Week 13	Application of Sequential circuits (SR_latch and D_latch)
Week 14	Application of Master-slave flip-flop(SR , JK, D and T)

Week 15	Exam
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Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	M.Morris Mano and Michael D Ciletti" digital design with an introduction to the Verilog HDL",pearson education 6 th edition , 2018.	Yes
Recommended Texts	Thomas 1. Floyd, 2006, " digital fundamentals", prentice hall	No
Websites	https://studentebookhub.com/wp-content/uploads/2024/preview/9780134549897.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
	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	Numerical Analysis		Module Delivery
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	cs-123		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	
Administering Department	Computer science	College	CSIT
Module Leader	Esraa Hashem Yahya	e-mail	elamiri@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/2/2026	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.The student will become familiar with the subject's concepts and the main approaches to studying it. 2. Mathematical Logic: Propositions, logical statements, and truth tables. 3. Sets and Relations: Operations on sets, functions, and different types of relations. 4. Graph Theory: The study of graphs and them applications in networking and programming. 5. Number Theory: Dealing with integers and their properties. 6. Mathematical Induction: Various techniques of mathematical proof.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	To enable students to formulate and solve mathematical problems using numerical methods. To understand and analyze the efficiency and accuracy of algorithms (convergence rate). To apply numerical methods using programming languages (such as MATLAB and Python) or computer software. To interpret data and approximate solutions and relate them to practical applications. College of Engineering - University of Baghdad Common Key References: Numerical Methods for Engineers (Chapra & Canale) Numerical Analysis: Theory and Practice (N.S. Asaithambi)
Indicative Contents المحتويات الإرشادية	Error Analysis: Studying the types of errors (approximation, truncation, machine error) and their sources to ensure the accuracy of the solution. • Solving Nonlinear Equations: Methods for finding the roots of equations, such as bisection, Newton-Raphson, and fixed-point methods. • Linear Systems: Direct methods (such as Gaussian elimination) and iterative methods (Jacobi, Gauss-Seidel) for solving systems of linear equations. • Interpolation and Approximation: Approximating functions using polynomials (such as Lagrange and Newtonian polynomials) • Numerical Differentiation and Integration: Methods for calculating derivatives and areas (trapezoidal rules, Simpson rules). Solving Ordinary Differential Equations (ODEs): Methods such as Euler and Runge-Kutta.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Problem-solving. This is the key to learning software. Practical application: Active participation and practical exercises effectively use computers. Program concepts are explained through presentation and illustration: Teachers demonstrate using examples and images. Step-by-step tutorials: Providing clear instructions and images helps the learner follow and understand the software functions. Through group projects or individual learning: Encouraging collaboration fosters collaborative learning. Peer feedback enhances the supportive learning environment. Online resources: Supplementing learning with online resources, documentation, official documents, and forums promotes understanding, troubleshooting, and problem-solving. Linking software learning to real-world scenarios and applications increases student engagement and practical importance.

Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا			
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Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation					
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	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	The concept of logic and their properties
Week 2	The concept of sets
Week 3	Explain the concept of sets and their properties
Week 4	The concept of operation on sets (union, intersection
Week 5	The concept of principle, Quizzes.
Week 6	The concept of cartesian product, Assignments.
Week 7	Mid-term Exam
Week 8	The concept of partisan sets
Week 9	The concept of cardinality
Week 10	The concept of quantifier properties, Quizzes.

Week 11	The concept of domain and range
Week 12	Expression properties of binary relations
Week 13	Expression the composition of relations, Assignments.
Week 14	The concept of power set
Week 15	The concept of mathematical induction
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	MATLAB System, Installation, User Interface
Week 2	Desktop Tools and Development Environment, Math Function Library, Language, Graphics, Interfaces Expert
Week 3	External, Participation in Expressions, Commands, Formats, Symbol Calculation
Week 4	Operator Priority, MATLAB Basics
Week 5	Comments Week
Week 6	Program File Expert, Programming
Week 7	Participation in Help Menu, Creating Symbolic Objects
Week 8	Midterm Exam, Pretty Command
Week 9	Sin, Cos, Tan, Cot, Sec, and Csc Commands
Week 10	Function Files, Data Import and Export, 2_W.H, Programming
Week 11	Creating Vectors, Scaling and Drawing, Solving Equations
Week 12	Operator Command, Sort Command
Week 13	Matrices, Loops, MATLAB Graphs, Solving Equations
Week 14	Review and Assessment
Week 15	Preparation for the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Brian D. Hahn and Daniel T. Valentine, Essential MATLAB for Engineers and Scientists, 7th Edition, Elsevier, London 2019. Stormy Attaway, MATLAB, 2016, United States	yes
Recommended Texts	1- Rudra Pratap, Getting Started with MATLAB, 2010, United States Duane Hanselman and Bruce Littlefield, Mastering MATLAB, 2019, United States	yes

Websites	https://www.mathworks.com/help/ - https://www.mathworks.com/matlabcentral/answers/ - https://www.mathworks.com/products/matlab-online.html
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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	Mathematics 2		Module Delivery	
Module Type	basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	cs-124			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGI	Semester of Delivery		
Administering Department	Computer science	College	CSIT	
Module Leader	Ahmed Mohammed idkeel		e-mail	Ah.adkheel@uowasit.edu.iq
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	m.sc	
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/2/2026	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Math1 (cs-104)	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 examines the mathematical elements of computer science. Topics include proposed logic; predicative logic; mathematical logic; proof techniques; mathematical inference; set theory; number theory; matrices; sequences and combinations; functions, relations, and their properties; elementary graph theory; and trees.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Learning outcomes are a brief description of what students will learn, what they will learn, and how that learning will be assessed.
Indicative Contents المحتويات الإرشادية	In general, mathematics is the study of numbers, quantities, and shapes. It is a subject used in everyday life and is essential in many professions such as engineering, science, and finance.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy to be adopted in delivering this unit is to encourage student participation in exercises, while simultaneously refining and expanding their critical thinking skills. This will be achieved through interactive classroom and educational programs, and by considering simple experiments that include some interesting sampling activities for students
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	102	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	7
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	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.				
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All

Total assessment	100% (100 Marks)		
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Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Solution of non-linear equations, Newton Raphson method for approximating, Lagrange approximation.
Week 2	Numerical differentiation and numerical integration, The Solutions of Integral equations, Trapezoidal
Week 3	Simpsons method (3/8)
Week 4	Fourier series for odd and even functions, Half range Fourier sin and cosine series
Week 5	Change of interval, Quizzes.
Week 6	Formation of Partial differential equations
Week 7	Mid-term Exam
Week 8	Types of partial differential equations, wave
Week 9	Numerical differentiation, Euler method, modified Euler method
Week 10	Rung Kutta method, Rung Kutta- merson method, Quizzes.
Week 11	Numerical analysis, Elimination and iterative methods
Week 12	Cramer's rule, solve by inverse matrices
Week 13	Definite integral
Week 14	Indefinite integral
Week 15	Preparatory week before the final Exam
Week 16	Final Exam

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	Calculus (Haward Anton)	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	Arabic Language 1		Module Delivery	
Module Type	Suport		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	WUO1			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	UGI	Semester of Delivery		
Administering Department	Computer science	College	CSIT	
Module Leader	م.م. رسل داود سلمان		e-mail	
Module Leader's Acad. Title	م.م. رسل داود سلمان		Module Leader's Qualification	
Module Tutor	م.م. رسل داود سلمان		e-mail	
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	01/2/2026	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	no	Semester	
Co-requisites module	no	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	١- تعلم اللغة بطلاقة وفهم قواعدها النحوية والصرفية والإملائية ٢- تطوير مهارات القراءة والكتابة والاستماع والتحدث باللغة العربية ٣- فهم التراث اللغوي والثقافي العربي وتطبيقه في الحياة اليومية ٤- تحسين قدرة الطلاب على التواصل بشكل فعال مع الآخرين في المواقف الاجتماعية والأكاديمية

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	١- القدرة على فهم وتحليل النصوص الأدبية والعلمية باللغة العربية ٢- تحسين مهارات الكتابة والقراءة والاستماع والتحدث باللغة العربية ٣- تطوير القدرة على التواصل بشكل فعال مع الآخرين باللغة العربية ٤- فهم التراث اللغوي والثقافي العربي وتطبيقه في الحياة اليومية ٥- تنمية المهارات البحثية والنقدية والابتكارية
Indicative Contents المحتويات الإرشادية	١- الحروف والاصوات العربية والارقام ٢- النحو والصرف والاملاء ٣- الادب والثقافة العربية ٤- القراءة والكتابة والاستماع والتحدث باللغة العربية ٥- البلاغة والاعراب والتراكيب اللغوية

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	تتمثل الاستراتيجيه الرئيسيه التي 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

Student Workload (SWL) الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.				
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)	Total assessment	100% (100 Marks)

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	دراسة الحروف والاصوات العربية والارقام
Week 2	دراسة النحو والصرف وتعلم القواعد النحوية والصرفية الاساسية
Week 3	تعلم القواعد الاملائية والترقيم الصحيح وتدريب الطلاب على الاملاء الصحيح
Week 4	دراسة الادب والثقافة العربية الاساسية وتعريف الطلاب بالتراث اللغوي
Week 5	تطوير مهارات القراءة والكتابة وتدريب الطلاب على فهم النصوص الادبية والعلمية و اختبار اني
Week 6	البلاغة والاعراب والتراكيب اللغوية وتعليم الطلاب كيفية استخدام هذه الأدوات مع واجبات
Week 7	تطوير مهارات الاستماع والتحدث باللغة العربية وتحسين قدرة الطلاب على التواصل بشكل فعال مع الآخرين Mid-term Exam
Week 8	مراجعة عامة للمواد الدراسية وتدريب الطلاب على امتحانات النهاية واجراء تقييم شامل لاداء الطلاب
Week 9	تحسين قدرة الطلاب على التواصل بشكل فعال مع الآخرين في المواقف الاجتماعية
Week 10	فهم التراث اللغوي والثقافي العربي وتطبيقه في الحياة اليومية و اختبار اني
Week 11	تنمية المهارات البحثية والتحليلية والنقدية والابتكارية
Week 12	اللغة العربية لاغراض خاصة مثل اللغة العربية في المجالات العلمية
Week 13	البلاغة والاعراب والتراكيب اللغوية مع واجبات
Week 14	دراسة النحو والصرف تعليم القواعد النحوية والصرفية
Week 15	تعلم القواعد الاملائية والترقيم الصحيح وتدريب الطلاب على الاملاء الصحيح
Week 16	التحضير والمراجعة للا متحان النهائي Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	النحو – اقسام الكلام – الاسم – الفعل – الحرف - انواع المعارف – العلم – الضمائر – اسم الإشارة – الاسماء الموصولة – المعرفة بال- المعرفة بالاضافة – المثنى – جمع المذكر السالم – معلقة زهير مع الشرح – بواعث النهضة الادبية في العصر الحديث – بدر شاكر السياب – نازك الملائكة – التاء المربوطة والتاء المبسوطة	
Recommended Texts	النصوص الادبية القديمة والقصص القصيرة الحديثة والنصوص الصحفية والاعلامية والنصوص العلمية	
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	Work Ethics		Module Delivery	
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	uni-104			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	UGI	Semester of Delivery		two
Administering Department	Computer science	College	CSIT	
Module Leader	HAYDER ABDOUN MUTTAIR ALSARRAY		e-mail	haider.abduon@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.	
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/2/2026	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	١- جعل الطلبة قادرين على فهم مصطلح الاخلاق واخلاق المهنة ٢- تنمية مهارات الطلبة من خلال الاطلاع على اخلاقيات مهنة التدريس وكيفية التعامل مع الطلبة مستقبلا .

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	أ- الأهداف المعرفية 1. تنمية مهارات الطلبة في تعريف الطلبة بأخلاقيات المهنة . 2. تعريف الطلبة بالسلوك الاخلاقي الناجح . 3. اكتساب ثقافة الحوار الاخلاقي والقيم النبيلة الأخلاقية اثناء مزاولة المهنة 3. 4. تعريف الطلبة بأنواع أخلاقيات المهنة الأساسية . ب- الأهداف ف المهاراتية الخاصة بالمقرر 1. تنمية القدرة على توضيح الأخلاق والسلوك والقيم . 2. جعل العمل والتطبيق الفعلي لتلك الاخلاقيات مهمة أساسية . 3. العمل على احترام حقوق وحريات الآخرين من باقي الأديان . 4. تطوير السلوك من خلال نقد المظاهر السلبية في المجتمع وتشخيص العيوب . ج- مهارات التفكير غرس مفهوم الحوار والنقاش والنقد الموضوعي د- المهارات العامة والمنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الأخلاقي الشخصي 1. متابعة التطور العلمي في المنظومات الأخلاقية في بعض الجامعات والمعاهد العالمية . 2. المشاركة في المؤتمرات والورش والندوات العلمية والحوارات العلمية .
	Indicative Contents المحتويات الإرشادية

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12

	Projects / Lab.				
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	مدخل الى علم الاخلاق مفهوم الاخلاق مداخل الاخلاق
Week 2	تشكيل الاخلاق اشكال وعناصر الاخلاق علاقة الاخلاق بالعلوم الاخرى
Week 3	الاخلاق وارتباطها بالعقيدة الرؤية الاخلاقية في الاسلام اسس اخلاقيات المهنة في الاسلام
Week 4	الاخلاق والايمان وارتباطها بالعقيدة اخلاقيات المهنة في مؤسسات التربية والتعليم العالي وسائل ترسيخ اخلاقيات المهنة
Week 5	الاخلاق والادارة الاهتمام بأخلاقيات الادارة والعاملين ابعاد اخلاقيات الادارة والعاملين اختبار اني
Week 6	المنظومة القيمية والاخلاقية بعض انماط السلوك الاخلاقي واجبات
Week 7	Mid-term Exam
Week 8	مصادر السلوك الأخلاقي + ترسيخ المفاهيم الاخلاقية
Week 9	اثر الاخلاق في محاربة الفساد + اخلاقيات المهنة في التربية والتعليم
Week 10	دور التربية في ترسيخ النزاهة + النشأة التاريخية لمظاهر الفساد في المجتمعات + اختبار اني
Week 11	دور المؤسسات الدينية في محاربة الفساد + محددات مهنة التعليم
Week 12	مصادر اخلاقيات مهنة التدريس + التدريس واخلاقياته
Week 13	الايخطاء الشائعة بشأن اخلاقيات مهنة التعليم + الجامعة والكلية واخلاقيات المهنة + واجبات
Week 14	اخلاقيات بعض المهن + المنظور الخلقي + اداب واخلاقيات المهن الاخرى

Week 15	اخلاقيات البحث العلمي + اخلاقيات المهنة في مجال التربية البدنية وعلوم الرياضة
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	مقرر دراسي للجامعات الحكومية والاهلية صادر عن وزارة التعليم العالي والبحث العلمي	
Recommended Texts		
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	Algorithms Analysis and Design		Module Delivery	
Module Type	core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☒ Seminar	
Module Code	cs-221			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	UGII	Semester of Delivery		
Administering Department	Computer science	College	CSIT	
Module Leader	Huda lafta majeed		e-mail	hulafta@uowasit.edu.iq
Module Leader's Acad. Title	Ass. Professor		Module Leader's Qualification	Ph.D.
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	1/2/2026	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 module aims to equip students with a comprehensive understanding of the concepts and methodologies in system analysis and design. It focuses on building analytical skills for identifying system requirements, developing design specifications

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students will be able to analyze system requirements, design effective system models, and develop structured system specifications. They will also demonstrate skills in evaluating system feasibility, creating data flow diagrams, and applying implementation and maintenance strategies for system development
Indicative Contents المحتويات الإرشادية	The module covers key topics in system analysis and design, including system concepts, types of systems, and principles of system analysis. Topics include requirements gathering, feasibility studies, data flow diagrams, system modeling, database design, and user interface design. Advanced topics include implementation strategies, system evaluation, testing, and maintenance procedures.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy for delivering this module is through structured lectures to introduce key concepts and methodologies, supported by interactive class discussions to deepen understanding. Emphasis will be placed on case studies and real-world scenarios to illustrate practical applications, enhancing students' analytical and critical thinking skills in system analysis and design.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	10 minutes / 2	10% (10)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12

	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Systems and System Analysis: Definitions of a system and common types of systems. General system principles and characteristics.
Week 2	Stages of System Analysis and Design: Overview of the system development life cycle (SDLC). Different stages: System analysis, design, and implementation.
Week 3	System Approach and Requirements Analysis: System approach and understanding system requirements. User, technical, and system requirements analysis.
Week 4	Feasibility Studies: Types of feasibility: Technical, economic, and operational. Assessing costs and benefits of proposed systems.
Week 5	Presenting the Feasibility Study Report: Structure and components of a feasibility study report. Methods for presenting assessment results.
Week 6	Data Flow Diagrams (DFD): Concept of data flow diagrams. Components of a DFD: Processes, data stores, data flows, and external entities.
Week 7	Mid-term Exam
Week 8	Friends functions concept
Week 9	System Design and Specifications: Overview of system design and its stages. Creating system and program specifications.
Week 10	System Design and Specifications: Overview of system design and its stages. Creating system and program specifications.
Week 11	Input Design and Error Handling: Stages of input capture and error prevention techniques. Principles of input specification and design.
Week 12	Implementation Planning and System Testing: Tasks of implementation: Planning and control. System testing strategies and test data preparation
Week 13	Implementation Planning and System Testing: Tasks of implementation: Planning and control. System testing strategies and test data preparation.

Week 14	System Evaluation and Maintenance: System evaluation procedures: Cost-benefit analysis, quality
Week 15	Project Presentation: Student presentations on system analysis and design projects.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to System Development Tools: Overview of system development tools (e.g., Microsoft Visio, Lucidchart). Setting up and understanding basic functions.
Week 2	Developing Data Flow Diagrams (DFD): Creating context-level and level-1 DFDs. Using symbols and notations for DFD components
Week 3	Requirement Gathering and Analysis Techniques: Practicing interviews and questionnaires to gather system requirements. Simulating a system survey to identify user needs
Week 4	Conducting a Feasibility Study: Performing a feasibility study for a sample system. Presenting feasibility reports with cost-benefit analysis.
Week 5	Designing a Logical Database Schema: Creating logical schema diagrams for a system. Understanding entity-relationship diagrams (ERD). Week 6 Physical Database Design and Normalization: Imp
Week 6	Physical Database Design and Normalization: Implementing physical database schema using normalization techniques. Practicing up to the third normal form (3NF).
Week 7	Physical Database Design and Normalization: Implementing physical database schema using normalization techniques. Practicing up to the third normal form (3NF).
Week 8	mid
Week 9	Physical Database Design and Normalization: Implementing physical database schema using normalization techniques. Practicing up to the third normal form (3NF).
Week 10	Creating Flowcharts for System Processes: Designing flowcharts for system processes and sub processes. Understanding flowchart symbols and best practices.
Week 11	System Implementation and Handover: Preparing handover documentation and system manuals. Planning user training and handover strategies
Week 12	WProject Demonstration: Final project demonstration and evaluation.

Week 13	Physical Database Design and Normalization: Implementing physical database schema using normalization techniques. Practicing up to the third normal form (3NF).
Week 14	Physical Database Design and Normalization: Implementing physical database schema using normalization techniques. Practicing up to the third normal form (3NF).
Week 15	Requirement Gathering and Analysis Techniques: Practicing interviews and questionnaires to gather system requirements. Simulating a system survey to identify user needs

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts		
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	Modern programming languages ¹		Module Delivery	
Module Type	Elective learning activity		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☒ Seminar	
Module Code	cs-222			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGII	Semester of Delivery		four
Administering Department	Computer Science	College	CSIT	
Module Leader	Mais Mudhafer Taher		e-mail	mtaher1@uowasit.edu.iq E-
Module Leader's Acad. Title	Assistant teacher	Module Leader's Qualification	MS.C.	
Module Tutor			e-mail	
Peer Reviewer Name	Mais Mudhafer Taher	e-mail	Lamita2269@gmail.com	
Scientific Committee Approval Date	01/2/2026	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	aims to enable students to understand and apply fundamental programming concepts using Python, by developing problem-solving and algorithm design skills, understanding basic data structures, controlling program flow, and transitioning from procedural to object-oriented programming. This will equip them to build simple applications and analyze data in both academic and practical contexts. • Introduction to programming concepts and Python. • Development of problem-solving skills using programming.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• learn the fundamentals of the Python programming language and its general structure. • understand basic programming concepts such as variables, data types, and operands. • grasp program flow control concepts such as conditional statements and loops. • understand the concept of functions and libraries in Python and how to use them and use some basic Python libraries.
Indicative Contents المحتويات الإرشادية	• Introduction to Python Programming • Writing First Simple Python Programs • Variables and Arithmetic Operations • Working with Strings • Lists and Tuples • Dictionaries and Sets • Command Structure and Its Applications in Programming • Working with Files

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Theoretical lectures supported by practical examples. • Laboratory applications • Exercises and class discussions. • Practical assignments and reports.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem)	64	Structured SWL (h/w)	4

الحمل الدراسي المنتظم للطلاب خلال الفصل		الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	86	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	10 minutes / 2	10% (10)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Python Programming - Definition of Programming - The Importance of Python in the Economy - Getting to Know IDEs such as VS Code and Jupyter Notebook - Installing Python and Running the Editor
Week 2	Writing Python program - Syntax basics - Running the program and debugging simple errors.
Week 3	Variables and Data Types - Data types (int, float, str, bool) - Defining variables and naming conventions - Writing simple programs that use variables and data types
Week 4	Arithmetic Operations and Mathematical Functions

	- Arithmetic Operations (+, -, *, /, %) - Math Library and Mathematical Functions - Applications for Solving Simple Problems
Week 5	Controlling program flow: Conditional statements - if, else, elif - Logical operators (and, or, not) - Practical exercises on conditions
Week 6	Loops - for and while loops - Loop control (break, continue) - Practical applications such as calculating averages
Week 7	Functions - Definition and Use of Functions - Passing Operators and Return Values - Building Functions to Solve Frequent Problems
Week 8	Strings - Defining and Manipulating Strings - Basic String Functions (slice, upper, lower) - Exercises in Analyzing String Data
Week 9	Lists and Tuples - Definition of lists and tuples - Operations on lists and loops
Week 10	Dictionaries - The Concept of Dictionaries - Adding, Deleting, and Searching in Dictionaries - Using Dictionaries to Represent Related Data
Week 11	Sets -The Concept of Sets
Week 12	Mid-term exam
Week 13	Classes and Objects
Week 14	Class Properties and Methods
Week 15	File system
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction to Python Programming
Week 2	Syntax basics and debugging errors.
Week 3	Variables and Data Types

Week 4	Arithmetic Operations and Mathematical Functions
Week 5	Controlling program flow
Week 6	Loops
Week 7	Functions
Week 8	Strings
Week 9	Lists and Tuples
Week 10	Dictionaries
Week 11	Sets
Week 12	Mid-term exam
Week 13	Classes and Objects
Week 14	Class Properties and Methods
Week 15	File system

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1. McKinney, W. (2017). Python for data analysis: Data wrangling with pandas, NumPy, and Jupyter (2nd ed.). O'Reilly Media. 2. Downey, A. B. (2014). Think stats: Exploratory data analysis in Python (2nd ed.). O'Reilly Media. 3. VanderPlas, J. (2016). Python data science handbook: Essential tools for working with data. O'Reilly Media. - Hilpisch, Y. (2018). Python for finance: Mastering data-driven finance (2nd ed.). O'Reilly Media.	
Recommended Texts		
Websites	Reputable scientific websites	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Visual Programming		Module Delivery
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☒ Seminar
Module Code	cs-223		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGII	Semester of Delivery	
Administering Department	Computer sciences	College	CSIT
Module Leader	Ahmed alaa	e-mail	Ahmed.alaa@uowasit.edu.iq
Module Leader's Acad. Title	Ass. Lecturer	Module Leader's Qualification	Master
Module Tutor	Name (if available)	e-mail	Ahmed.alaa@uowasit.edu.iq
Peer Reviewer Name	Ahmed alaa	e-mail	Ahmed.alaa@uowasit.edu.iq
Scientific Committee Approval Date	01/2/2026	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 module aims to provide students with a comprehensive understanding of Visual Basic programming, focusing on both fundamental and advanced concepts of visual programming. Students will develop skills to create user interfaces, implement event-driven programming, and build database-connected applications using Visual Basic.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students will be able to design and develop user interfaces using Visual Basic, implement event-driven programming, and apply object-oriented principles. They will also be able to connect Visual Basic applications to databases, perform error handling, and deploy fully functional software applications.
Indicative Contents المحتويات الإرشادية	The module covers fundamental concepts of Visual Basic, including programming basics, control structures, and user interface design. It also addresses advanced topics like event-driven programming, object-oriented programming, database connectivity, error handling, and application deployment. Additionally, topics like file handling, creating graphical user interfaces (GUIs), and connecting Visual Basic applications to databases using ADO.NET are explored.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy for delivering this module is through structured lectures to explain key programming concepts, supported by coding demonstrations to reinforce theoretical knowledge. Interactive discussions, case studies, and real-world scenarios will be used to illustrate practical applications. Students will be encouraged to engage in active problem-solving and participate in group activities to enhance their learning experience.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem)	150		

الحمل الدراسي الكلي للطلاب خلال الفصل	
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Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10 minutes / 2	10% (10)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Visual Programming and Visual Basic: Overview of Visual Programming concepts. Introduction to Visual Basic environment (IDE). Understanding projects, solutions, and forms.
Week 2	Programming Basics and Visual Elements: Data types, variables, and constants. Using controls: TextBox, Label, Button, ComboBox, and ListBox. Creating and managing forms.
Week 3	Control Structures and Loops: Implementing decision-making (If...Else, Select Case). Looping structures (For, While, Do...Loop). Building programs using control flow and loops.
Week 4	Procedures and Functions in Visual Basic: Creating and using subroutines and functions. Parameter passing and return values. Understanding scope and lifetime of variables.
Week 5	Event-Driven Programming Concepts: Handling form and control events (Click, Load, TextChanged). Understanding event procedures. Building interactive programs using event-driven techniques.
Week 6	Working with Arrays and Collections: Single and multi-dimensional arrays. Using ArrayList and Collection classes. Array manipulation: Sorting and searching.

Week 7	Mid-term Exam
Week 8	File Handling and Data Persistence: Reading from and writing to text files. Managing file operations using StreamReader and StreamWriter. Using file dialogs and exceptions for file management.
Week 9	Database Connectivity Using ADO.NET: Introduction to database concepts and ADO.NET architecture. Connecting to databases (SQL Server, Access). Executing queries and displaying data using DataGridView.
Week 10	Designing User Interfaces: Principles of good interface design. Implementing menus, toolbars, and status bars. Using graphical controls: PictureBox and Timer.
Week 11	Object-Oriented Programming in Visual Basic: Understanding classes and objects. Implementing properties, methods, and constructors. Inheritance, encapsulation, and polymorphism in Visual Basic.
Week 12	Error Handling and Debugging: Using Try...Catch...Finally for error handling. Understanding debugging techniques in Visual Basic. Using breakpoints, step-through, and watch windows.
Week 13	Building and Deploying Visual Basic Applications: Creating standalone applications. Packaging and deploying Visual Basic projects. Using ClickOnce deployment and setup wizards.
Week 14	Advanced Visual Basic Concepts: Using LINQ for data manipulation. Implementing multithreading and asynchronous operations. Building custom controls.
Week 15	Project Presentations: Student presentations on final projects.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to Visual Basic IDE: Setting up the Visual Studio environment. Creating a simple Visual Basic project. Familiarization with basic controls and properties.
Week 2	Building Basic Visual Applications Using common controls (TextBox, Button, Label). Implementing simple arithmetic operations. Building a basic calculator.
Week 3	Control Structures and Event Handling: Implementing decision-making programs. Using If...Else and Select Case structures. Lab exercises on building interactive applications.

Week 4	Creating and Using Procedures: Defining and calling subroutines and functions. Building programs using modular design. Lab: Creating reusable functions for calculations.
Week 5	Event-Driven Programming in Practice: Handling form events (Load, Resize) and control events. Implementing event-driven programs using Buttons and TextBoxes. Building a temperature converter using event handling.
Week 6	Working with Arrays and Data Structures: Implementing programs using arrays. Sorting and searching arrays using Visual Basic. Lab project: Managing a student score list using arrays.
Week 7	Mid-term Exam
Week 8	File Handling Operations: Writing programs to read from and write to text files. Implementing a simple text editor using StreamReader and StreamWriter. Lab exercises on managing file operations and data storage.
Week 9	Connecting to a Database: Establishing a database connection using ADO.NET. Performing CRUD operations on a sample database. Displaying data using DataGridView.
Week 10	Designing User Interfaces: Implementing menu systems, toolbars, and status bars. Building a user-friendly interface with icons and images. Lab project: Creating a simple media player interface.
Week 11	Object-Oriented Programming in Visual Basic: Defining classes and creating objects. Implementing a simple inventory management system. Lab exercises on using OOP concepts in Visual Basic.
Week 12	Error Handling and Debugging: Implementing error handling using Try...Catch. Debugging programs using breakpoints and step-through. Lab project: Creating a file manager with error handling.
Week 13	Building Visual Basic Applications: Building and packaging standalone applications. Creating an installer for a Visual Basic project. Lab project: Packaging and deploying a small application.
Week 14	Advanced Visual Basic Programming: Implementing LINQ queries in Visual Basic. Using threads for parallel processing. Lab exercises on multithreading and custom controls.
Week 15	Project Demonstration: Final project presentations and evaluation.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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Required Texts	Deitel, P., & Deitel, H. (2016). <i>Visual Basic: How to Program</i> (6th Edition). Pearson.	Yes
Recommended Texts	Gaddis, T. (2016). <i>Starting Out With Visual Basic</i> (7th Edition). Pearson. Bradley, J., & Millspaugh, A. (2016). <i>Programming in Visual Basic 2015</i> (6th Edition). McGraw-Hill.	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	Multimedia		Module Delivery
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☒ Seminar
Module Code	cs-224		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII	Semester of Delivery	
Administering Department	Computer sciences	College	CSIT
Module Leader	Mohamed H Ghaleb	e-mail	mghaleb@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Mohamed H Ghaleb	e-mail	mghaleb@uowasit.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1/2/2026	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 module aims to provide students with a comprehensive understanding of multimedia systems, focusing on integrating text, graphics, audio, video, and animation. Students will develop skills in multimedia content creation, editing, and system design, applying tools and techniques to build interactive multimedia applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students will be able to understand the core components and principles of multimedia systems, including text, graphics, audio, video, and animation. They will be able to design and develop multimedia projects, integrate various media elements, and apply multimedia tools to create interactive applications.
Indicative Contents المحتويات الإرشادية	The module covers core topics in multimedia systems, including an introduction to multimedia components (text, graphics, audio, video, and animation) and their formats. Topics include multimedia hardware and software, data compression techniques, and multimedia authoring tools. Advanced content includes designing interactive multimedia systems, multimedia communication, and exploring emerging trends like virtual and augmented reality.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The primary strategy for delivering this module is through structured lectures to explain multimedia concepts, supported by visual aids and interactive discussions to clarify complex topics. Real-world case studies, demonstrations of multimedia tools, and the use of multimedia authoring software will be incorporated to enhance practical understanding and engage students in critical thinking and creative content development.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem)	61	Unstructured SWL (h/w)	4

الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem)	125		
الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10 minutes / 2	10% (10)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المناهج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Multimedia: • Elements of Multimedia System. • Categories of Multimedia. • HyperText and HyperMedia. • Components of Multimedia. • Multimedia Research Topics and Projects. • Multimedia Projects.
Week 2	• Applications of Multimedia. • Multimedia on the Web. • HyperText Transfer Protocol (HTTP). • HyperText Markup Language (HTML). • Extensible Markup Language (XML). • Multimedia Data Basics.
Week 3	Graphics and Image Data Representation: • Digital Images. • Image Representation (Data Structures bitmap representation).

	• Image Digitalization. • Sampling. • Quantization. • Spatial resolution and quantization.
Week 4	Type of image: • Binary Images. • Gray-Scale Images. • Color Images. • Multispectral Images. • Image file formats.
Week 5	Arithmetic and Logical Operations on Images (Image Algebra), Quizzes.
Week 6	Image Histogram Assignments
Week 7	Mid-term Exam
Week 8	Histogram modification: - a- Histogram stretch. - b- Histogram shrink. - c- Histogram slide.
Week 9	Histogram equalization
Week 10	Image compression techniques: 1- Lossless Compression. 2- Lossy Compression. Quizzes.
Week 11	Compression System Model:
Week 12	Huffman Code.
Week 13	Basics of Digital Audio (20th 21st) Assignments
Week 14	Compression of Audio (25th)
Week 15	Video Basics (26th) Video Compression.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Setting up MATLAB programming language.

	Introduction to MATLAB.
Week 2	Entering Matrix. Colon Operator. Basic Matrix Functions.
Week 3	Variables. Arithmetic Operators. Function. Relational and Logical Operations.
Week 4	Read Image. Print image. Adding Title.
Week 5	Convert color image to binary image. Calculate the Histogram.
Week 6	Implementation the Hypermedia and Hypertext.
Week 7	Mid-term Exam
Week 8	Implementation of Digital Audio
Week 9	MIDI Audio MIDI vs. Digital Audio Multimedia System Sounds Audio File Formats
Week 10	implementation Animation
Week 11	Using Video
Week 12	Using Video
Week 13	Case study :Making Multimedia
Week 14	The Stages of a Multimedia Project
Week 15	Case study: Multimedia on the Web

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Ze-Nian Li & Mark S. Drew. (2016). <i>Multimedia Systems</i> . Springer.	Yes
Recommended Texts	Li, Z., Drew, M., & Liu, J. (2014). <i>Fundamentals of Multimedia</i> (2nd Edition). Springer Parekh, R. (2006). <i>Principles of Multimedia</i> . Tata McGraw-Hill Education.	yes
Websites	https://en.wikipedia.org/wiki/Multimedia	

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	Databases Fundamentals		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☒ Practical ☒ Seminar
Module Code	cs-225		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGII	Semester of Delivery	
Administering Department	Computer Science	College	CSIT
Module Leader	Osamah Adil Raheem	e-mail	oalmusawi@uowasit.edu.iq
Module Leader's Acad. Title	Ass. Professor	Module Leader's Qualification	PHD.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	1/2/2025	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- The module aims to introduce the fundamental concepts of database systems, focusing on data organization, database models, and the role of Database Management Systems (DBMS) in modern information systems. 2- Students will learn how to design, create, and manage simple databases, understand data relationships, and apply basic SQL queries to retrieve and manipulate data effectively.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students will be able to understand the core concepts of database systems and apply relational database principles to design basic database structures. They will be able to create tables, define relationships, perform SQL queries for data retrieval and manipulation, and understand the importance of data integrity and database security in real-world applications.
Indicative Contents المحتويات الإرشادية	The "Fundamentals of Databases" module covers the basic concepts of database systems, including data, information, and database management systems (DBMS). It introduces database architecture, data models, and the relational model. The module also includes Entity-Relationship (ER) modeling, relational schema design, normalization concepts, and basic SQL operations such as data definition, data manipulation, and simple queries. Practical exercises are included to help students understand database design and data management in real-world applications.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy for delivering the "Fundamentals of Databases" module is to encourage active student participation through practical database design and query exercises. This will be achieved through a combination of theoretical lectures, interactive demonstrations, and hands-on practice using SQL and database management tools. Students will apply concepts such as database design, table creation, and data retrieval through practical tasks and real-world examples. Continuous feedback and guided practice will help students strengthen their understanding of database concepts and develop problem-solving skills in managing and organizing data.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا
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Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	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	10 minutes / 2	10% (10)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Database Systems and DBMS Concepts
Week 2	Database Architectures and Data Independence
Week 3	Client-Server Architecture and Data Models
Week 4	Entity Relationship (ER) Data Model
Week 5	Advanced ER Modeling and Conceptual Design
Week 6	Relational Model Concepts and Constraints

Week 7	Mid-term Exam
Week 8	Mapping ER Diagrams to Relational Models
Week 9	Relational Algebra – Syntax and Operations
Week 10	Structured Query Language (SQL) – Data Definition Language (DDL)
Week 11	SQL for Data Manipulation (DML)
Week 12	Advanced SQL Queries
Week 13	Database Integrity and Security
Week 14	Database Normalization and Design Refinement
Week 15	Database Design and Implementation Project
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to Database Environment and SQL Basics
Week 2	Creating Tables and Schema Design
Week 3	Implementing ER Diagrams into SQL Tables
Week 4	Basic Data Manipulation – Inserting and Retrieving Data
Week 5	Advanced Data Retrieval Techniques
Week 6	Implementing Joins in SQL
Week 7	Mid-term Exam
Week 8	Working with Subqueries and Nested Queries
Week 9	Using Aggregation Functions in SQL
Week 10	Implementing Integrity Constraints in SQL
Week 11	Creating Views in SQL
Week 12	Implementing Triggers and Stored Procedures
Week 13	Database Security – User Management and Permissions
Week 14	Database Backup and Recovery
Week 15	Final Project Development, Implementation, Presentations and Evaluation

Learning and Teaching Resources
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مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Silberschatz, A., Korth, H. F., & Sudarshan, S. (2020). <i>Database system concepts</i> (6th ed.). McGraw-Hill	Yes
Recommended Texts	Sciore, E. (2020). <i>Database Design and Implementation</i> (2nd ed.). Springer.	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	English Language 2		Module Delivery	
Module Type	support		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	WUO3			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	UGII	Semester of Delivery		three
Administering Department	Computer Science	College	CSIT	
Module Leader	HAYDER ZAIBIL MAREEDH AL_SHIHMANI		e-mail	drtghy73@gmail.com
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	M.A	
Module Tutor	HAYDER ZAIBIL MAREEDH AL_SHIHMANI		e-mail	drtghy73@gmail.com
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	01/2/2026	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 module aims to enhance students' English language proficiency through the Headway Plus course book, with particular emphasis on communicative competence, grammar reinforcement, and extended practice. The course develops the four core language skills—listening, speaking, reading, and writing—while strengthening students' confidence in using English for academic and everyday communication.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon successful completion of this module, students will be able to: 1. Comprehend spoken and written texts aligned with the Headway Plus level. 2. Use core grammatical structures accurately through extended and supported practice. 3. Apply a broad range of functional and academic vocabulary in context. 4. Communicate orally with improved fluency and accuracy in guided and semi-guided tasks. 5. Produce well-structured written paragraphs and short texts using appropriate language forms. 6. Interpret and respond to reading passages using effective comprehension strategies. 7. Participate actively in pair and group communicative activities. 8. Demonstrate increased learner autonomy through self-study and revision tasks.
Indicative Contents المحتويات الإرشادية	• Diagnostic review of basic English skills • Grammar consolidation and expansion (Headway Plus focus) • Vocabulary enrichment and functional language • Reading comprehension (extended texts from Headway Plus) • Listening practice using Headway Plus audio materials • Speaking activities: role-plays, discussions, and presentations • Writing skills: guided and semi-free compositions • Integrated skills practice and cumulative revision units

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Interactive and student-centered lectures • Communicative Language Teaching (CLT) approach • Task-based learning and extended practice activities

	• Pair and group work • Audio-visual learning using Headway Plus digital resources • Continuous formative assessment and feedback
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Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.				
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Fundamentals of English for Non-Specialist Students

	Week Material Covered
Week 2	Course orientation; diagnostic assessment; introduction to Headway Plus; review of basic sentence structure
Week 3	Principles of General English for Non-English Majors Present Simple & Present Continuous; daily routines; vocabulary for everyday activities
Week 4	Past Simple; regular and irregular verbs; reading: short narratives
Week 5	General English: An Introduction for Non-Specialist Students Past Continuous; describing past events; listening and speaking practice
Week 6	Present Perfect; life experiences; vocabulary expansion
Week 7	Comparison of tenses (Past Simple vs. Present Perfect); integrated skills practice
Week 8	Basic English Language Skills for Non-Specialist College Students
Week 9	Future forms (will, going to, present continuous); planning and predictions
Week 10	Modal verbs (can, could, must, should); advice and obligation Countable & uncountable nouns; articles; functional language
Week 11	Introduction to English for Non-Specialist Students
Week 12	Reading skills: skimming and scanning; extended Headway Plus texts
Week 13	Writing skills: paragraph structure; guided and semi-guided writing
Week 14	Speaking skills: role-plays, discussions, and presentations
Week 15	Integrated skills revision; grammar and vocabulary consolidation
Week 16	Preparatory week before the final Exam Practice tests; exam-oriented activities; feedback and clarification

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
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	Web programming 1		Module Delivery
Module Type	core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	cs-321		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	
Administering Department	Computer Science	College	CSIT
Module Leader	Dr. Mohammed Ibrahim Mahdi	e-mail	mmahdi@uowasit.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name	Dr. Mohammed Ibrahim Mahdi	e-mail	mmahdi@uowasit.edu.iq
Scientific Committee Approval Date	01/2/2026	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	1. To provide students with fundamental and advanced knowledge of concepts and technologies used in modern front-end web development.

أهداف المادة الدراسية	- To enable students to design and develop interactive and responsive web pages using front-end languages and technologies in accordance with international web development standards. - To equip students with practical skills in utilizing user interface design and development tools, while adhering to usability and user experience (UI/UX) principles
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Explain the fundamental concepts of front-end web development and web page structure. - Use front-end languages and technologies to create structured and responsive web pages. - Design user interfaces that adhere to usability and user experience (UI/UX) principles. - Apply modern styling and layout techniques using advanced CSS. - Implement interactive elements in web pages using JavaScript. - Test and optimize web pages for performance, cross-browser compatibility, and responsiveness across different devices. - Follow international standards and best practices in front-end web development
Indicative Contents المحتويات الإرشادية	- Introduction to Front-End Web Development. - HTML for structuring web pages. - CSS for styling, layout, and responsive design. - UI/UX design principles. - JavaScript for interactivity and dynamic content. - Integration of HTML, CSS, and JavaScript. - Best practices and international web standards. - Practical project: complete front-end website development

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	- Interactive lectures to present fundamental front-end web development concepts. - Hands-on laboratory learning using HTML, CSS, and JavaScript. - Project-based learning to enhance design and development skills. - Problem-solving and applied exercises to develop programming thinking. - Self-directed learning supported by continuous feedback
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6

Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150
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Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	HTML Fundamentals Introduction to HTML5, Editing HTML Files, HTML Document Structure, HTML Head Element, HTML, Comments, HTML Headings, HTML Paragraphs
Week 2	HTML Content and Forms HTML Attributes, HTML Text Formatting, HTML Links (Anchor Tag), HTML Images, HTML Lists, HTML Tables, HTML Tags (div, span, br), HTML5 Semantic Elements, HTML5 Forms, Form Labels, Input Elements
Week 3	CSS Fundamentals CSS Introduction, Getting Started with CSS, CSS Syntax, CSS Comments, Case Sensitivity, CSS Selectors
Week 4	CSS Styling CSS Background, CSS Text, CSS Fonts, CSS Links, CSS Tables
Week 5	CSS Box Model and Layout CSS Box Model (Padding, Margin, Border), CSS Display, CSS Overflow, CSS Visibility
Week 6	CSS Advanced Layout CSS Border Radius, CSS Flexible Box (Flexbox), Responsive Layout Concepts
Week 7	Mid-term Exam Revision of HTML and CSS Topics, Mid-Term Theoretical Examination
Week 8	JavaScript Fundamentals JavaScript Introduction, Getting Started with JavaScript, JavaScript Comments, JavaScript Variables, Generating Output, Data Types

Week 9	JavaScript Operators and Strings JavaScript Operators, JavaScript Strings, String Methods
Week 10	JavaScript Numbers and Control Statements JavaScript Numbers, Number Methods, Math Object, Conditional Statements, Switch Statements
Week 11	JavaScript Arrays JavaScript Arrays, Array Methods, Sorting Arrays
Week 12	JavaScript Loops JavaScript Loops, Loop Control, Final Theoretical Examination
Week 13	JavaScript Functions and Scope JavaScript Functions, Parameters, Return Values, JavaScript Scope
Week 14	Advanced JavaScript and User Interaction Higher-Order Functions, JavaScript Objects, Alert, Confirm, Prompt, Basic Validation
Week 15	Course Project Front-End Project using HTML, CSS, JavaScript
Week 16	final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	HTML Basics Lab Creating basic HTML files, HTML document structure, Head element, Comments, Headings, Paragraphs
Week 2	HTML Content Lab Text formatting, Links, Images, Lists, Tables, div, span, br, Semantic elements, Basic forms
Week 3	CSS Fundamentals Lab Linking CSS to HTML, CSS syntax, Selectors, Comments, Basic styling
Week 4	CSS Styling Lab Backgrounds, Text styling, Fonts, Links styling, Tables styling
Week 5	CSS Box Model Lab Padding, Margin, Border, Display, Overflow, Visibility
Week 6	CSS Layout Lab Border radius, Flexbox, Responsive layout basics
Week 7	Practical Exam HTML and CSS practical assessment
Week 8	JavaScript Basics Lab Variables, Data types, Output methods, Comments
Week 9	JavaScript Operators and Strings Lab Operators, String handling, String methods
Week 10	JavaScript Numbers and Control Lab Numbers, Math object, Conditions, Switch statements
Week 11	JavaScript Arrays Lab Arrays, Array methods, Sorting arrays
Week 12	JavaScript Loops Lab Loops, Loop control
Week 13	JavaScript Functions Lab

	Functions, Parameters, Return values, Scope
Week 14	JavaScript Interaction Lab Objects, Alert, Confirm, Prompt, Basic validation
Week 15	Complete front-end project using HTML, CSS, JavaScript

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	- Duckett, J. <i>HTML and CSS: Design and Build Websites</i>. Wiley. - Duckett, J. <i>JavaScript and JQuery: Interactive Front-End Web Development</i>. Wiley	yes
Recommended Texts	- McFarland, D. <i>CSS: The Missing Manual</i>. O'Reilly Media. - Flanagan, D. <i>JavaScript: The Definitive Guide</i>. O'Reilly Media. - Robbins, J. <i>Learning Web Design</i>. O'Reilly Media	yes
Websites	- W3Schools: https://www.w3schools.com - CSS Specifications (W3C): https://www.w3.org/Style/CSS - JavaScript Documentation: https://developer.mozilla.org/en-US/docs/Web/JavaScript	

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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	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	Machine Learning		Module Delivery	
Module Type	core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar	
Module Code	cs-322			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGIII	Semester of Delivery		six
Administering Department	Computer science	College	CSIT	
Module Leader	Yousif Raad		e-mail	yousif@uowasit.edu.iq
Module Leader's Acad. Title	Associate Professor	Module Leader's Qualification	Ph.D.	
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	1/2/2026	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	cs-301	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 primary objective of the Machine Learning module is to provide students with a comprehensive understanding of the foundational concepts, techniques, and algorithms that underpin machine learning. Students will explore various machine learning paradigms, including supervised, unsupervised, and reinforcement learning, and gain

	insight into the practical applications of these methods in real-world scenarios. Through hands-on experience and theoretical study, students will develop the skills necessary to preprocess data, implement machine learning algorithms, and evaluate model performance effectively.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students will be able to apply various machine learning techniques to solve real-world problems, demonstrating proficiency in data preprocessing, model training, and evaluation. They will have a solid understanding of core concepts, including linear regression, classification algorithms, neural networks, and ensemble methods. Additionally, students will be equipped to critically assess the ethical implications of machine learning applications, ensuring that their practices promote fairness and transparency. Through collaborative projects, students will also enhance their teamwork and communication skills, preparing them for future challenges in the field of data science and artificial intelligence.
Indicative Contents المحتويات الإرشادية	The course will cover a range of topics essential to mastering machine learning, beginning with an introduction to the fundamental principles and types of machine learning. Students will learn about data preprocessing techniques, such as normalization and splitting datasets, and delve into supervised learning algorithms, including linear regression and decision trees. Unsupervised learning methods, such as clustering and dimensionality reduction, will also be explored. Furthermore, the course will introduce deep learning concepts, focusing on neural networks and their applications in fields like natural language processing and image recognition. Throughout the course, students will engage in practical exercises and projects to apply their learning and develop a robust understanding of machine learning methodologies.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The delivery of the Machine Learning module will employ a blended learning approach that combines theoretical instruction with hands-on practical experience. Lectures will introduce key concepts and frameworks, supplemented by multimedia resources such as videos and interactive presentations to cater to diverse learning styles. Practical sessions will utilize programming environments and tools like Python, TensorFlow, and Scikit-learn to enable students to implement algorithms and analyze real datasets. Collaborative projects and group discussions will encourage peer learning and knowledge sharing, fostering a supportive learning environment. Additionally, regular assessments, including quizzes, assignments, and a mid-term exam, will provide students with feedback on their progress and understanding, ensuring they are well-prepared for the final project and overall course objectives. By integrating various teaching methods and fostering an interactive classroom atmosphere, the course aims to engage students actively and deepen their understanding of machine learning principles and practices.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا
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Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	86	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	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Machine Learning concepts, types (supervised, unsupervised, reinforcement learning), and applications
Week 2	Data preprocessing techniques: cleaning, normalization, transformation, and splitting datasets
Week 3	Linear Regression: loss functions, gradient descent, and model evaluation metrics
Week 4	Classification Algorithms: logistic regression, k-nearest neighbors (KNN), and support vector machines (SVM)
Week 5	Decision Trees and Ensemble Methods: understanding decision trees, random forests, and boosting methods
Week 6	Neural Networks: basics, activation functions, feedforward networks, and backpropagation
Week 7	Mid-term Exam
Week 8	Unsupervised Learning: clustering algorithms (k-means, hierarchical clustering) and dimensionality reduction techniques (PCA, t-SNE)
Week 9	Natural Language Processing (NLP): text preprocessing, bag-of-words, and TF-IDF

Week 10	Model Evaluation and Hyperparameter Tuning: cross-validation, confusion matrix, and tuning methods
Week 11	Deep Learning: introduction to convolutional neural networks (CNNs) and recurrent neural networks (RNNs)
Week 12	Time Series Analysis: forecasting techniques, ARIMA models, and applications
Week 13	Ethical Considerations in Machine Learning: bias, fairness, transparency, and ethical implications
Week 14	Deployment of Machine Learning Models: techniques for deploying models, versioning, and performance monitoring
Week 15	Final Project Presentations: showcasing student projects and practical applications of machine learning concepts
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Implement data preprocessing techniques to clean and normalize datasets, including handling missing values and categorical encoding.
Week 2	Implement linear regression from scratch, using gradient descent to minimize the loss function and evaluate model performance using metrics like Mean Squared Error (MSE).
Week 3	Implement classification algorithms , including logistic regression and k-nearest neighbors (KNN), and analyze their performance using confusion matrices and accuracy scores.
Week 4	Implement decision trees and random forests , visualizing the tree structure while comparing their accuracy and overfitting tendencies.
Week 5	Implement a simple neural network using frameworks like TensorFlow or PyTorch, exploring the effects of different activation functions and architectures.
Week 6	Mid-term Exam.
Week 7	Implement unsupervised learning algorithms , including k-means clustering and hierarchical clustering, and visualize the results with appropriate plots.
Week 8	Implement dimensionality reduction techniques such as Principal Component Analysis (PCA) and t-Distributed Stochastic Neighbor Embedding (t-SNE) for visualization of high-dimensional data.
Week 9	Implement natural language processing techniques , including tokenization, stemming, and TF-IDF vectorization for text classification.
Week 10	Implement model evaluation techniques , including k-fold cross-validation and hyperparameter tuning using grid search or random search.
Week 11	Implement deep learning architectures such as convolutional neural networks (CNNs) for image classification tasks and analyze performance metrics like accuracy and F1-score.
Week 12	Implement time series analysis using ARIMA models for forecasting and evaluate the model's predictions against test data.
Week 13	Implement ethical considerations in machine learning projects , focusing on bias detection and mitigation strategies.
Week 14	Implement transfer learning by using pre-trained models for specific tasks and comparing their performance to models trained from scratch.
Week 15	Implement a final project where students apply machine learning techniques to a real-world dataset, demonstrating their understanding of the concepts learned throughout the course.

Learning and Teaching Resources مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. K. Murphy, Machine Learning: a Probabilistic Perspective, MIT Press, 2012.	Yes
Recommended Texts	1. A. Smola and S.V.N. Vishwanathan, Introduction to Machine Learning, Cambridge University Press 2008. 2. Stanford University Machine Learning CS229 Lecture notes by Andrew Ng.	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

Module Information			
معلومات المادة الدراسية			
Module Title	Modern programming languages 2		Module Delivery
Module Type	core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	cs-323		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGIII	Semester of Delivery	
Administering Department	Computer science	College	CSIT
Module Leader	Asst. prof. Dr.Hussein Khudhur Ibrahim	e-mail	hkhudher@uowasit.edu.iq
Module Leader's Acad. Title	Asst. 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	01/2/2026	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 module aims to introduce students to Python programming fundamentals and their practical applications in problem solving, data analysis, web technologies, and basic machine learning. تهدف هذه المادة إلى تعريف الطلبة بأساسيات برمجة Python وتطبيقاتها العملية في حل المشكلات، تحليل البيانات، تقنيات الويب، ومبادئ تعلم الآلة.
Module Learning Outcomes	By the end of this module, students will be able to: 1. Write and execute basic Python programs. 2. Use control structures, functions, and data structures effectively.

مخرجات التعلم للمادة الدراسية	3. Apply object-oriented programming concepts. 4. Handle files and exceptions in Python. 5. Use standard and external Python libraries. 6. Perform basic data analysis and web data collection. 7. Implement simple machine learning models. 8. Develop and present a small Python-based project. نهاية هذه المادة، سيكون الطالب قادرًا على: ١. كتابة وتنفيذ برامج Python الأساسية. ٢. استخدام هياكل التحكم، الدوال، وهياكل البيانات. ٣. تطبيق مفاهيم البرمجة كائنية التوجه. ٤. التعامل مع الملفات والاستثناءات. ٥. استخدام مكتبات Python القياسية والخارجية. ٦. تنفيذ تحليل بيانات أولي وجمع بيانات من الويب. ٧. تطبيق نماذج بسيطة في تعلم الآلة. ٨. تطوير وعرض مشروع برمجي بسيط.
Indicative Contents المحتويات الإرشادية	• Python basics and programming environment • Control structures and loops • Functions, modules, and code organization • Python data structures • Object-oriented programming concepts • File handling and exception management • Python libraries and packages • Introduction to data analysis • Web scraping and APIs • Basics of machine learning • Advanced Python topics • Final project presentation • أساسيات لغة Python وبيئة العمل • هياكل التحكم والحلقات • الدوال والوحدات • هياكل البيانات في Python • مفاهيم البرمجة • التعامل مع الملفات والاستثناءات • مكتبات وحزم Python • مقدمة في تحليل البيانات • البيانات من الويب وواجهات البرمجة • أساسيات تعلم الآلة • مواضيع متقدمة في Python • عرض المشروع النهائي

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Lectures to introduce theoretical concepts. • Practical lab sessions for hands-on programming practice.

	• Problem-solving and coding exercises. • Interactive discussions and Q&A sessions. • Assignments and mini-projects to reinforce learning. • • Blended learning through the online classroom استراتيجيات التعلم والتدريس: • محاضرات لشرح المفاهيم النظرية. • جلسات مختبرية عملية للتطبيق البرمجي. • تمارين حل المشكلات وكتابة الشيفرة. • مناقشات تفاعلية وجلسات أسئلة وأجوبة. • واجبات ومشاريع صغيرة لتعزيز الفهم. • تعليم مدمج من خلال الصف الإلكتروني
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Student Workload (SWL)			
الحمل الدراسي للطالب محسوب ل ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	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	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Introduction to Python Programming: Overview of programming languages and Python's role. Setting up the Python environment. Basic syntax, variables, and data types. Writing and executing simple Python scripts.
Week 2	Control Structures in Python Decision making: if, elif, and else statements. Loops: for and while loops. Using break, continue, and pass statements.
Week 3	Functions and Modules: Defining and calling functions. Function arguments, return values, and scope. Organizing code using modules and the import statement.

Week 4	Data Structures in Python: Lists, tuples, and sets: creation, manipulation, and operations. Dictionaries: key-value pairs and common methods. Understanding list comprehension.
Week 5	Object-Oriented Programming (OOP) Concepts: Introduction to classes and objects. Defining attributes and methods. Concepts of inheritance, encapsulation, and polymorphism.
Week 6	File Handling in Python: Reading and writing files. File operations: opening, closing, and manipulating file pointers. Handling exceptions during file operations.
Week 7	Mid-term Exam
Week 8	Exception Handling: Understanding errors and exceptions. Using try, except, else, and finally statements. Creating custom exceptions.
Week 9	Working with Libraries and Packages: Using standard Python libraries (e.g., math, random). Installing and using external packages (numpy, pandas). Understanding the pip package manager.
Week 10	Introduction to Data Analysis with Python: Using pandas for data manipulation. Understanding dataframes and series. Basic data analysis techniques: filtering and grouping data.
Week 11	Introduction to Web Scraping: Basics of HTML and CSS. Using BeautifulSoup and requests for scraping. Storing and processing scraped data.
Week 12	Working with APIs: Understanding RESTful APIs. Making requests using the requests library. Parsing and handling JSON data.
Week 13	Introduction to Machine Learning with Python: Overview of machine learning concepts. Using scikit-learn for implementing basic ML algorithms. Simple projects: classification and regression.
Week 14	Advanced Python Topics: Understanding decorators and generators. Multithreading and multiprocessing. Using Python for automation.
Week 15	Project Presentations: Student presentations on final projects.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Python Environment Setup and Basic Syntax: Setting up Python (Anaconda, Jupyter Notebook, or IDEs). Writing and executing simple scripts. Lab exercises on basic syntax, variables, and input/output operations.
Week 2	Control Flow Exercises: Implementing decision-making constructs (if, elif, else). Looping structures (for and while loops). Hands-on exercises: building simple control-flow based programs.
Week 3	Functions and Modular Programming: Creating and calling user-defined functions. Using built-in functions. Lab exercises on organizing code into modules.
Week 4	Implementing Python Data Structures: Creating and manipulating lists, tuples, sets, and dictionaries. Writing code using list comprehension and dictionary operations.
Week 5	Object-Oriented Programming Implementation: Defining classes and creating objects. Implementing class inheritance and polymorphism. Practical exercises on building OOP-based projects
Week 6	File Handling Operations: Reading from and writing to files. Creating a script to process data files. Handling exceptions during file operations.
Week 7	Mid-term Exam
Week 8	Error Handling Exercises: Implementing try and except blocks. Creating custom error messages. Developing programs to handle runtime errors.

Week 9	Working with Python Libraries: Using numpy for numerical computations. Creating and manipulating dataframes using pandas. Lab tasks using data analysis libraries.
Week 10	Data Analysis with pandas: Filtering, sorting, and grouping data using pandas. Performing data aggregation and basic analysis. Lab exercises on small data analysis projects.
Week 11	Web Scraping Project: Using BeautifulSoup and requests to scrape web data. Extracting and storing data in CSV format. Lab project: building a simple web scraper.
Week 12	Working with APIs: Making API requests and handling responses. Extracting and processing JSON data. Lab project: Building a Python program to interact with an external API.
Week 13	Implementing Machine Learning Models: Implementing basic ML models using scikit-learn. Training and testing a simple classification model. Lab project: Analyzing and visualizing model performance.
Week 14	Automation Projects with Python: Using os, shutil, and subprocess for system automation. Automating data processing tasks. Lab exercises on file automation and system management.
Week 15	Project Presentation: Final project demonstration and presentation.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	• <i>Python Crash Course</i> – Eric Matthes • <i>Introduction to Computer Science using Python</i> – John Guttag	
Recommended Texts	• <i>Automate the Boring Stuff with Python</i> – Al Sweigart • <i>Learning Python</i> – Mark Lutz	
Websites	• Python Official Documentation • W3Schools – Python • GeeksforGeeks – Python • Real Python	

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 Networking 2		Module Delivery
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	cs-324		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	
Administering Department	Computer science	College	CSIT
Module Leader	Mustafa Raheem	e-mail	E-mail
Module Leader's Acad. Title	Ass. 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	01/2/2026	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	cs-305	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives	1- Deepen understanding of advanced networking concepts, including routing protocols, switching techniques, and network security mechanisms.

أهداف المادة الدراسية	2- Develop practical skills in configuring, managing, and troubleshooting complex network infrastructures, focusing on scalability, performance, and security.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module, students will be able to demonstrate an in-depth understanding of advanced networking concepts, including dynamic routing protocols, VLANs, and network security strategies. They will be able to apply these concepts to design and manage complex network infrastructures, configure and troubleshoot routers and switches, and implement security measures to protect network environments.
Indicative Contents المحتويات الإرشادية	Indicative contents for the Computer Networking 2 module include advanced networking concepts, such as dynamic routing protocols (OSPF, EIGRP, BGP), VLANs, and inter-VLAN routing. The module covers network security topics including firewalls, VPNs, and access control lists (ACLs). It also focuses on network troubleshooting, diagnostics, and performance optimization, along with Quality of Service (QoS) techniques. Practical sessions involve configuring routers, switches, and securing network infrastructures, with case studies on modern networking applications and future trends.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategies for delivering the Computer Networking 2 module include a strong focus on practical, hands-on learning through lab-based exercises that simulate real-world networking scenarios. Lectures will cover advanced networking theories and concepts, followed by lab sessions to reinforce these ideas through direct application. Case studies and real-life examples will be used to illustrate complex topics like routing protocols and network security. Collaborative projects will encourage teamwork, while regular feedback and troubleshooting sessions will help students refine their skills and address challenges.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem)	61	Unstructured SWL (h/w)	4

الحمل الدراسي غير المنتظم للطالب خلال الفصل		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	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Explore the Network – Introduction to networking concepts, devices, and topology.
Week 2	Explore the Network – Continue exploring network infrastructures and network types.
Week 3	Configure a Network Operating System – Basic configurations on routers and switches.
Week 4	Configure a Network Operating System – Advanced configurations and initial network setup.
Week 5	Network Protocols and Communications – Understand protocols and how devices communicate.
Week 6	Network Access – Introduction to the OSI model, MAC addresses, and access methods.
Week 7	Mid-term Exam
Week 8	Network Access – Further exploration of network media, hardware addressing, and media access control.
Week 9	Ethernet – Study Ethernet technologies and standards, and how Ethernet frames function in a network.
Week 10	Network Layer – Introduction to network layer functionality, IP addressing basics.
Week 11	IP Addressing – Learn about IPv4 addressing, private vs public IP, and subnetting concepts.

Week 12	Subnetting IP Networks – Practice subnetting IP networks and efficient address assignment.
Week 13	Transport Layer and Application Layer – Explore the function of the transport layer, TCP vs UDP, and application layer protocols.
Week 14	Build a Small Network – Design and build a functioning small network using learned configurations.
Week 15	Preparatory week before the final exam – Review all concepts, focus on areas of difficulty, and prepare for the final assessment.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction to Packet Tracer Program
Week 2	Switch & Router Configuration
Week 3	Router Configuration for Networks
Week 4	Further practice with routing, including dynamic routing protocols setup.
Week 5	Address Resolution Protocol (ARP)
Week 6	Reverse Address Resolution Protocol (RARP)
Week 7	Mid-term Exam
Week 8	Configure DNS to resolve domain names to IP addresses, ensuring name-to-address mappings in a network
Week 9	Explore advanced DHCP settings and DHCP lease management for network devices.
Week 10	Configure VLANs on switches to segment network traffic and enhance security within a network.
Week 11	Distance Vector Routing Protocol Configuration
Week 12	Further practice and troubleshooting with RIP, improving network routing performance.
Week 13	Configure link state routing protocols, focusing on OSPF for optimized network routing.
Week 14	Final Project Implementation
Week 15	Project Presentations and Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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Required Texts	Computer Networks" by Andrew S. Tanenbaum, 6th Edition, 2021	Yes
Recommended Texts	Routing and Switching Essentials" by Cisco Networking Academy, 2nd Edition, 2020	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	Compilers		Module Delivery
Module Type	Elective		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	Cs-325		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIII	Semester of Delivery	
Administering Department	Computer science	College	CSIT
Module Leader	Melad Jameel Hmood	e-mail	mieladjameel@uowasit.edu.iq
Module Leader's Acad. Title	Ass. Lecturer	Module Leader's Qualification	Master
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/2/2026	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	The Compilers module equip the students with a comprehensive understanding of how compilers translate high-level programming languages into machine code. the

أهداف المادة الدراسية	Compilers module aims to provide both theoretical knowledge and practical skills in compiler design and implementation
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Students will be able to design and implement key components of a compiler. They will also gain practical experience using compiler construction tools.
Indicative Contents المحتويات الإرشادية	The indicative contents of a compilers module cover topics such as lexical analysis, syntax and semantic analysis, intermediate representations, optimization techniques, and code generation. Additionally, it includes practical work with compiler construction tools and error handling strategies.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Compilers learning and teaching strategies typically include a combination of lectures, hands-on coding exercises, and practical projects to reinforce concepts. Collaborative activities and discussions are also encouraged to enhance understanding of compiler design and implementation.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.	3 month / 2	10% (10)	All	All
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Compiler.
Week 2	Lexical analysis.
Week 3	Syntax of Analysis.
Week 4	Problems of Compiler, ambiguity, left recursion, left factoring.
Week 5	First and Follow.
Week 6	Top down Parsing, Predictive Parsing Method.
Week 7	Mid-term Exam
Week 8	Left to right-right most derivation (LL1) using parsing table.
Week 9	Bottom up LL(1),Parsing, Operation Precedence Parser.
Week 10	Simple Left to Right Parser (SLR).
Week 11	Semantic Analysis, static semantic.
Week 12	dynamic semantic.

Week 13	Intermediate Code Generation.
Week 14	Code Optimization,code optimization types.
Week 15	Code Generation.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to VB.
Week 2	Input & output.
Week 3	Loop & if statement.
Week 4	Array.
Week 5	Functions.
Week 6	File
Week 7	Mid-term Exam
Week 8	Lexical.
Week 9	Top down.
Week 10	Left recursion.
Week 11	Left factoring.
Week 12	First.
Week 13	follow
Week 14	LR parser.
Week 15	Closure function.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Principle of compiler design by Alfred V.Aho & Jeffrey D.Ullman	Yes
Recommended Texts	1- Compilers: principle, techniques and tools by Alfred V.Aho , Ravi Seth, Jeffrey D.Ullman. 2- Basics of compiler design by Torben Egidius mogensen	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	Scientific Research Methodology		Module Delivery
Module Type	support		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar
Module Code	cs-326		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGIII	Semester of Delivery	
Administering Department	Computer Science	College	CSIT
Module Leader	Siraj Imad Shareef	e-mail	sirajal-safi@uowasit.edu.iq
Module Leader's Acad. Title	Assist Lecture	Module Leader's Qualification	M.Sc..
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Siraj Imad Shareef	e-mail	E-mail
Scientific Committee Approval Date	01/2/2026	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	Empower students with the fundamental concepts of scientific research and professional ethics within the Computing discipline.

	• Train students on the efficient use of global academic search engines and digital libraries (e.g., IEEE Xplore, ACM). • Equip students with advanced academic typesetting skills using \$LaTeX\$ and Overleaf. • Educate students on the mechanisms of automated reference management according to IEEE and APA standards.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Advanced Search Proficiency: Implementing sophisticated search strategies utilizing within Google Scholar and specialized digital libraries such as IEEE Xplore and ACM Digital Library. • Technical Typesetting Mastery: Mastering the typesetting of complex scientific documents using \$LaTeX\$, including the construction of formal mathematical equations and robust algorithmic pseudocode. • Automated Reference Management: Automating scientific citation processes and reference management through digital tools like Mendeley, strictly adhering to IEEE citation standards. • Empirical Data Analysis: Analyzing and interpreting Experimental Results and representing them graphically through professional Data Visualization techniques to ensure clarity and academic rigor.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	10 minutes / 2	20% (20)	5 and 10	#1-#5 and #6-#10
	Assignments	1 week / 2	10% (10)	6 and 13	#1-#6 and #8-#12
	Projects / Lab.				
	Report	1 month / 1	10% (10)	13	#13
Summative assessment	Midterm Exam	2hr / 1	10% (10)	7	#1-#6
	Final Exam	3hr / 1	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Research Methodology and type of Research
Week 2	Literature review and Aim of Research Study
Week 3	Problem Formulation & Research Gap
Week 4	Advanced Digital Search Strategies
Week 5	Research Ethics & Integrity
Week 6	Anatomy of a Technical Paper (Deep dive into sections: Abstract, Methodology, Experimental Setup, and Discussion.)
Week 7	Mid-term Exam
Week 8	Reference and Citation Styles (IEEE vs. APA)
Week 9	LaTeX Typesetting Fundamentals (Typesetting complex mathematical equations, Pseudo-code (Algorithms), and tables
Week 10	Reference Automation (Building a digital library with Mendeley/Zotero and linking with BibTeX.)
Week 11	Global Digital Libraries Navigating IEEE Xplore, ACM Digital Library, and ScienceDirect
Week 12	Result Analysis & Visualization (Transforming raw data/code output into professional charts (Data Visualization).
Week 13	Presentation & Pitching Skills
Week 14	Big Data & Real-world Data Sourcing (Accessing real datasets from: Kaggle, UCI Machine Learning Repository, GitHub, and Google Dataset Search.)
Week 15	Final Review & Submissio
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Snyder, Hannah. "Literature review as a research methodology: An overview and guidelines." <i>Journal of business research</i> 104 (2019): 333-339.	
Recommended Texts	Nasution, Mahyuddin KM, Marischa Elveny, and Rahmad Syah. "Research methodology for computer science." <i>2ND INTERNATIONAL CONFERENCE ON ADVANCED INFORMATION SCIENTIFIC DEVELOPMENT (ICAISD) 2021: Innovating Scientific Learning for Deep Communication</i> . Vol. 2714. No. 1. AIP Publishing LLC, 2023.	
Websites		

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
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