



**Ministry of Higher Education and
Scientific Supervision and Evaluation Scientific
Research
Quality Assurance and Academic Authority
Accreditation Directorate
Accreditation Division**



Academic Programme and Course Description

University of Alkafeel— College of Sciences — Department of Artificial Intelligence

2025-2026

Introduction

An academic programme constitutes an integrated and structured package of courses comprising procedures and experiences organised into study units, the primary purpose of which is to build and refine the competencies of graduates, thereby qualifying them to meet the demands of the labour market. The programme is reviewed and evaluated on an annual basis through internal and external audit procedures and programmes, such as the External Examiner programme.

The academic programme description provides a concise summary of the principal characteristics of the programme and its courses, indicating the skills that are to be developed in students in alignment with the programme's academic objectives. The significance of this description lies in its representing the cornerstone for achieving programmatic accreditation; it is co-authored by the teaching staff under the supervision of the scientific committees within the academic departments.

This guide, in its second edition, contains a description of the academic programme following the updating of items and sections in the preceding guide, in the light of recent developments and advances in the educational system in Iraq. It encompasses the academic programme description in its traditional form under both annual and semestral systems, in addition to the adoption of the academic programme description disseminated in accordance with the directive of the Studies Directorate, reference T.M.3/2906, dated 3 May 2023, with regard to programmes operating under the Bologna process.

In this context, we reaffirm the importance of composing academic programme and course descriptions as a means of ensuring the sound conduct of the educational process.

Definitions and Terminology

Academic Programme Description: The academic programme description provides a concise summary of the programme's vision, mission, and objectives, incorporating a precise account of the targeted learning outcomes in accordance with defined learning strategies.

Course Description: Provides a concise summary of the most important characteristics of the course and the learning outcomes that the student is expected to achieve, demonstrating the

extent to which the student has maximised the available learning opportunities. It is derived from the programme description.

Programme Vision: An ambitious image of the future of the academic programme, constituting an advanced, inspiring, motivating, realistic, and applicable vision.

Programme Mission: Clarifies the objectives and the activities necessary for their achievement in a concise manner, and delineates the pathways and orientations for programme development.

Programme Objectives: Statements describing what the academic programme intends to achieve within a defined period of time, formulated in measurable and observable terms.

Curriculum Structure: All courses and subjects encompassed by the academic programme under the adopted learning system (semestral, annual, or Bologna process), whether constituting institutional, college, or departmental requirements, together with the number of credit units.

Learning Outcomes: A coherent set of knowledge, skills, and values acquired by the student upon the successful completion of the academic programme. Learning outcomes must be specified for each course in a manner that fulfils the objectives of the programme.

Teaching and Learning Strategies: The strategies employed by academic staff to develop student learning and teaching; these are plans followed in order to attain learning objectives, encompassing all in-class and extra-curricular activities aimed at achieving the programme's learning outcomes.

Academic Program Description Form

University Name: University of Alkafeel

Faculty/Institute: College of Science

Scientific Department: Artificial Intelligence

Academic or Professional Program Name: Bachelor

Final Certificate Name: Bachelor in Science

Academic System: Bologna

Description Preparation Date: 12/4/2026

File Completion Date: 12/4/2026



A handwritten signature in black ink, consisting of a large loop and a horizontal stroke.

Signature:

Head of Department Name:

Date: 12/4/2026

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Signature:

Scientific Associate Name:

Date: 12/4/2026

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance

Department:

Date:

Signature:

A handwritten signature in blue ink, consisting of a stylized 'A' and a horizontal stroke. The date "12/4/2026" is written next to it.

A handwritten signature in green ink, consisting of a stylized 'A' and a horizontal stroke.

Approval of the Dean

A.B. Sharba

12/4/2026

Academic Programme Description

1. Program Vision

To achieve leadership in artificial intelligence technology education, preparing creative and competent graduates who contribute to intelligent digital transformation in accordance with Islamic values and rigorous international standards.

2. Program Mission

The department endeavors to provide a stimulating academic environment that equips students with the skills to develop intelligent systems and innovative solutions, in service of society and in pursuit of sustainable development, while upholding professional ethics.

3. Program Objectives

1. To prepare distinguished graduates possessing advanced scientific foundations and programming competencies in artificial intelligence technologies and machine learning.
2. To support applied research aimed at solving complex problems through intelligent algorithms and big data processing.
3. To implement national standards pertaining to science programs and to position the department for programmatic accreditation following the graduation of its inaugural cohort.
4. To attain advanced rankings in national and international classification systems.
5. To pursue continuous curriculum renewal in order to keep pace with the accelerating digital revolution in the domains of intelligent systems and applications.
6. To activate collaboration with governmental and private institutions for the delivery of intelligent solutions that contribute to process automation and the enhancement of operational efficiency.
7. To consolidate ethical principles and social responsibility in the development and use of intelligent systems, thereby ensuring societal safety and the protection of individual privacy.

4. Programmatic Accreditation

None

5. External Influences

None

6. Program Structure

Structure Component	No. of Courses	Credit Hours	Percentage	Notes
Institutional Requirements	6	10	13%	
College Requirements	2	14	4%	
Department Requirements	39	216	83%	

7. Program Curriculum

Year / Level	Course Code	Course Title	Theory	Lab
Year 1 / Semester 1	MCSAI101	Statistics and Probability	3	0
	MCSAI103	Programming Basics	3	2
	MCSAI105	Introduction to Artificial Intelligence	3	2

	MCSAI107	Mathematics	3	0
	UOKFI-03	English Language I	2	0
	UOKFI-06	Democracy and Human Rights	2	0
Year 1 / Semester 2	MCSAI102	Discrete Structures	3	0
	MCSAI104	Advanced Programming	3	2
	MCSAI106	Logic Design	3	2
	MCSAI108	Knowledge Representation	3	2
	UOKFI-01	Arabic Language I	2	0
	MCSAI110	Computer Technology	2	2
Year 2 / Semester 1	MCSAI201	Artificial Intelligence Algorithms	3	2
	MCSAI203	Numerical Analysis	3	2
	MCSAI205	Object-Oriented Programming Fundamentals	3	2
	MCSAI207	Computational Theory	3	2
	MCSAI209	Python Programming Language	3	2
	UOKFI-02	Arabic Language II	2	0
Year 2 / Semester 2	MCSAI202	Advanced Object-Oriented Programming	3	2
	MCSAI204	Algorithms and Data Structures	3	2
	MCSAI206	Machine Learning Fundamentals	3	2
	UOKFI-04	English Language II	2	0
	MCSAI208	Computer Graphics	3	2
	UOKFI-05	Ba'ath Regime Crimes in Iraq	2	0
Year 3 / Semester 1	MCSAI301	Compilers	3	0
	MCSAI303	Computer Architecture	2	2
	MCSAI305	Optimization Problems	3	2
	MCSAI307	Image Processing	3	2
	MCSAI309	Advanced Machine Learning	3	2
	MCSAI311	Fuzzy Logic	2	2
Year 3 / Semester 2	MCSAI302	Natural Language Processing	3	2
	MCSAI304	Databases	3	2
	MCSAI306	Computer Networks	2	1
	MCSAI308	Deep Learning	3	2
	MCSAI310	Computer Security	3	1
	MCSAI312	Web Applications	2	2
Year 4 / Semester 1	MCSAI401	Operating Systems	2	2
	MCSAI403	Data Mining	3	2
	MCSAI405	Expert Systems	3	2
	MCSAI407	Research Methodology	2	0

	MCSAI409	Robotics	2	2
	MCSAI410	Game Development	2	2
Year 4 / Semester 2	MCSAI402	Information Retrieval	3	2
	MCSAI406	Pattern Recognition	3	2
	MCSAI408	Big Data	3	2
	MCSAI410	Recommendation Systems	3	0
	MCSAI412	Graduation Project	4	0

8. Expected Program Learning Outcomes

Knowledge	Identify and characterize the mathematical, logical, and programming foundations upon which the discipline of artificial intelligence is predicated. Explain the architecture of advanced algorithms, including deep neural networks, and recognize methods for processing large-scale data. Demonstrate familiarity with the most recent trends and emerging technologies in the labor market pertaining to artificial intelligence.
Skills	Diagnose complex technical problems and analyze data in order to extract patterns and intelligent solutions. Design, construct, and train machine learning models. Evaluate the efficiency and accuracy of intelligent models by employing established scientific metrics, thereby ensuring the quality of programmatic outputs.
Values	Adhere to ethical and legal standards in the handling of data, with due regard for privacy and the mitigation of algorithmic bias. Demonstrate the capacity to work within multi-disciplinary teams and to lead technical projects effectively. Embrace a methodology of self-directed learning in order to keep abreast of rapid developments in artificial intelligence technologies and their global applications.

Teaching and Learning Strategies / Assessment Methods

9. Teaching and Learning Strategies	1. Emphasis on the necessity of learning and pedagogical experience. 2. Discussion through collaborative group work. 3. Self-directed report writing. 4. Preparation of final projects.
10. Assessment Methods	1. Daily examinations. 2. Monthly examinations. 3. Oral examinations. 4. Student assignment performance. 5. Execution of projects with defined objectives.

11. Teaching Faculty

Academic Rank	General Specialization	Specific Specialization	Staff	Lecturer
Professor	English Language	Arts		1
Associate Professor	Computer Science	AI and Data Mining		1
Lecturer	Computer Engineering	Artificial Intelligence		1

Y1	UOKFI-01	Arabic Language I	B								√	
Y1	MCSAI110	Computer Technology	B	√	√	√	√	√		√		√

MODULE DESCRIPTOR

وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	Introduction to Artificial Intelligence (AI)			Module Delivery	
Module Type	Core			Lab Practical Theory	
Module Code	MCSAI105				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level		UGI	Semester of Delivery		1
Administering Department		PRAI	College	Type College Code	
Module Leader	Dr.Ahmed Ali Talib		e-mail	Ahmed.ali@alkafeel.edu.iq	
Module Leader's Acad. Title		lecturer	Module Leader's Qualification		PhD
Module Tutor	Ayat Abbas Fadhil		e-mail	aayat.alkhazali@alkafeel.edu.iq	
Peer Reviewer Name			e-mail		
Review Committee Approval			Version Number		1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1-Introduction to Artificial Intelligence: Provide an overview of the field of artificial intelligence, its history, key concepts, and its role in various domains. 2-Problem Solving and Search: Explore different problem-solving techniques and search algorithms used in artificial intelligence. 3-Knowledge Representation and Reasoning: Study methods and languages used to represent and manipulate knowledge in artificial intelligence systems. 4- AI applications: Examining real-world applications of AI in various domains, such as healthcare, finance, autonomous vehicles, robotics, and recommendation systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Understand the fundamental concepts and principles of artificial intelligence and its various subfields. 2- Understand the AI problem-solving techniques.

	3-Explore real-world applications of artificial intelligence in various domains and understand the challenges and opportunities associated with their implementation.
Indicative Contents المحتويات الإرشادية	Data-Information-Knowledge (DIK Hierarchy). Knowledge base building. Knowledge discovery. Knowledge acquisition. Knowledge engineering. Knowledge representation. Problem fundamentals and characteristics. Problem state space. Problem solving approach. Different problems in AI world. Shortest path problem. Travelling salesman problem. The 2 jug problem. Monkey and banana problem.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	108	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية 4					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	1, 8	LO #1, 2
	Assignments	2	10% (10)	5, 12	LO # 2,3
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 1,2,3
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1,2,3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		
Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري					

Week	Material Covered
Week 1	AI definition, history, concept, and applications
Week 2	AI goals and AI environment
Week 3	Alan Turing Test
Week 4	Data-Information-Knowledge (DIK Hierarchy)
Week 5	Knowledge base building
Week 6	Knowledge discovery, Knowledge acquisition
Week 7	Knowledge engineering. Knowledge representation
Week 8	Problem fundamentals and characteristics
Week 9	Problem state space
Week 10	Problem solving approach
Week 11	Problem solving approach
Week 12	Different problems in AI world
Week 13	Shortest path problem. Travelling salesman problem
Week 14	2 jug problem, Monkey and banana problem
Week 15	Preparatory Week
Week 16	Final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1-Rich, E., & Knight, K. (1991). Artificial Intelligence. McGraw-Hill. 2-Luger, G. F., & Stubblefield, W. A. (2004). Artificial Intelligence: Structures and Strategies for Complex Problem Solving. Addison Wesley.	Yes
Recommended Texts	Russell, S. J., & Norvig, P. (2016). Artificial Intelligence: A Modern Approach.	No
Websites		

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB 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 DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	mathematics		Module Delivery	
Module Type	Basic		Theory Lecture	
Module Code	MCSAI107			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	UGI	Semester of Delivery	1	
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Dr.Ahmed Ali Talib		e-mail	Ahmed.ali@alkafeel.edu.iq
Module Leader's Acad. Title	Lecture	Module Leader's Qualification	PhD.	
Module Tutor	Assist. Lect. Hashim Ali Hashim		e-mail	hashim.ali@alkafeel.edu.iq
Peer Reviewer Name		e-mail		
Review Committee Approval		Version Number	1.0	

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	
Module Aims, Learning Outcomes and Indicative Contents			
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	1. To learn how solve and develop problem solving skills		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learning how solve equations by hand without computer. 2. Develop the brain ability.		
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. ➤ Mathematical background		

	➤ Matrix • Types of matrix • Matrix addition, subtraction, and multiplication • Determinant, transpose, and rank of matrix • Inverse of matrix, absolute value, and polynomials ➤ Functions • Function Definition • Domain and range of functions ➤ Derivation • Mathematical definition of derivation, rule of derivation • Derivation of trigonometric, inverse trigonometric, logarithm, exponential • ➤ Series ➤ integration • Integration Indefinite integral • Rules of integral • Method of integration -Partial derivative Partial derivative of two variables, total differential. -Differential equations First order differential equations Variable separable, homogeneous differential equation, Exact differential equation, first order linear differential equation. ➤ Second order differential equation Homogeneous second order with constant coefficient, non Homogeneous second order with constant coefficient, Variation of parameter. -Laplace transformation Definition, Laplace transformation of some function, Laplace transformation of differential Properties of L.T (1) Shifting (2) L.T of integrals - Multiplication by t^n. -Inverse laplace transformation Properties of inverse L.T 1- Partial fraction, 2- Application of Laplace transformation Linear(D.E) with constant coefficient.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their mathematical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	5% (5)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	3% (3)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	2%(2)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1-7
	Final Exam	3hr	70% (70)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	➤ Mathematical background ➤ Matrix Types of matrix, Matrix addition, subtraction, and multiplication, Determinant, transpose, and rank of matrix
Week 2	Inverse of matrix, absolute value,
Week 3	➤ Functions ,

	Function Definition, Domain and range of functions and polynomials,
Week 4	➤ Derivation Mathematical definition of derivation, rule of derivation Derivation of trigonometric, inverse trigonometric, logarithm, exponential.
Week 5	➤ Series
Week 6	➤ Integration Indefinite integral, Rules of integral.
Week 7	Method of integration
Week 8	Partial derivative Partial derivative of two variables, total differential.
Week 9	Differential equations First order differential equations Variable separable, homogeneous differential equation
Week 10	Exact differential equation, first order linear differential equation.
Week 11	➤ Second order differential equation ➤ Homogeneous second order with constant coefficient, non Homogeneous second order with constant coefficient.
Week 12	Variation of parameter
Week 13	Laplace transformation Definition, Laplace transformation of some function, Laplace transformation of differential Properties of L.T (3) Shifting (4) L.T of integrals (5) Multiplication by t^n .
Week 14	Inverse laplace transformation Properties of inverse L.T 2- Partial fraction
Week 15	3- Application of Laplace transformation 4- Linear(D.E) with constant coefficient.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر (ليس مرتبط بمختبر)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas,G. Calculus and Analytic Geometry,Fifth Edition,Addition Wesly,1999	Yes
Recommended Texts		
Websites	https://youtube.com/@soraali5120	

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Programming Basics		Module Delivery
Module Type	Core		-Theory -Lab -Practical
Module Code	MCSAI103		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGI	Semester of Delivery	1
Administering Department		College	
Module Leader	Dr.Ahmed Ali Talib		e-mail Ahmed.ali@alkafeel.edu.iq
Module Leader's Acad. Title	Lecture	Module Leader's Qualification	PhD.
Module Tutor	Asst. Lect. Fatima Tahseen	e-mail	fatimaalbadry@alkafeel.edu.iq
Peer Reviewer Name		e-mail	
Review Committee Approval		Version Number	1.0

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	
Module Aims, Learning Outcomes and Indicative Contents			
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	2. To develop problem solving skills 3. This course deals with the basic concept of Algorithms. 4. To understand the meaning of programming.		
Module Learning Outcomes	1. Understanding the meaning of algorithms and how to write it 2. Understand the various types of data		

مخرجات التعلم للمادة الدراسية	3. Learn how to draw flowchart. 4. Understanding the main data types in C++ , and logical and mathematics operations 5. Capable of writing While an For statements in the program. 6. Have the ability to use conditions (IF , IF else) statements
Indicative Contents المحتويات الإرشادية	1. Explain the steps involved in problem definition and analysis. 2. Learn how to write algorithm and draw the flowchart to solve a particular problem 3. Define program that capable of reading and printing data. 4. Learn how to repeat execution of a block of statements (While, For) 5. Learn how to use conditions in the program
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	110	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	65	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	5	LO # 1 and 3
	Practical Seminar(Lab).	2	15% (15)	Continuous	LO # 2 , 4 and 5
Summative assessment	Midterm Exam	1 hr	15% (15)	14	LO # 1 to 5
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	• Introduction, Procedural Programming Principles • Introduction to algorithm • Algorithms example
Week 2	• Flowchart definition and its symbols • Flowchart examples
Week 3	• C++ programming language • Structure of C++ program • Reserved words and Header files • Character set and Identifiers • Variable and Constant • Data type (int , float , char , void) • Cout , Cin
Week 4	• Constant • % operator • IF statement • Compound IF statement • IF / ELSE statement
Week 5	Quizzes
Week 6	• && , with if statement • ELSE IF statement
Week 7	• Switch statement • Nested switch statement
Week 8	• C++ operators : Arithmetic , Assignment , Comparison , Logical • Operators precedence
Week 9	• Unary operators (++ , --) • Prefix ,Postfix notation
Week 10	• Examples of order evaluation • "math.h" library : Exp,Log,Sin, Cos,Tan,Pow,Sqrt

Week 11	• While statement
Week 12	• Do / While statement
Week 13	• For loop statement
Week 14	Midterm Exam
Week 15	Preparatory Week
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week	Material Covered
Week 1	Introduction to C++ environment
Week 2	Introduction to C++ environment
Week 3	• C++ programming language • Structure of C++ program • Reserved words and Header files • Character set • Variable and Constant • Data type (int , float , char , void) • Cout , Cin
Week 4	• IF statement • Compound IF statement • IF / ELSE statement • Constant • % operator
Week 5	Quizzes
Week 6	• && , with if statement • ELSE IF statement
Week 7	• Switch statement • Nested switch statement
Week 8	• C++ operators : Arithmetic , Assignment , Comparison , Logical • Operators precedence
Week 9	• Unary operators (++ , --) • Prefix ,Postfix notation
Week 10	• Examples of order evaluation • "math.h" library : Exp,Log,Sin, Cos,Tan,Pow,Sqrt
Week 11	While statement
Week 12	Do / While statement
Week 13	For loop statement

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Mastring C++, Amman-Jordan, AL-Shorok, 2002	Yes
Recommended Texts	1- OqeiliSalch, prof. Department of IT-AL-Balqa Applied University.	No
Websites		

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB 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 DESCRIPTOR FORM نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	statistics and probability				Module Delivery	
Module Type	Basic				Theory Lecture	
Module Code	MCSAI101					
ECTS Credits	6					
SWL (hr/sem)	150					
Module Level		UGI	Semester of Delivery		1	
Administering Department		Type Dept. Code	College	Type College Code		
Module Leader	Dr.Ahmed Ali Talib		e-mail	Ahmed.ali@alkafeel.edu.iq		
Module Leader's Acad. Title		Lecture	Module Leader's Qualification		Ph.D.	
Module Tutor	None		e-mail	None		
Peer Reviewer Name			e-mail			
Review Committee Approval			Version Number		1.0	

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	5. Understand the laws of statistics and data distribution. 6. Enable the student to transform large data into understandable shapes and illustrations, and to deduce statistical data. 7. provide the students with details statistics and data population. 8. Define and explain the basic of probabilistic metrics like event, outcome, trial, simple event, sample space, Venn Diagram ,tree diagram, and calculate the probability that an event will occur. 5. Define and explain the basic of statistical measurements like Data Organization, variation, of central tendency. 6. Express the concepts and principal of counting techniques (factorial , combination) and the basic principles of Probability Theory 7. Solve the problems about permutation, combination and Binomial Theorem.
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Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. provide the students with details Probability and its theories and how apply them on game theory. 2. Enable the student to transform large data into understandable shapes and illustrations, and to deduce statistical data 3. Express the concept of probability and its features. Explain the concept of a random event, addition and multiplication probabilities lows . 4. Understand the laws of statistics and data distribution 5. Express the concepts of factorial and the basic principal of counting. Solve the problems about permutation, combination and Binomial Theorem. 6. enable the students with knowledge of the problems and solutions that may face in future and depend on probability theory to solve them
Indicative Contents المحتويات الإرشادية	<u>Part A - statistic</u> 1- Population, samples, type of samples, Random variables discrete variable, continuous variable, Data Organization. [4] 2- frequency distribution, histogram [8] 3- Measurement of central tendency - mean, median, mode. [6]. 4- measurements of variation -standard deviation, variance.[6] 5- Coefficient of variation, Correlation and Regression. [8] <u>Part b – probability.</u> 1- Probability Theory -sample space, events, rules of probability. [4] 2- Venn Diagram, tree diagram, probability theorems -Addition theorem.[4] 3- Multiplication theorem.[4] 4- Combinations ,Conditional probability[4] 5- Bayes theorem, Independent of events, Discrete Probability distributions.[4] 6- Binomial distribution, Multinomial distribution.[4] 7- Poisson distribution, Continuous Probability Distributions-Uniform distribution.[4] 8- Normal distribution, Exponential distribution[4].
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes,

	interactive tutorials and by considering type of simple examples involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	6% (10)	5, 10	LO #2,4, and 5
	Assignments	2	4% (10)	2, 12	LO # 2 and 5
Summative assessment	Midterm Exam	1 hr	20% (10)	7	LO # 1-5
	Final Exam	2hr	70% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

Week	Material Covered
Week 1	Population ,samples , type of samples, Random variables discrete variable, continuous variable, Data Organization.
Week 2	frequency distribution, histogram
Week 3	measurement of central tendency - mean ,median, mode.
Week 4	measurements of variation -standard deviation, variance ,coefficient of variation
Week 5	Probability Theory -sample space, events ,rules of probability, Venn Diagram.
Week 6	tree diagram, probability theorems -Addition theorem.
Week 7	Mid-term Exam
Week 8	Multiplication theorem.
Week 9	Counting techniques :Factorial, Permutations, Combinations ,Conditional probability

Week 10	Bayes theorem, Independent of events, Discrete Probability distributions.
Week 11	Binomial distribution, Multinomial distribution.
Week 12	Poisson distribution, Continuous Probability Distributions-Uniform distribution.
Week 13	Normal distribution, Exponential distribution.
Week 14	Correlation and Regression.
Week 15	Preparatory Week
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1. Probability and statistics, theory and applications, Gunnar Blom 2. Probability and statistics for engineers, Richard L. Scheaffer 3. Statistics: theories and applications, Joseph Inungo, 2006. 4. Introductory Statistics , Ronald J. Wonnacott	Yes
Recommended Texts	Introduction to Statistics and Data Analysis	No
Websites	https://www.spps.org/cms/lib/MN01910242/Centricity/Domain/859/Statistics%20Textbook.pdf	

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

NB 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	Democracy & Human Rights		Module Delivery
Module Type	Base		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	UOKFI-06		
ECTS Credits	2.00		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr.Ahmed Ali Talib		e-mail: Ahmed.ali@alkafeel.edu.iq
Module Leader's Acad. Title	lecturer	Module Leader's Qualification	PhD.
Module Tutor	Ali Thuban Abbas		e-mail: ali.thuban@alkafeel.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1 .Promoting Dialogue and Mutual Respect: This course aims to foster open and constructive dialogue among students and encourage them to respect and value others' viewpoints, even when opinions differ. It also aims to enhance mutual understanding and students' ability to engage with diverse perspectives.

	2 .Developing Life Skills: The Human Rights and Democracy course contributes to the development of essential life skills in students, such as critical thinking, reading and writing, research, problem-solving, informed decision-making, and effective communication. 3. Promoting Active Citizenship: This course aims to promote active citizenship among students and encourage their participation in teamwork.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The Human Rights and Democracy course at universities is expected to achieve a range of learning outcomes for students. Some potential outcomes of this course include: 1. A deep understanding of human rights and democracy concepts: Students can gain a comprehensive understanding of human rights and democracy concepts and their fundamental principles, including human rights, freedom of expression, equality, and the rule of law. 2. Promoting dialogue and mutual respect: Students can learn how to participate in constructive and collaborative dialogues, and appreciate and respect the viewpoints of others, even when they disagree. 3. Enhancing civic awareness: Students can gain a greater awareness of their responsibilities as citizens and their role in society, and promote active citizenship and social participation.
Indicative Contents المحتويات الإرشادية	We will discuss the subject of human rights and democracy from the perspective of the concept of human rights, the position of divine laws on rights, the sources of rights and their guarantees, the concept of democracy and its forms, and the mechanism of the parliamentary system (election).

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	There are many strategies that can be used in teaching and learning human rights and democracy at universities. Here are some common teaching strategies that can be implemented: 1. Group discussions: Group discussions can be organized on human rights and democracy topics. Students are guided to exchange views and engage in critical discussion on issues such as human rights. Active participation and respect for diverse viewpoints should be encouraged. 2. Case studies: Case studies can be used to introduce students to real-life experiences of human rights and democracy, or instances of human rights violations. 3. Presentations and Publications: Students can prepare presentations and publications on the concepts of human rights and democracy and their applications. They can use images, illustrations, and real-life examples to clarify the concepts more clearly.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1.2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2
	Assignments	2	10% (10)	2 and 12	LO #3
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	The Concept of Rights (Definition - Categories)
Week 2	Human Rights in Divine Laws (Christianity and Judaism)
Week 3	Human Rights in Divine Laws (Islam)
Week 4	International Sources of Human Rights: a) The Universal Declaration of Human Rights
Week 5	b) The International Covenants on Human Rights
Week 6	Guarantees of Human Rights at the Domestic Level
Week 7	Guarantees of Human Rights at the International Level
Week 8	2- Semi-direct democracy
Week 9	3- Representative (parliamentary) democracy (concept and pillars)
Week 10	Forms of the representative (parliamentary) system (council system - presidential system)
Week 11	Forms of the representative system - parliamentary system

Week 12	Mechanism of the representative (parliamentary)
Week 13	system: Election (concept of election - electorate)
Week 14	Electoral systems
Week 15	Final exam
Week 16	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Human Rights, Children's Rights, and Democracy Authors: Dr. Maher Saleh Alawi Al-Jubouri, Dr. Raad Naji Al-Jada, Dr. Riyadh Aziz Hai, Dr. Kamel Abdul-Ankoud, Dr. Ali Abdul-Razzaq Muhammad, Dr. Hassan Muhammad Shafiq	No
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 DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	English Language I		Module Delivery	
Module Type	Basic		Theory	
Module Code	UOKFI-03			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	UGI	Semester of Delivery	1	
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Dr.Ahmed Ali Talib		e-mail	Ahmed.ali@alkafeel.edu.iq
Module Leader's Acad. Title	Lecture	Module Leader's Qualification	Ph.D.	
Module Tutor		e-mail		
Peer Reviewer Name		e-mail		
Review Committee Approval		Version Number	1.0	

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	
Module Aims, Learning Outcomes and Indicative Contents			
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	9. Understand the laws of statistics and data distribution. 10. Enable the student to transform large data into understandable shapes and illustrations, and to deduce statistical data. 11. provide the students with details statistics and data population. 12. Define and explain the basic of probabilistic metrics like event, outcome, trial, simple event, sample space, Venn Diagram ,tree diagram, and calculate the probability that an event will occur.		

	5. Define and explain the basic of statistical measurements like Data Organization, variation, of central tendency. 6. Express the concepts and principal of counting techniques (factorial , combination) and the basic principles of Probability Theory 7. Solve the problems about permutation, combination and Binomial Theorem.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. provide the students with details Probability and its theories and how apply them on game theory. 2. Enable the student to transform large data into understandable shapes and illustrations, and to deduce statistical data 3. Express the concept of probability and its features. Explain the concept of a random event, addition and multiplication probabilities laws . 4. Understand the laws of statistics and data distribution 5. Express the concepts of factorial and the basic principal of counting. Solve the problems about permutation, combination and Binomial Theorem. 6. enable the students with knowledge of the problems and solutions that may face in future and depend on probability theory to solve them
Indicative Contents المحتويات الإرشادية	<u>Part A - statistic</u> 1-Population, samples, type of samples, Random variables discrete variable, continuous variable, Data Organization. [4] 2- frequency distribution, histogram [8] 3- Measurement of central tendency - mean, median, mode. [6]. 4- measurements of variation -standard deviation, variance.[6] 5- Coefficient of variation, Correlation and Regression. [8] <u>Part b – probability.</u> 9- Probability Theory -sample space, events, rules of probability. [4] 10- Venn Diagram, tree diagram, probability theorems -Addition theorem.[4] 11- Multiplication theorem.[4] 12- Combinations ,Conditional probability[4] 13- Bayes theorem, Independent of events, Discrete Probability distributions.[4] 14- Binomial distribution, Multinomial distribution.[4] 15- Poisson distribution, Continuous Probability Distributions-Uniform distribution.[4] 16- Normal distribution, Exponential distribution[4].
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple examples involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	6% (10)	5, 10	LO #2,4, and 5
	Assignments	2	4% (10)	2, 12	LO # 2 and 5
Summative assessment	Midterm Exam	1 hr	20% (10)	7	LO # 1-5
	Final Exam	2hr	70% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

Week	Material Covered
Week 1	Population ,samples , type of samples, Random variables discrete variable, continuous variable, Data Organization.
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Week 6	tree diagram, probability theorems -Addition theorem.
Week 7	Mid-term Exam
Week 8	Multiplication theorem.
Week 9	Counting techniques :Factorial, Permutations, Combinations ,Conditional probability
Week 10	Bayes theorem, Independent of events, Discrete Probability distributions.

Week 11	Binomial distribution, Multinomial distribution.
Week 12	Poisson distribution, Continuous Probability Distributions-Uniform distribution.
Week 13	Normal distribution, Exponential distribution.
Week 14	Correlation and Regression.
Week 15	Preparatory Week
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	5. Probability and statistics, theory and applications, Gunnar Blom 6. Probability and statistics for engineers, Richard L. Scheaffer 7. Statistics: theories and applications, Joseph Inungo, 2006. 8. Introductory Statistics , Ronald J. Wonnacott	Yes
Recommended Texts	Introduction to Statistics and Data Analysis	No
Websites	https://www.spps.org/cms/lib/MN01910242/Centricity/Domain/859/Statistics%20Textbook.pdf	

APPENDIX:

GRADING SCHEME مخطط الدرجات				
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Note:				

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Advanced Programming		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	MCSAI104		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	2
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr.ahmed ali talib		e-mail ahmed.ali@alkafeel.edu.iq
Module Leader's Acad. Title	Lecture	Module Leader's Qualification	Ph.D.
Module Tutor	Asst. Lect. Fatima Tahseen		e-mail fatimaalbadry@alkafeel.edu.iq
Peer Reviewer Name	Non	e-mail	...
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MCSAI103	Semester	1
Co-requisites module	Non	Semester	...

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	

Module Objectives أهداف المادة الدراسية	The following are some key aims and benefits of studying Programming Fundamentals II: 1. Problem Solving: Teach students how to analyze problems and develop algorithms to solve them. Emphasize problem-solving techniques, algorithm design, and decomposition of complex problems into smaller, manageable parts. 2. Debugging and Testing: Teach students how to debug and test their programs to identify and fix errors. Explore techniques for error detection, debugging tools, and strategies for writing effective test cases. 3. Data Structures: Introduce students to fundamental data structures such as arrays, stacks, queues, structures. Explore their properties, implementation, and usage in solving programming problems. 4. Modular Programming: Introduce the concept of modular programming, including the use of functions, parameter passing, and code reuse. Emphasize the importance of modular design and writing reusable and maintainable code. 5. Programming Best Practices: Introduce students to programming best practices and coding standards, including code documentation, naming conventions, code formatting, and code optimization techniques. 6. Files Input and Output: Teach students how to interact with the user and handle input/output operations, including reading from and writing to files, standard input/output, and error handling. 7. Introduction to Object-Oriented Programming (OOP): Introduce the principles and concepts of OOP, including classes.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The following are some common learning outcomes for an Programming Fundamentals II : 1. Effective Code Writing: Write clear, well-structured, and readable code that follows coding standards and best practices, including proper indentation, meaningful variable names, and appropriate comments. 2. Use of Data Structures: Apply appropriate data structures, such as arrays, linked lists, stacks, and queues, to store and manipulate data effectively in programming problems. 3. Modular Design and Reusability: Design and implement modular programs by breaking them into reusable functions or methods, facilitating code reuse, improving maintainability, and promoting good software engineering practices.

	4. Debugging and Testing Skills: Use debugging techniques and tools to identify and fix errors in programs. Develop effective test cases and perform testing to ensure program correctness and reliability. 5. Understanding of Object-Oriented Programming (OOP) Concepts.
Indicative Contents المحتويات الإرشادية	The indicative contents of an Programming Fundamentals II module have a list of common topics that shown below : 1- Modular Programming: [25 hrs] Functions and procedures, Scope and lifetime of variables, Parameter passing mechanisms. 2- Data Structures: [25 hrs] Arrays, Strings and lists, Structures, Stacks and queues. 3- Input and Output: [15 hrs] Standard input/output, Reading from and writing to files, Error handling and exception handling. 4- Debugging and Testing: Common types of programming errors, Debugging techniques and tools. [20 hrs] 5- Object-Oriented Programming (OOP) Concepts: Classes and objects. [5 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	To teaching an Programming Fundamentals II module, various strategies can be employed to facilitate effective learning and engagement. Here are some learning and teaching strategies commonly used in Programming Fundamentals II module: 1- Lectures: Delivering lectures to present theoretical concepts, principles, and foundational knowledge of Programming Fundamentals II. Lectures can include visual aids, examples, and demonstrations to enhance understanding. 2- Interactive Discussions: Encourage students to actively participate in discussions by asking questions, sharing their thoughts, and engaging in peer-to-peer learning. Discussions can focus on challenging concepts, real-world applications, or case studies related to Programming Fundamentals II. 3- Hands-on Lab Sessions: Conduct practical lab sessions where students can gain hands-on experience with Programming Fundamentals II, commands, and programming exercises. These sessions provide an opportunity to reinforce theoretical concepts and develop practical skills.

	4- Group Projects: Assign group projects that involve designing, implementing, and evaluating components of an Programming Fundamentals II. Group projects promote teamwork, problem-solving, and practical application of operating system concepts. 5- Online Resources and Tutorials: Provide access to online resources, tutorials, and interactive learning materials related to Programming Fundamentals II. This allows students to explore additional content, reinforce their understanding, and self-assess their progress. 6- Assessments and Feedback: Use a variety of assessment methods such as quizzes, assignments, projects, and exams to evaluate students' understanding of Programming Fundamentals II concepts. Provide timely and constructive feedback to help students improve their knowledge and skills.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	95	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	55	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	5% (5)	3,5,7,9 , and 11	LO #1, #3 and #4
	Homework Assignments	5	10% (10)	2,4,6,8 and 10	LO #1, #3 and #4
	Projects / Lab.	5	20% (20)	Continuous	All
	Onsite Assignments	5	5% (5)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	9	LO #1, #2 and #3
	Final Exam	3hr	50% (50)	17	All

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

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Functions
Week 2	Function Types
Week 3	The concept of Recursion
Week 4	Array
Week 5	1D array
Week 6	2D array (Matrix)
Week 7	Array of Characters (Strings)
Week 8	String Processing
Week 9	Midterm Exam
Week 10	Arrays and functions
Week 11	Structures
Week 12	Array of structures and Nested Structures
Week 13	Stack and Queue
Week 14	Pointers
Week 15	Files
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Writing Codes using Functions
Week 2	Writing Codes using Function Types
Week 3	Writing Codes using The concept of Recursion
Week 4	Writing Codes using Arrays
Week 5	Writing Codes using 1D arrays
Week 6	Writing Codes using 2D array (Matrix)s
Week 7	Writing Codes using Array of Characters (Strings)

Week 8	Writing Codes using String Processing
Week 9	Midterm Exam
Week 10	Writing Codes using Arrays and functions
Week 11	Writing Codes using Structures
Week 12	Writing Codes using Array of structures and Nested Structures
Week 13	Writing Codes using Stack and Queue
Week 14	Pointers
Week 15	Files

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	C++: The Complete Reference, Fourth Edition, Herbert Schildt.	Yes
Recommended Texts	The C++ Programming Language , Third Edition , Bjarne Stroustrup.	Yes
Websites	https://stackoverflow.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	Arabic Language I		Module Delivery
Module Type	Base		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	UOKFI-01		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	2
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr.Ahmed Ali Talib		e-mail Ahmed.ali@alkafeel.edu.iq
Module Leader's Acad. Title	Lecture	Module Leader's Qualification	Ph.D.
Module Tutor	Hiba AbdulJaleel AbdulHadi Al-kharsan		e-mail hiba.alkharsan@alkafeel.edu.iq
Peer Reviewer Name	Non	e-mail	...
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Non	Semester	...
Co-requisites module	Non	Semester	...

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The objectives of the Arabic language course are to introduce students to the most important basic rules of correct spelling, help them avoid errors in expression, and enable them to master the language at a level appropriate to their cultural background. Here are some of the main objectives of the course: 1. To understand the fundamental rules of spelling that students will need in their studies and future work. 2. To be able to apply these rules easily and effortlessly without needing to memorize them. 3. To enable students to recognize simple spelling and grammatical errors in order to avoid making them. 4. To develop the ability to express themselves correctly without needing assistance. 5. To help students understand the importance of the Arabic language in their lives and work, expand their vocabulary, and identify and address the most common errors and difficulties they encounter.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The learning outcomes for Arabic language courses aim to develop a range of skills and knowledge in students. Below are some of the key learning outcomes expected upon completion of this course: 1. Understanding the basic rules of writing in Arabic. 2. Applying linguistic knowledge skillfully and easily. 3. Analyzing linguistic structures and simple texts used in daily life. 4. Demonstrating self-confidence and the ability to express themselves clearly. 5. Correcting their own minor errors.
Indicative Contents المحتويات الإرشادية	1. Spreading the Arabic language among all members of society to open new horizons for developing and supporting language skills. 2. Addressing the various challenges facing society in the field of education, particularly in teaching Arabic, and striving to find effective and beneficial solutions to enhance language abilities. 3. Utilizing modern communication tools such as the internet and others in the learning process..

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Several simple strategies can be used to effectively develop the learning process, making it enjoyable and beneficial. These include: 1. Numbered Heads Strategy 2. Popsicle Stick Strategy 3. Think-Pair-Share Strategy 4. Cube Strategy 5. Correct the Mistake Strategy 6. Hot Seat Strategy
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1.2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	4 marks	5,7,9	2,3,4
	Assignments	2	4 marks	3,5	2, 3
	Onsite Assignments	10	1 marks	all	all
	Reports	1	10 marks	6,7,8,9,10	all
Summative assessment	Midterm Exam	2hr	10% (10)	9	
	Final Exam	3hr	50% (50)	17	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	An introductory overview of the science of spelling, its founder, origins, and development
Week 2	The initial hamza
Week 3	The medial hamza 1
Week 4	The medial hamza 2
Week 5	The final hamza
Week 6	The final hamza and tanween al-fath
Week 7	The ta' marbuta and the ta' mabsuta
Week 8	The letters dad and dha'
Week 9	Midterm exam
Week 10	The alif maqsurah
Week 11	Letters of addition and omission
Week 12	Number and counted noun 1
Week 13	Number and counted noun 2
Week 14	Number and counted noun 3
Week 15	Shadda and madda
Week 16	Preparation for the final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Unique Dictation, Naoum Jirjis Zarazir, Arabic Language Library, Baghdad, Iraq, 6th edition, 2017. Clear Dictation, Abdul Majeed Al-Nuaimi, Dar Al-Mutanabbi Library, Baghdad, Iraq, 3rd edition, 1967.	
Recommended Texts		
Websites	Lisan Al-Arab Electronic Library Al-Aluka Network Fasih Website Narjis Electronic Library Waqfiyah Electronic Library	

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	Discrete Structure		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MCSAI102		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	2
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr.Ahmed Ali Talib		e-mail: Ahmed.ali@alkafeel.edu.iq
Module Leader's Acad. Title	Lecture	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name	Non	e-mail	...
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Non	Semester	...
Co-requisites module	Non	Semester	...

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	give the students the general idea for the important subject that is related with the computer science to enable them to understand the other subject
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	give the main principle of set theory and graph theory so as mathematical logic and number theory which help the student in the other stages
Indicative Contents المحتويات الإرشادية	Mathematical Logic, Propositional Logic, Predicate Logic [10 hour] Sets, Set properties, operations of sets [5 hour] Relations and their types, Composite of relations, Equivalent relations [15 hour] Functions, Properties of functions, Recursive functions [10 hour] mathematical induction [5 hour] Basic counting, Sum principles, Product principles[10 hour] Graph theory, Graph types and its applications, Degree points of graphs [20 hour] Trees and its details [15 hour] Number theory, divisibility, greatest common divisor, prime numbers [20 hour] vector and matrices [15 hour] Transpose ,determinant and square matrices [10 hour] inverse of matrices [5 hour] polish notation [5 hour]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Throughout the module, it is important to employ effective learning and teaching strategies to ensure students grasp the concepts and develop the necessary skills. The main strategy that will be adopted in delivering this module: 1. Giving lectures. 2. Practical Exercises: Provide students with opportunities to practice their skills through practical exercises as a basic concept implementation 3. Conducting theoretical exams. 4. Request a report from students to teach them how to do research on a specific topic.	
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	5. Request some small projects from student groups of real-world examples and case studies to demonstrate the relevance and impact of discrete structure	
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10%(10)	4 and 8	1 to 3 and 5 to 7
	Assignments	2	10%(10)	12	1 to 11
	Projects / Pr.	1	10%(10)	11	all
	Seminar	1	10%(10)	15	11 to 14
Summative assessment	Midterm Exam	2hr	10% (10)	10	1 to 9
	Final Exam	3hr	50% (50)	17	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Mathematical Logic, Propositional Logic, Predicate Logic

Week 2	Sets, Set properties, operations of sets
Week 3	Relations and their types, Composite of relations, Equivalent relations
Week 4	Functions, Properties of functions, Recursive functions
Week 5	mathematical induction
Week 6	Basic counting, Sum principles, Product principles
Week 7	Graph theory, Graph types and its applications, Degree points of graphs
Week 8	Trees and its details
Week 9	Number theory, divisibility, greatest common divisor, prime numbers
Week 10	Exam
Week 11	vector and matrices
Week 12	Transpose ,determinant and square matrices
Week 13	inverse of matrices
Week 14	polish notation
Week 15	seminar discussion
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	1-Dr Jassim toama sarsoh , "Discrete structure", 1992. 2- Discrete mathematics, Seymour Lipschutz, Marc Lipson 2007.	yes
Recommended Texts	1-Discrete Mathematical Structures With Applications To Computer Science By Trem Blay Manohar. 2-Introduction To Discrete Structures By perpestrate And Yeh , 1973 3-Discrete Mathematics by Seymour Lipschutz and Marc Lipson , 2007	yes
Websites	google scholar	

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
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Logic Design		Module Delivery		
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	MCSAI106				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		UGI	Semester of Delivery		2
Administering Department		Type Dept. Code	College	Type College Code	
Module Leader	Dr.Ahmed Ali Talib		e-mail	Ahmed.ali@alkafeel.edu.iq	
Module Leader's Acad. Title		Lecture	Module Leader's Qualification		Ph.D.

Module Tutor	Dr.Ahmed Ali Talib	e-mail	Ahmed.ali@alkafeel.edu.iq
Peer Reviewer Name	Non	e-mail	...
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Non	Semester	...
Co-requisites module	Non	Semester	...

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	This course aims to give fundamentals of the number systems arithmetic and representation. The course focuses on binary numbers, because the machine language is represented as binary patterns. After understanding the machine signals (zero and one), the course deals with logical gates, Boolean algebra and logical expression, and digital system design.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Logic Gates Learning Objectives Learn that there is a one-to-one relationship between logic gates and Boolean expressions Learn how logic gates are combined to build circuits within processors Learn how logic gates are used to evaluate Boolean expressions to produce a result. Learn how logic gates can be combined to create full systems Learn what full and half adders are.
Indicative Contents المحتويات الإرشادية	Logic gates are based on Boolean algebra [50 hrs]. At any given moment, every terminal is in one of the two binary conditions, false or true. False represents 0, and true represents 1. Depending on the type of logic gate being used and the combination of inputs, the binary output will differ [50 hrs]. Direct contact with students in theoretical or practical sessions for different subjects such as (Standard Forms of Boolean Expressions, Boolean Expressions and Truth Tables, The Karnaugh Map, Karnaugh Map SOP Minimization, Karnaugh Map POS Minimization, Basic Combinational Logic Circuits) [70 hrs].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	various strategies can be employed to facilitate effective learning and engagement. Here are some learning and teaching strategies commonly used, Lectures: Delivering lectures to present theoretical concepts, principles, and foundational knowledge. Interactive Discussions: Encourage students to actively participate in discussions by asking questions, sharing their thoughts, and engaging in peer-to-peer learning. Discussions can focus on challenging concepts. Hands-on Lab Sessions: Conduct practical lab sessions where students can gain hands-on experience. Assessments and Feedback: Use a variety of assessment methods such as quizzes, assignments, projects, and exams to evaluate students' understanding
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	7,12	lec1 to lec 12
	Assignments	1	10% (10)	11	lec 1 to lec 11
	Projects / Lab.	1	10% (10)	14	All
	Projects / Pr.				
	Seminar	1	10% (10)	15	All
Summative assessment	Midterm Exam	2hr	10% (10)	9	
	Final Exam	3hr	50% (50)	17	All

Total assessment	100% (100 Marks)		
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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Number Systems, Binary Numbers, Decimal-to-Binary Conversion
Week 2	Binary Arithmetic, Complements of Binary Numbers
Week 3	Signed Numbers, Arithmetic Operations with Signed Numbers
Week 4	Hexadecimal Numbers, Binary Coded Decimal (BCD) 100, Digital Codes
Week 5	Logic Gates
Week 6	Fixed-Function Logic Gates
Week 7	Boolean Operations and Expressions, Laws and Rules of Boolean Algebra
Week 8	Midterm Exam
Week 9	Standard Forms of Boolean Expressions
Week 10	Boolean Expressions and Truth Tables
Week 11	The Karnaugh Map
Week 12	Karnaugh Map SOP Minimization
Week 13	Karnaugh Map POS Minimization
Week 14	Basic Combinational Logic Circuits
Week 15	Implementing Combinational Logic
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week	Material Covered
Week 1	Number Systems
Week 2	Logic Gates

Week 3	And , OR gates
Week 4	Arithmetic operation gate
Week 5	Addition, subtraction operations
Week 6	multiplication and division process
Week 7	XOR, XNOR gates
Week 8	Design for logic circuits
Week 9	convert from logic circuits to truth table
Week 10	Timing diagram
Week 11	The Karnaugh Map
Week 12	Karnaugh Map SOP Minimization
Week 13	Karnaugh Map POS Minimization
Week 14	Basic Combinational Logic Circuits
Week 15	Implementing Combinational Logic

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas L. Floyed, "Digital Fundamentals"	
Recommended Texts	Digital Fundamentals 11 th Edition, 2015	
Websites	http://www.sasurieengg.com/e-course-material/I-year-E-course-material-II-sem/7.CS6201%20-DPSD.pdf https://www.scribd.com/doc/219587519/Digital-Principles-and-System-Dsign https://www.vidyarthiplus.com/vp/thread-17782.html#.WFrbFN96po	

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 DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	KNOWLEDGE REPRESENTATION		Module Delivery	
Module Type	CORE		Theory Lecture Lab Tutorial Practical Seminar	
Module Code	MCSAI108			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	UGI	Semester of Delivery	2	
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Ahmed Ali Talib		e-mail	Ahmed.ali@alkafeel.edu.iq
Module Leader's Acad. Title	Lecture	Module Leader's Qualification	PhD	
Module Tutor	Assist. Lect. Hashim Ali Hashim		e-mail	hashim.ali@alkafeel.edu.iq
Peer Reviewer Name		e-mail		
Review Committee Approval		Version Number		
Relation With Other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	None		Semester	
Co-requisites module	None		Semester	
Module Aims, Learning Outcomes and Indicative Contents				
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية				
Module Aims أهداف المادة الدراسية	13. 1. To learn how to solve problems, develop problem-solving skills, and acquire knowledge.			
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learn how to transform cognitive statements into logical statements. 2. Develop mental abilities. 3. Develop skills.			
Indicative Contents المحتويات الإرشادية	Week 1: Introduction to Knowledge Representation (facts, rules, objects). Week 2: Propositional Logic Basics (True/False statements, AND, OR, NOT).			

	Week 3: Rules and Simple Inference (IF-THEN rules).
	Week 4: Objects and Relations (Basic First-Order Logic, predicates, and variables).
	Week 5: Understanding Meaning in Logic (syntax vs. semantics).
	Week 6: Forward and Backward Reasoning (data to conclusion, goal to facts).
	Week 7: Resolution and Simple Proofs.
	Week 8: Semantic Networks (graph-based representation using nodes and edges).
	Week 9: Frames and Slots (structured object representation).
	Week 10: Ontologies and Hierarchies (taxonomies, 'is-a' and 'part-of' relationships).
	Week 11: Introduction to Description Logic (defining categories and subclasses).
	Week 12: Uncertainty in Knowledge (probabilistic reasoning).
	Week 13: Knowledge in Expert Systems (decision-making rules).
	Week 14: Logic Programming Basics (Prolog Style: facts, rules, queries).
	Week 15: Review and Mini Project (applying learned techniques).
	Learning and Teaching Strategies استراتيجيات التعلم والتعليم
	Strategies Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their mathematical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	7.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	66	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.4
Total SWL (h/sem)	175		

الحمل الدراسي الكلي للطلاب خلال الفصل	
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Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	5% (5)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	15% (15)		
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	➤ Introduction to Knowledge Representation Introduce KR as the way computers understand and organize information. Discuss why KR is important in AI and types of knowledge: facts, rules, objects.
Week 2	➤ Propositional Logic Basics Learn basic logic: True/False statements, AND, OR, NOT. Understand how to express simple facts logically.
Week 3	➤ : Rules and Simple Inference Learn IF-THEN rules. Understand how computers use rules to draw conclusions.
Week 4	➤ Objects and Relations (Basic FOL) Introduce basic First-Order Logic: objects, properties, and relationships. Learn simple predicates and variables.
Week 5	➤ Understanding Meaning in Logic Learn the difference between logical syntax (symbols) and semantics (meaning). Understand how statements are true/false in real life.
Week 6	➤ Forward and Backward Reasoning Learn how reasoning can derive new facts. Forward chaining (data → conclusion) and backward chaining (goal → required facts).
Week 7	➤ Resolution and Simple Proofs Learn the concept of proving statements using resolution in logic.
Week 8	➤ Semantic Networks Learn graph-based knowledge representation: nodes = concepts, edges = relationships.
Week 9	➤ Frames and Slots Learn structured object representation: frames (objects) and slots (attributes).
Week 10	➤ Ontologies and Hierarchies

	Learn to organize knowledge into hierarchies (taxonomy). Understand 'is-a' and 'part-of' relationships.
Week 11	➤ Introduction to Description Logic Learn simple description logic to define categories, subclasses, and relations..
Week 12	➤ Uncertainty in Knowledge Introduce uncertainty and probabilistic reasoning. Learn to represent 'maybe' facts.
Week 13	➤ Knowledge in Expert Systems Learn how KR is used in decision-making systems (rules for advice).
Week 14	➤ Logic Programming Basics (Prolog Style) Introduce logic programming: facts, rules, queries.
Week 15	➤ Review and Mini Project Apply all learned KR techniques in a small project.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	The specific textbook is not named, but it is indicated as available in the library .	Yes
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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required