



**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 Cyber Security
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 light of recent developments and advances in the educational system in Iraq. It encompasses the academic programme description in both the traditional form (annual and semestral systems), as well as 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 Pathway.

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: 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 the student is expected to achieve, demonstrating the extent to which the student has maximised 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 activities necessary for their achievement in concise terms, 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 (Bologna Pathway), 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, describing 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: Cyber Security

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



Signature:

Head of Department Name:

Date: 12/4/2026

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:

12/4/2026

Approval of the Dean

A.B. Sharba

12/4/2026

1. Programme Vision

To achieve leadership in empowering the digital space through innovative education, preparing graduates specialised in cybersecurity in accordance with Islamic values and rigorous international standards.

2. Programme Mission

The department endeavours to provide a stimulating academic environment that equips students with the skills to protect information infrastructure and develop intelligent security solutions that serve national security and sustainable digital transformation, while upholding professional ethics.

3. Program Objectives

1. To prepare national cadres capable of countering cyber threats and managing digital risks professionally.
2. To develop applied research in encryption technologies, network security, and artificial intelligence related to digital security.
3. To implement national standards pertaining to science programmes and 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 continuously update curricula to keep pace with the rapid evolution of cyberattack methods and defensive countermeasures.
6. To build strategic collaboration with the public and private sectors to provide security consultancy and practical field training for students.
7. To consolidate legal and ethical principles in the handling of data and sensitive systems.

4. Programmatic Accreditation

None

5. Other External Influences

None

6. Program Structure

Structure Component	No. of Courses	Credit Hours	Percentage	Notes
Institutional Requirements	6	12	11.5%	
College Requirements	2	20	4%	
Departmental Requirements	44	208	84.5%	
Summer Training				
Other				

7. Program Curriculum

Year / Level	Course Code	Course Title	Theory	Lab
Year 1 / Semester 1	CSI111	Programming Fundamentals	2	2
	DCS111	Computer Organization	2	2
	CSI112	Mathematics	3	0
	DCS113	Discrete Structures (1)	2	0

	DCS114	Information Security Principles	2	2
	uokfl-6	Democracy and Human Rights	2	0
	uokfl-03	English Language 1	2	0
Year 1 / Semester 2	CSI12	Advanced Programming	2	2
	DCS122	Cybersecurity Principles	2	2
	CSI12	Discrete Structures (2)	3	0
	uokfl-01	Arabic Language (1)	2	0
	CSI123	Logic Design	2	2
	DCS123	Computational Theory	2	0
	DCS124	Security Awareness and Training	2	0
Year 2 / Semester 1	DCS211	Object-Oriented Programming (1)	2	2
	DCS212	Database Fundamentals	2	2
	CSI211	Numerical Methods	2	2
	DCS213	Modern Cryptosystems (1)	2	2
	DCS214	Data Structures	2	2
	KU09	English Language (2)	2	0
	KU08	Crimes of the Defunct Ba'ath Party	2	0
Year 2 / Semester 2	DCS221	Object-Oriented Programming (2)	2	2
	DCS222	Cybersecurity Tools	2	2
	DCS223	Distributed Databases	2	2
	CSI221	Statistics and Probability	2	0
	DCS224	Software Security	2	0
	DCS225	Cryptography (2)	2	2
	KU26	Arabic Language (2)	2	0
Year 3 / Semester 1	DCS311	Coding and Information Theory	2	0
	DCS312	Cloud Computing Fundamentals	2	2
	DCS313	Computer Networks	2	2
	DCS314	Malware Analysis	2	2
	DCS315	Artificial Intelligence	2	2
	DCS316	Computer Architecture	2	0
Year 3 / Semester 2	DCS321	Compiler Design	2	2
	DCS322	Network Security	2	2
	DCS323	Database Security	2	2
	DCS324	Modelling and Simulation	2	0
	DCS325	Secure Communication Protocols	2	2

	DCS326	Ethical Hacking	2	2
Year 4 / Semester 1	DCS411	Operating Systems	2	2
	DCS412	IoT Security	2	2
	DCS413	Web Application Programming	2	2
	DCS414	E-Governance Security	2	0
	DCS415	Cloud Computing Security	2	2
	DCS416	Graduation Project 1	0	2
Year 4 / Semester 2	DCS421	Operating System Security	2	2
	DCS422	Web Application Security	2	2
	DCS423	Digital Forensics	2	2
	DCS424	Intelligent Threat Analysis	2	2
	DCS425	Information Risk Management	2	0
	DCS426	Graduation Project 2	0	2

8. Expected Programme Learning Outcomes

Knowledge	A1 — Comprehensive familiarity with the fundamental concepts and principles related to cybersecurity specialisations and fields. A2 — Deep understanding and full mastery of the approved courses and curricula within the programme. A3 — Development of cognitive and analytical capacities to diagnose technical challenges and devise effective scientific solutions.
Skills	B1 — Application of theoretical knowledge professionally in practical technical environments and situations. B2 — Proficiency in operating specialised hardware, software, and modern technologies relevant to the field. B3 — Acquisition of advanced programming skills and effective use of diverse programming languages in system development and protection.
Values	C1 — Consolidation of professional principles and ethics to produce a conscientious graduate distinguished by dedication and integrity. C2 — Reinforcement of commitment to scientific and ethical methodology, and cultivation of a spirit of citizenship and social responsibility. C3 — Channelling and directing students' energies towards continuous development and the building of a promising professional career.

Teaching and Learning Strategies / Assessment Methods

9. Teaching & Learning Strategies	1. Emphasis on the need for 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. Performance of student-assigned tasks. 5. Execution of projects with defined objectives.

11. Teaching Faculty

Academic Rank	General Specialisation	Specific Specialisation	Staff	Lecturer
Professor (Dr.)	English Language			1
Associate Professor (Dr.)	Computer Science			1
Lecturer (Dr.)	Computer Science	Natural Language Processing		1
Lecturer (Dr.)	Computer Engineering Technology	Communications		1
Lecturer	Law	Private Law		1
Assistant Lecturer	Computer Science	Artificial Intelligence		1
Assistant Lecturer	Computer Science	Network Security		1
Assistant Lecturer	Computer Engineering Technology	Artificial Intelligence		1
Assistant Lecturer	Computer Science	Networks and Communications		1
Assistant Lecturer	Computer Science	Artificial Intelligence		1
Assistant Lecturer	Accounting	Mathematics and Statistics		1
Assistant Lecturer	Arabic Language			1

Professional Development

Orientation of New Faculty Members

Professional Development of Faculty Members

12. Admission Criteria

The department admits graduates of the preparatory stage from preceding years through the centralized admissions channel, after which students compete internally within the college on the basis of their grade point average and stated preferences. The department admits students from the scientific track of the preparatory stage, in accordance with the applicable regulations of the Ministry of Higher Education and Scientific Research.

13. Principal Sources of Programme Information

The applicable laws and directives of the Ministry of Higher Education and Scientific Research. International educational standards as observed by the majority of universities worldwide. The official website of the university and college.

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	اساسيات البرمجة Programming Fundamentals		Module Delivery		
Module Type	Basic learning activities		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar		
Module Code	CSI111				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level		UGI	Semester of Delivery		1
Administering Department		Cyber Security	College	Science	
Module Leader	Fatima Tahseen		e-mail	fatimaalbadry@alkafeel.edu.iq	
Module Leader's Acad. Title		Assist. Lec.	Module Leader's Qualification		Master
Module Tutor	Fatima Tahseen		e-mail	fatimaalbadry@alkafeel.edu.iq	
Peer Reviewer Name			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. This course aims to provide students with an overview of programming languages. 2. Enable the student to design algorithms and flowcharts to solve and develop programming issues.
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	3. Learning and understanding basic concepts and methods of structured programming using PYTHON 4. Enable the student from converting algorithms /flowcharts into an executable program on the computer. 5. Enable the student to use control Statements.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the programming and programming languages. 2. Understand the algorithms. 3. Learn how to write algorithms and flowcharts. 4. Learn how to analyze problems, find appropriate solutions, and develop correct algorithms that contribute to solving these problems. 5. Learn how to write simple programs. 6. Learn how to convert the algorithm into a program. 7. Understanding the Control statements, and learn how to use them in the programs.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A:</u> - Programming and programming languages. - Algorithms and Flowcharts. - Python Basics. <u>Part B:</u> - Selection Statements. - If and IF Else statements. - Switch – case statements. <u>Part C:</u> - Looping Statements - While Statement - Do – While Statement - For statement

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	In this course, the student learned the basics of programming through theoretical lectures and practical application in the laboratory, in addition to daily assignments and daily tests, asking some questions and using the brainstorming method.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem)	122	Unstructured SWL (h/w)	8

الحمل الدراسي غير المنتظم للطلاب خلال الفصل		الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	200		

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 and #10, #11
	Assignments	4	10% (10)	3, 5 and 8 and 9	LO #3, #4 and #6, #7
	Projects / Lab.	15	10% (10)	Continuou s	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	12	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to Programming - Defining the programming, programming language, Levels of programming languages. - Steps to solve the problems.
Week 2	Algorithms - Defining the algorithms. - Algorithm properties. - Flowcharts. - Writing a simple algorithm.
Week 3	More about algorithms

	• More examples on algorithms
Week 4	Introduction to Python language • Python languages basics. • Write a simple program. • Converting algorithms to programs.
Week 5	Python basics • Keywords and Identifier. • Data types. • Variables and their Declarations. • Variable initialization. • Variable scope.
Week 6	More about Python basics • Arithmetic operation. • Operation order. • Comparison and logic operations.
Week 7	More about Python basics • Unary operators • Increment and decrement operators. • Characters and Literal in PYTHON • Objects, variables and constants.
Week 8	Control Statements Selection Statements • Selection Statement (IF statement) • Examples on If statements.
Week 9	More about selection Statements • If – else Statement • Examples on if – else statement.
Week 10	More about selection Statements • Switch case statement. • Examples on switch - case statement.
Week 11	Control Statements

	Looping Statements • While statement • Examples on while statements.
Week 12	More about Looping statements • Do –while Statement • Examples on Do – while statement.
Week 13	More about Looping statements. • For Statement • Examples on for statement.
Week 14	Control Statements. • Jumping statements (break and continue) • Examples on break and continue.
Week 15	Comprehensive review of the course

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Introduction to Python language editor (editor interface, menu, how to run and check program)
Week 2	Writing a simple program
Week 3	Writing more programs
Week 4	Writing more simple programs
Week 5	Performing the arithmetic and logic programs
Week 6	Perform the unary operator examples.
Week 7	Perform the increments and decrement operations.
Week 8	Perform the if statement examples
Week 9	Perform the if – else examples
Week 10	Perform the switch case examples
Week 11	Perform the while examples
Week 12	Perform the do – while examples
Week 13	Perform the for statements examples
Week 14	Perform the break and continue examples
Week 15	Comprehensive review of the course

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Python: How To Program, Deitel and Deitel, 4th edition, Prentice Hall, 2002. - Deitel, Paul, Harvey Deitel, and Paul J. Deitel. Python for Programmers. Pearson, 2019.. - Sakpere, Aderonke Busayo, and Adedeji Folashade. "Comparative Analysis of Two Programming Platforms for Beginners: Python and Scratch." International Journal of Education and Management Engineering 14.5 (2024): 46-62..	No
Recommended Texts	Python Programming: A Complete Guide to Mastering the C Language, Augie Hansen and August Hansen, Addison-Wesley, 1989.	No
Websites	https://www.python.org/	

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 Information

معلومات المادة الدراسية

Module Title	هيكل متقطعة (1) Discrete Structures	Module Delivery
Module Type	B	☒ Theory

Module Code	DCS113		☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar		
ECTS Credits	4				
SWL (hr/sem)	150				
Module Level		UGI	Semester of Delivery		1
Administering Department		Cyber Security	College	Science	
Module Leader	Ayat Ma'an		e-mail	ayaat.maan@alkafeel.edu.iq	
Module Leader's Acad. Title		Assist. Lec.	Module Leader's Qualification		Master
Module Tutor	Ayat Ma'an		e-mail	ayaat.maan@alkafeel.edu.iq	
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date			Version Number		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	- The course aims to study discrete structures in terms of the use of algebraic laws. - Charts and shapes - To reach an easy and clear way for students - To solve all material issues related to discontinuous structures. - In addition to studying quantifiers and predicates logic - Studying the different groups, theories and schemes so that the student can solve the duties required of him and the exercises with simplicity, ease and clarity.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Learn how to solve algebraic laws, groups and Venn diagrams correctly, efficiently and clearly - The subjects studied in discrete structures are either definite or indefinite. The term finite structures are sometimes used to refer to fields of discrete mathematics that deal with finite groups - especially in fields of business relevance.

	4. Discrete mathematical structures have gained wide importance over the recent decades due to their wide applications in computer science. 5. Discrete mathematics terms and notations are useful for studying and expressing problems of objects in computer programming and algorithms. 6. Some branches of discrete mathematics are also useful in studying some business and economic issues.
Indicative Contents المحتويات الإرشادية	The course aims to study discontinuous structures in terms of the use of algebraic laws, diagrams and shapes to reach an easy and clear way for students to solve all issues related to the subject of discontinuous structures. In addition to studying quantifiers and predicates logic and studying different groups, theories and schemes so that the student can solve the duties required of him and the exercises with simplicity, ease and clarity.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Discrete structures are the study of mathematical structures that are essentially discontinuous, in the sense that they do not require the presence of the adjective of communication and do not require it in order to study this subject. Most of the topics studied in discrete mathematics are related to countable sets (a completely different concept from finite sets), an example of which is the set of integers. Discrete mathematics has gained wide importance in recent decades due to its wide applications in computer science. Discrete mathematics terms and notations are useful for studying and expressing objects in computer programming and algorithms. Some branches of discrete mathematics are also useful in studying some business and economic issues.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	3.5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	9	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	0	0% (10)	Continuous	All
	Report	15	15% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2hr	15% (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	Definition to discrete structure
Week 2	Conditional statement, Type of statements
Week 3	Algebra of propositions
Week 4	Laws of Algebra propositions
Week 5	Define of Predicates logic
Week 6	Define of quantifiers and examples
Week 7	Sets theory
Week 8	Type of set operation
Week 9	Venn diagram in details
Week 10	Laws of set operation and type
Week 11	Define of Cartesian product
Week 12	types of relations
Week 13	Graphs of relation, construct the relation
Week 14	How to solve laws of relations
Week 15	Other approaches to computability
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Discrete Mathematics and Its Applications_7th_Edition	
Recommended Texts	Foreman, M., Akihiro Kenmore, eds. Handbook of Set Theory. 3 vols., 2010. Each chapter surveys some aspect of contemporary research in set theory. Does not cover established elementary set theory.	

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 Information

معلومات المادة الدراسية

Module Title	Mathematics رياضيات			Module Delivery	
Module Type	Support			☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CSI112				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level		UGI	Semester of Delivery		1
Administering Department		Cyber Security	College	Science	
Module Leader	Hashim Ali Hashim		e-mail	hashim.ali@alkafeel.edu.iq	
Module Leader's Acad. Title		Assist. Lec.	Module Leader's Qualification		Master
Module Tutor	Hashim Ali Hashim		e-mail	hashim.ali@alkafeel.edu.iq	
Peer Reviewer 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-provide the student with knowledge of the function and some types of functions 2-rein forcing studying and understanding some math terms such relation,sequences and series and calculus 3-enable the student to interpret and write math application in the field of study 4-applying math rules and rules and developing inference and conclusion among student 5- identify the ability to derive functions and the integration of function and its relationship to continuity 6-know the applications of calculus and integration in various sciences
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Introducing math concepts 2-Appling math concepts 3-Realizing the importance of math concepts in scientific life 4-Distinguishing between different math concepts 5-Developing students math concepts 6-Trying to reach new math concepts
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Real number and properties of operations arithmetic, domain function definition and the corresponding domain ,the extent of the function ,drawing functions and express method, the relationship between the derivative and continuity, Rolls theorem and Mean value theorem ,define integration and study methods of integration ,fundamental laws of integration, Application of integration , improper integrals.

Learning and Teaching Strategies			
استراتيجيات التعلم والتعليم			
Strategies	. 1-Giving scientific lectures in classrooms and using the (data show) table statement of the main ideas of the topic		
	2-Guiding students to some websites to benefit from them		
	3-Assign the student to prepare brief reports on some topics and carry out homework		
Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem)	63	Structured SWL (h/w)	4
الحمل الدراسي المنتظم للطلاب خلال الفصل		الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem)	87	Unstructured SWL (h/w)	6
الحمل الدراسي غير المنتظم للطلاب خلال الفصل		الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem)	150		

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	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	report	2	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	20% (20)	6 and 13	LO #1 - #7
	Final Exam	3hr	50% (50)	7	All
Total assessment			100% (100 Marks)	15	

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

Week	Material Covered
Week 1	Real number
Week 2	Functions
Week 3	Limit and continuity
Week 4	Derivative
Week 5	Rolls theorem and Mean value theorem
Week 6	Application of Derivative
Week 7	definite integration
Week 8	indefinite integration
Week 9	Transcendental function
Week 10	Transcendental function
Week 11	Methods of integration
Week 12	Methods of integration
Week 13	Methods of integration

Week 14	Application of integration
Week 15	Faulty integrations

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Thomas G.B.Calculus and Analytic Geometry 4th 1984	Yes
Recommended Texts	www. Free science. Info/mathالمواقع الالكترونية الرصينة	

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 Information

معلومات المادة الدراسية

Module Title	Computer Organization تنظيم الحاسوب			Module Delivery	
Module Type	E			☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	DCS111				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level		UGI	Semester of Delivery		1
Administering Department		Cyber Security	College	Science	
Module Leader	Mohsin Mohammed Mahdi		e-mail	muhsen.mohammad@alkafeel.iq	
Module Leader's Acad. Title		Assist. Lec.	Module Leader's Qualification		Master
Module Tutor	Mohsin Mohammed Mahdi		e-mail	muhsen.mohammad@alkafeel.iq	
Peer Reviewer Name			e-mail	E-mail	
Scientific Committee Approval Date			Version Number		1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI112	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Understanding Computer Architecture: - Gain a comprehensive understanding of computer organization and architecture principles. - Understand the components and their interconnections in a computer system. 2. Data Representation and Arithmetic: - Learn various number systems and their conversions (binary, decimal, hexadecimal). - Understand how data is represented and manipulated in a computer system.
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	• Perform arithmetic operations on binary numbers. 3. Memory Systems: • Understand the organization and hierarchy of computer memory systems. • Learn about caching techniques and their impact on performance. • Study memory management and addressing techniques. 4. Instruction Set Architecture (ISA): • Learn about different instruction set architectures and their characteristics. • Understand the components and execution of instructions. • Analyze the relationship between ISA and machine language. 5. Processor Organization: • Understand the structure and components of a processor. • Learn about instruction pipelining and its benefits and challenges. • Study the design and implementation of control units. 6. Input/Output (I/O) Systems: • Learn about different I/O devices and their interfaces. • Understand the techniques used for I/O data transfer. • Study interrupt handling and DMA (Direct Memory Access). 7. Parallel Processing and Multiprocessor Systems: • Understand the concepts of parallel processing and its benefits. • Study different parallel processing architectures and their characteristics. • Learn about multiprocessor systems and their organization. 8. Performance Evaluation and Optimization: • Learn performance metrics and evaluation techniques for computer systems. • Understand the factors affecting computer system performance. • Study optimization techniques to improve system performance. 9. Emerging Trends and Technologies: • Explore current and emerging trends in computer organization. • Study new technologies and their impact on computer systems. • Understand the challenges and opportunities in designing future computer architectures.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the fundamental principles of computer organization and architecture, including the components and their interactions within a computer system. 2. Demonstrate knowledge and proficiency in various number systems, data representation, and arithmetic operations in a computer system. 3. Analyze and evaluate different memory systems, including cache memory and main memory, and understand their impact on computer performance. 4. Describe and interpret different instruction set architectures (ISAs), including their components, instruction formats, and execution. 5. Analyze and evaluate the design and organization of processors, including

	pipelining techniques and control unit implementation. 6. Understand the principles and techniques of input/output (I/O) systems, including I/O devices, interfaces, interrupts, and direct memory access (DMA). 7. Discuss and evaluate parallel processing and multiprocessor systems, including concepts of parallelism, parallel architectures, and interconnectivity. 8. Apply performance evaluation techniques to measure and analyze the performance of computer systems, and propose optimization strategies for improving system performance. 9. Stay informed about current and emerging trends and technologies in computer organization, and assess their potential impact on future computer architectures. 10. Demonstrate effective problem-solving, critical thinking, and analytical skills in the context of computer organization and architecture. 11. Communicate effectively, both orally and in writing, about complex concepts and topics related to computer organization. 12. Work collaboratively and contribute effectively as a team member in group projects and activities related to computer organization.
Indicative Contents المحتويات الإرشادية	1. Introduction to Computer Organization: o Basic concepts and terminology in computer organization. o Historical development and evolution of computer architecture. 2. Digital Logic and Boolean Algebra: o Binary representation and arithmetic operations. o Logic gates, Boolean functions, and truth tables. o Combinational and sequential logic circuits. 3. Data Representation and Arithmetic: 84 o Number systems: binary, decimal, hexadecimal. o Signed and unsigned integer representation. o Floating-point representation and arithmetic operations. 4. Central Processing Unit (CPU): o Instruction set architecture (ISA) and machine language. o CPU organization and components. o Control unit, instruction fetching, and execution. 5. Memory Systems: o Memory hierarchy and storage technologies. o Cache memory organization, principles, and mapping techniques. o Main memory organization and addressing modes. o Virtual memory concepts and techniques.

	6. Input/Output (I/O) Systems: o I/O devices, interfaces, and data transfer methods. o Interrupt handling and interrupt-driven I/O. o Direct Memory Access (DMA) and its role in data transfer. 7. Pipeline Processing: o Instruction pipelining concepts and stages. o Hazards and techniques for hazard detection and resolution. o Performance metrics and improvements in pipeline processing. 8. Parallel Processing and Multiprocessor Systems: o Concepts of parallel processing and its benefits. o Types of parallel architectures: SIMD, MIMD, and multicore. o Interconnection networks and communication among processors. 9. Performance Evaluation and Optimization: o Performance metrics and measurement techniques. o Bottleneck identification and performance analysis. o Techniques for optimizing computer system performance. 10. Emerging Trends and Advanced Topics: o Advanced topics in computer organization, such as superscalar processors, out-of-order execution, and speculative execution. o Emerging technologies and their impact on computer organization, such as quantum computing and neuromorphic computing.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Understand the Fundamentals: - Start by grasping the foundational concepts and principles of computer organization, such as binary representation, digital logic, and Boolean algebra. - Build a strong understanding of number systems, data representation, and arithmetic operations used in computer systems. 2. Visualize and Diagram: - Use visual aids, diagrams, and flowcharts to represent and understand the structure and organization of computer components. - Draw diagrams to illustrate the flow of data and control signals within a computer system, such as the CPU, memory, and I/O devices. 3. Hands-on Experience: - Gain practical experience by working with computer hardware and software. This can involve assembling computers, configuring components, or writing low-level programs. - Experiment with simulators or emulators to observe how instructions are executed and how data flows through different computer components. 4. Relate to Real-World Examples:

	• Relate the concepts of computer organization to real-world examples and applications. Understand how the principles of computer organization are applied in everyday computing devices. 5. Analyze and Evaluate Case Studies: • Study and analyze case studies of actual computer architectures and designs. • Examine the trade-offs made in the design of different computer systems, considering factors such as performance, power consumption, and cost. 6. Solve Practice Problems: • Practice solving problems related to computer organization. This could involve analyzing and designing digital circuits, writing assembly language programs, or optimizing system performance. 7. Stay Updated with Current Research: • Keep up-to-date with the latest advancements and research in computer organization. • Read academic papers, attend conferences, and follow industry trends to understand emerging technologies and new approaches to computer organization. 8. Collaborate and Discuss: • Engage in discussions and collaborate with peers or study groups. Share knowledge, exchange ideas, and clarify concepts through group discussions or online forums. 9. Seek Guidance and Resources: • Consult textbooks, online resources, and academic materials that cover computer organization. • Seek guidance from instructors, tutors, or professionals with expertise in computer architecture and organization. 10. Practice Conceptual Mapping: • Develop a conceptual map or framework to connect the different topics and components of computer organization. • Understand how the various concepts and components fit together to form a cohesive computer system.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (hr/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (hr/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
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Unstructured SWL (hr/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	37	Unstructured SWL (hr/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2.5
Total SWL (hr/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	#1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	#3, #4 and #6, #7
	Projects / Lab.	15	10% (10)	All	
	Report	1	10% (10)	13	#5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	#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 Security - Basic principles - Overview of system security. - How to establish trust in computing systems
Week 2	Brief Introduction to Cryptography - Symmetric and asymmetric cryptosystems - Stream ciphers and block ciphers
Week 3	Brief Introduction to Cryptography - Hash functions, MACs, and digital signatures - Advanced topics: Blockchains
Week 4	Intrusion Detection - Different types - Intrusion detections techniques

Week 5	Malware Detection - Hardware and software malware detection - Evasive malware
Week 6	Hardware Trust Units - Basic principles of establishing trust in hardware - Attestation, TPM, and secure boot
Week 7	Trusted Execution Units - SGX and Trustzone (attacks, defenses, and use-cases) - Open-Source Enclaves
Week 8	Memory Safety and Security - Attacks (buffer-overflow, ROP, jump-oriented) - Hardware-Support for memory security - Program analysis tools and methodologies
Week 9	Machine Learning Security Security in ML (attacks and defenses)
Week 10	Machine Learning Privacy - Privacy in ML (attacks) - Privacy-Preserving Computation
Week 11	Side-Channels - Micro-architectural side-channels - Physical Side-Channels
Week 12	Hardware Security Hardware Trojan
Week 13	Hardware Security Fault attacks (PMU, rowhammer)
Week 14	Hardware Security Supply-chain security
Week 15	Hardware Security PUF and encryption implementation

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
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Week 1	Introduction to Python language editor (editor interface, menu, how to run and check program)
Week 2	Writing a simple program
Week 3	Writing more programs
Week 4	Writing more simple programs
Week 5	Performing the arithmetic and logic programs
Week 6	Perform the unary operator examples.
Week 7	Perform the increments and decrement operations.
Week 8	Perform the if statement examples
Week 9	Perform the if – else examples
Week 10	Perform the switch case examples
Week 11	Perform the while examples
Week 12	Perform the do – while examples
Week 13	Perform the for statements examples
Week 14	Perform the break and continue examples
Week 15	Comprehensive review of the course

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Textbook: 1. Forouzan, B.A. and Mukhopadhyay, D., 2015. Cryptography and network security (Vol. 12). New York, NY, USA:: Mc Graw Hill Education (India) Private Limited. Er Vikrant Vij - Computer Networks-Laxmi Publications (2018)	Yes (E-copy)

	2. Sharma, K., Gigras, Y., Sharma, V., Hemanth, D.J. and Poonia, R.C. eds., 2022. <i>Internet of Healthcare Things: Machine Learning for Security and Privacy</i>. John Wiley & Sons. 3. Tehranipoor, M. and Wang, C. eds., 2011. <i>Introduction to hardware security and trust</i>. Springer Science & Business Media.	
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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	مبادئ أمنية الحاسوب Data Security Principle		Module Delivery
Module Type	B		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	DCS112		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGI	Semester of Delivery	1
Administering Department	Cyber Security	College	Science
Module Leader	Ayat Abbas	e-mail	aayat.alkhazali@alkafeel.edu.iq
Module Leader's Acad. Title	Assist. Lec.	Module Leader's Qualification	Master
Module Tutor	Ayat Abbas	e-mail	aayat.alkhazali@alkafeel.edu.iq
Peer Reviewer Name		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 Aims أهداف المادة الدراسية	1. Confidentiality: Ensure that data is accessible only to authorized individuals or entities, protecting it from unauthorized access or disclosure.

	2. Integrity: Maintain the accuracy, consistency, and trustworthiness of data by preventing unauthorized modifications, corruption, or tampering. 3. Availability: Ensure that data is accessible and usable by authorized users when needed, avoiding disruptions or downtime that could hinder productivity. 4. Authentication: Verify the identity of individuals or systems accessing data to prevent unauthorized access and protect against identity theft or impersonation. 5. Auditing and Accountability: Establish mechanisms to track and monitor data access, modifications, and user activities, enabling traceability, investigation, and accountability in case of security incidents or breaches.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the key principles and concepts of data security. 2. Identify and assess potential risks to data security. 3. Apply appropriate measures to protect data confidentiality and integrity. 4. Implement authentication and access control mechanisms to ensure authorized data access. 5. Develop strategies for ensuring data availability and preventing downtime or disruptions. 6. Demonstrate knowledge of auditing and accountability practices to track and monitor data access. 7. Comply with legal and regulatory requirements related to data security.
Indicative Contents المحتويات الإرشادية	• Threat landscape: Overview of common threats and vulnerabilities in data security. • Risk assessment: Understanding and conducting risk assessments to identify potential security risks. • Encryption and data protection: Exploring encryption techniques and methods to safeguard data. • Access control: Implementing access control mechanisms to regulate data access based on user roles and permissions. • Security policies and procedures: Developing and implementing data security policies and procedures. • Incident response: Understanding incident response protocols to effectively address and mitigate data security incidents. • Compliance and legal considerations: Familiarity with relevant regulations and standards pertaining to data security.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Defense in depth: Implement multiple layers of security controls to create a comprehensive and resilient defense strategy. • Regular updates and patch management: Keep software and systems up to date with the latest security patches and updates to address known vulnerabilities.

	- Employee training and awareness: Educate and train employees on data security best practices and the importance of maintaining strong security measures. - Data classification and protection: Classify data based on its sensitivity and apply appropriate protection measures, such as encryption or access controls.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	9	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	10% (10)	Continuous	All
	Report	15	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction, Basic Security Concepts
Week 2	(Cryptosystem), Components of the Cryptographic System
Week 3	Encryption Algorithms Traditional Transposition
Week 4	Monoalphabetic Substitution, Cipher Systems
Week 5	Homophonic Substitution Cipher Systems

Week 6	Polyalphabetic Substitution Cipher Systems
Week 7	One-Time Pad and Stream Ciphers
Week 8	Mathematical Background
Week 9	Public key Cryptography and RSA
Week 10	Block Ciphers
Week 11	Security Mechanisms, Authentication
Week 12	Firewall Concept
Week 13	Definitions about Viruses, Hackers, Attacks
Week 14	Network Security
Week 15	Review
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Language Principles
Week 2	Language Definitions for Cryptosystem
Week 3	Programs for: Transposition Methods
Week 4	Programs for: Monoalphabetic Substitution Methods
Week 5	Programs for: Homophonic Substitution Methods
Week 6	Programs for: Polyalphabetic Substitution Methods
Week 7	Programs for: LFSR and NLFSR
Week 8	Programs for: Prime, GCD, Inverse
Week 9	Programs for: RSA Algorithm Steps
Week 10	Programs for: DES Algorithm Steps
Week 11	Programs for: Authentication Steps
Week 12	Programs for: Some Applications

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Principles of Information Security" by Michael E. Whitman and Herbert J. Mattord (Latest edition - 2018)	Yes
Recommended Texts	Cryptography and Network Security: Principles and Practice" by William Stallings (Latest edition - 2020)	No

Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	
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Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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	F – Fail	راسب	(0-44)	Considerable amount of work required

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	الديمقراطية وحقوق الإنسان Democracy and Human Rights		Module Delivery
Module Type	S		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	QU02		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	1
Administering Department	Cyber Security	College	Science
Module Leader	Ali Thuban	e-mail	ali.thuban@alkafeel.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Master
Module Tutor	Ali Thuban	e-mail	ali.thuban@alkafeel.edu.iq
Peer Reviewer 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)

المناهج 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 Najj 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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	English Language (1) اللغة الانكليزية (1)		Module Delivery	
Module Type	Support		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	QU01			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	UGI	Semester of Delivery	1	
Administering Department	Cyber Security	College	Science	
Module Leader	Haider Ghazi	e-mail	E-mail	
Module Leader's Acad. Title	Assit. Prof.	Module Leader's Qualification	Ph.D.	
Module Tutor	Haider Ghazi	e-mail		
Peer Reviewer Name		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 Aims أهداف المادة الدراسية	1. To Develop English skills by listening and writing . 2. Learning English and conversation training 3. Conversations in English in the field of computers (Information Technology). 4. The student receives all the information about the computer and at the same time learns and trains the correct pronunciation in this language. 5. conversations between students about everything related to Information Technology. 6. Obtain English skill support high level of graduate .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Learning English and conversation training. 2. Listening and writing in English language. 3. Basic information about Information Technology (IT). 4. Learns and trains the correct pronunciation in this language. 5. Learn and write common sentences in the English language. 6. Learn to write words that end or start with the same syllable in the English language. 7. Learn about job interviews. 8. Learn personal presentation in English language.
Indicative Contents المحتويات الإرشادية	<u>Unit 1: E-commerce companies [8hrs]</u> E-commerce companies: listening, writing, reading, speaking and vocabulary. E-commerce features: listening, writing, language, speaking and vocabulary. Transaction security: listening, writing, language, speaking and vocabulary. Online transaction: listening, writing, language, speaking and vocabulary. <u>Unit 2: Network systems [8hrs]</u> Types of network: describe networks and make recommendations. Networking hardware: listening, writing, language, speaking and vocabulary. Talking about the past: listening, writing, language, speaking and vocabulary. Network range and speed: listening, writing, language, speaking and vocabulary. <u>Unit 3: IT support [8hrs]</u> Fault diagnosis: talk about results of an action, language, speaking and vocabulary. Software repair: listening, writing, language, speaking and vocabulary. 40 Hardware repair: listening, writing, language, speaking and vocabulary. Customer service: explain the use of things. listening, writing and vocabulary. <u>Unit 4: IT security and safety [8hrs]</u> Security solutions: listening, writing, language, speaking and vocabulary. Workstation health and safety: listening, writing, language, speaking and vocabulary. Security procedures: listening,

	writing, language, speaking and vocabulary. Reporting incidents: listening, writing, language, speaking and vocabulary.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in the delivery of this units are to encourage students to participate in writing and reading exercises, while improving their listening skills. This will be achieved through student interaction in class and completion of daily assignments (homework).

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
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	E-commerce companies +listening, speaking and vocabulary.
Week 2	E-commerce features + listening, writing, language and vocabulary.
Week 3	Transaction security + listening, writing, language and speaking.
Week 4	Online transaction + listening, writing, language, speaking and vocabulary
Week 5	Types of network /describe networks and make recommendations.
Week 6	Networking hardware + listening, writing, language, speaking and vocabulary.
Week 7	Talking about the past + listening, writing, language, speaking and vocabulary.
Week 8	Network range and speed + listening, writing, language, speaking and vocabulary.
Week 9	Fault diagnosis + talk about results of an action, language, speaking and vocabulary.
Week 10	Software repair + listening, writing, language, speaking and vocabulary.
Week 11	Hardware repair + listening, writing, language, speaking and vocabulary.
Week 12	Security solutions: listening, writing, language, speaking and vocabulary.
Week 13	Workstation health and safety: listening, writing, language, speaking and vocabulary.
Week 14	Security procedures + Reporting incidents/ listening, writing, language, speaking and vocabulary.
Week 15	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	English for information technology , 1 vocational English, course book, Maja Olejniczak, series editor David Bonamy.	Yes
Recommended Texts		
Websites	https://www.youtube.com/watch?v=WOVu22J_sN8	

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	Advanced Programming البرمجة المتقدمة		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	CSI121		
ECTS Credits	8		
SWL (hr/sem)	200		
Module Level	UGI	Semester of Delivery	2
Administering Department	Cyber Security	College	Science
Module Leader	Mohsin Hassan	e-mail	mohsin.hassan@alkafeel.edu.iq
Module Leader's Acad. Title	Assist. Prof.	Module Leader's Qualification	Ph.D.
Module Tutor	Mohsin Hassan	e-mail	mohsin.hassan@alkafeel.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/10/2025	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Algorithms and structure programing with PYTHON 1	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. To develop problem solving skills and understanding of programming through the application of instruction. 2. To understand input, output instruction. 3. This course deals with the basic operation in any program code. 4. This is the basic subject for all programs. Learning different instructions, programming concepts, ideas and data structures like array, pointers, functions, strings and structures in order to build different programs efficiently. 5. To understand how to analysis any problem to solve it by programs. 6. To perform a good programmer .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize how instruction works in program code. 2. List the various terms of programming. 3. Summarize what is meant by a basic instruction. 4. Discuss the simple programming and the perfect programming. 5. Describe the problem and how to solve it by programming. 6. Identify the basic elements of any program code. 7. Discuss the precedence of operator. 8. Discuss the various of idea to solve any program .
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • <u>Part A – function:</u> Definition of functions, examples, Definition of default argument, Definition of recursive functions, Definition of call by reference functions, [20 hrs] • <u>Part B – arrays:</u> Definition of 1D , examples, Definition of 2D, main and second diagonal, examples [20 hrs.] • <u>Part C – string:</u> Definition of string, read and write string, Definition of string function, examples [15 hrs.] • <u>Part D- structures:</u> Definition of structures, read structurer, write structures, examples, Definition of nested structure, examples [20 hrs.] • <u>Part E - files :</u> Definition files , Open files , closing files , rewind , Fgetc, fputc functions, examples , Fgets , fputs function , examples , Fread and fwrite with arraye and structures [20 hrs.]

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 types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	122	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Function in PYTHON - Defining the function. - Explain the advantages of the functions. - How to declare the defining and calling the function - Examples on functions
Week 2	More about functions - Passing parameters to function (by value and by reference) - Examples on passing parameters. - Overloading
Week 3	More about function - Recursive Function - Examples on recursive function.
Week 4	Array in PYTHON - One Dimension array. - How to declare the array. - How to access the array elements. - How to read and write the array.
Week 5	More about the array. Examples on 1 D array.
Week 6	More about array. - How to declare a 2D array. - How to access, read and write 2D array elements. - Characteristics of square matrix $A[n][n]$. - Examples on 2D arrays.
Week 7	More about array More examples on array.
Week 8	Reference and pointers Defining the reference

	- Defining the pointer. - Dereferencing operator - Examples on reference and pointer
Week 9	Pointers in PYTHON - Pointer to pointers - Pointer and array - Examples on pointer to pointer - Examples on pointer and array
Week 10	- String in PYTHON - Defining the string. - Examples on reading and writing the string - Pointer and string
Week 11	More about the string in Python - Using cstring library - Examples on cstring library
Week 12	Structure in PYTHON - Defining the structure in Python - How to declare the structure - How to read and write the structure elements. - Examples on structure.
Week 13	More about structures - Array of structures. - Declaring, reading and writing the array of structures.
Week 14	More examples on structures.
Week 15	A comprehensive review on the

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Perform examples on Function in PYTHON

Week 2	Perform examples on Passing parameters in PYTHON and overloading
Week 3	Perform examples on Recursive functions
Week 4	Perform examples on 1D array in PYTHON
Week 5	More examples on 1D arrays
Week 6	Perform examples on 1D arrays.
Week 7	Examples on 2D arrays
Week 8	Examples on square array characteristics
Week 9	Perform examples on references
Week 10	Perform examples on pointers
Week 11	More examples on pointers and array
Week 12	Perform examples on string
Week 13	More examples on string and Cstring library
Week 14	More examples on structure
Week 15	Comprehensive review on the course

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	- Python: How To Program, Deitel and Deitel, 4th edition, Prentice Hall, 2002. - Deitel, Paul, Harvey Deitel, and Paul J. Deitel. Python for Programmers. Pearson, 2019.. - Sakpere, Aderonke Busayo, and Adedeji Folashade. "Comparative Analysis of Two Programming Platforms for Beginners: Python and Scratch." International Journal of Education and Management Engineering 14.5 (2024): 46-62..	No
Recommended Texts	Deitel, Paul, Harvey Deitel, and Paul J. Deitel. Python for Programmers. Pearson, 2019..	No
Websites	https://www.python.org/	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
	A - Excellent	امتياز	90 - 100	Outstanding Performance

Success Group (50 - 100)	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	مبادئ الامن السيبراني Cybersecurity Principles		Module Delivery
Module Type	B		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	DCS122		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGI	Semester of Delivery	2
Administering Department	Cyber Security	College	Science
Module Leader	Ali Fouad Al-Hammami	e-mail	alhammami@alkafeel.edu.iq
Module Leader's Acad. Title	Assist. Lec.	Module Leader's Qualification	Master
Module Tutor	Ali Fouad Al-Hammami	e-mail	alhammami@alkafeel.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/10/2025	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 Aims أهداف المادة الدراسية	

	1. The roles and influences of governments, commercial and other organizations, citizens and criminals in cyber security affairs. 2. Issues surrounding privacy and anonymity 3. The importance of taking a multi-disciplinary approach to cyber security 4. The potentialities and challenges of emerging block chain technology to enhance inter-organization trust and data/processing integrity This is the basic subject for all programs. 5. The cyber threat landscape, both in terms of recent emergent issues and those issues which recur over time 6. General principles and strategies that can be applied to systems to make them more robust to attack 7. Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. General principles and strategies that can be applied to systems to make them more robust to attack
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. 1- Protect and defend computer systems and networks from cybersecurity attacks. ... 2. Diagnose and investigate cybersecurity events or crimes related to computer systems and digital evidence. 3. Effectively communicate in a professional setting to address information security issues.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A –: Introduction to Cyber security and Security Fundamentals Overview of cybersecurity and its importance Basic security concepts and principles Threat modeling, [20 hrs.] Part B – Network Security Network security fundamentals, including firewalls, intrusion detection, and prevention systems Encryption and decryption techniques Virtual Private Networks (VPNs) [20 hrs.] Part C – Cryptography Access Control and Authentication Security Management and Risk Assessment [15 hrs.] Part D- structures: Definition of structures, read structure, write structures, examples, Definition of nested structure, examples [20 hrs.] Part E - Web Security and Applications Mobile Security, Cloud Security Part F- incident Response and Recovery incident response planning and management, Disaster recovery and business continuity planning, Cyber security incident investigations

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 types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to Cyber Security (Overview, Definitions, and Terminology)

Week 2	Cyber Threats, Attacks, and Actors (Types and Examples)
Week 3	Cyber security Risk Management (Identification, Assessment, and Control)
Week 4	Cyber Defense Strategies (Prevention, Detection, and Response)
Week 5	Cryptography (Principles, Techniques, and Applications)
Week 6	Cybercrime Investigations and Forensics (Tools, Procedures, and Techniques)
Week 7	Network Security (Protocols, Devices, and Services)
Week 8	Operating System Security (Threats, Vulnerabilities, and Patches)
Week 9	Web Security (Threats, Configurations, and Best Practices)
Week 10	Cloud Security (Deployment Models, Risks, and Controls)
Week 11	Mobile Security (Threats, Platform, and App Security)
Week 12	Social Engineering (Phishing, Scams, and Deception)
Week 13	Ethics and Legal Issues in Cybersecurity (Privacy, Intellectual Property, and Liability)
Week 14	Emerging Trends in Cybersecurity (Artificial Intelligence, Internet of Things, and Blockchain)
Week 15	Review
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)

المناهج الاسبوعي للمختبر

Week	Material Covered
Week 1	Language Principles
Week 2	Language Definitions for Cryptosystem
Week 3	Programs for: Transposition Methods
Week 4	Programs for: Monoalphabetic Substitution Methods
Week 5	Programs for: Homophonic Substitution Methods
Week 6	Programs for: Polyalphabetic Substitution Methods
Week 7	Programs for: LFSR and NLFSR
Week 8	Programs for: Prime, GCD, Inverse
Week 9	Programs for: RSA Algorithm Steps
Week 10	Programs for: DES Algorithm Steps
Week 11	Programs for: Authentication Steps
Week 12	Programs for: Some Applications

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
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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	هياكل متقطعة (2) Discrete Structures (2)		Module Delivery
Module Type	Support		☒ Theory ☒ Lecture ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	CSI122		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	2
Administering Department	Cyber Security	College	Science
Module Leader	Ayat Ma'an	e-mail	ayaat.maana@alkafeel.edu.iq
Module Leader's Acad. Title	Assist. Lec.	Module Leader's Qualification	Master
Module Tutor	Ayat Ma'an	e-mail	ayaat.maana@alkafeel.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/10/2025	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
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	1. The course aims to study discrete structures in terms of the use of algebraic laws. 2. Studying the Graphs and Trees 3. To reach an easy and clear way for students 4. To solve all material issues related to discontinuous structures. 5. In addition to studying quantifiers and predicates logic 6. Studying the different groups, theories and schemes so that the student can solve the duties required of him and the exercises with simplicity, ease and clarity.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learn how to solve algebraic laws, groups and Venn diagrams correctly, efficiently and clearly 2. The subjects studied in discrete structures are either definite or indefinite. The term finite structures are sometimes used to refer to fields of discrete mathematics that deal with finite groups, 3. especially in fields of business relevance. 4. Discrete mathematical structures have gained wide importance over the recent decades due to their wide applications in computer science. 5. Discrete mathematics terms and notations are useful for studying and expressing problems of objects in computer programming and algorithms. 6. Some branches of discrete mathematics are also useful in studying some business and economic issues.
Indicative Contents المحتويات الإرشادية	The course aims to study discontinuous structures in terms of the use of algebraic laws, diagrams and shapes to reach an easy and clear way for students to solve all issues related to the subject of discontinuous structures. In addition to studying quantifiers and predicates logic and studying different groups, theories and schemes so that the student can solve the duties required of him and the exercises with simplicity, ease and clarity.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Discrete structures is the study of mathematical structures that are essentially discontinuous, in the sense that they do not require the presence of the adjective of communication and do not require it in order to study this subject. Most of the topics studied in discrete mathematics are related to countable sets (a completely different concept from finite sets), an example of which is the set of integers. Discrete mathematics has gained wide importance in recent decades due to its wide applications in computer science. Discrete mathematics terms and notations are useful for studying and expressing objects in computer
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	programming and algorithms. Some branches of discrete mathematics are also useful in studying some business and economic issues.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	87	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

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	2	10% (10)	6 and 13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	20% (20)	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	Definition of proofs
Week 2	Ordered structures
Week 3	Introduction to trees
Week 4	Tree traversal
Week 5	Relations
Week 6	Functions

Week 7	Map function
Week 8	Definition of strings
Week 9	Definition of lists
Week 10	Simple Ciphers
Week 11	Hash function
Week 12	Introduction to Bijection
Week 13	Combinational and sequential analysis and design
Week 14	Combinational and sequential analysis and design
Week 15	Graph Theory
Week 16	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Digital Design, Third Edition, by M. Morris Mano. Prentice-Hall, Inc. 2002 - Logic Design ,Digital Principles and Application", Malvino, 2000 "Introduction to Logic Design" (2nd) edition), Sajjan G. Shiva, 2007. - Jayant Ganguly, Mathematical foundation for computer science 2010.	
Recommended Texts	Discrete Mathematics with Applications, ThomasKoshy, Elsevier 2003,	
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	Arabic Language(1)		Module Delivery
Module Type	S		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	QU06		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	2
Administering Department	Cyber Security	College	Science
Module Leader	Hiba Abd Al-Jalil	e-mail	hiba.alkharsan@alkafeel.edu.iq
Module Leader's Acad. Title	Assist. Lec.	Module Leader's Qualification	Master
Module Tutor	Hiba Abd Al-Jalil	e-mail	hiba.alkharsan@alkafeel.edu.iq
Peer Reviewer Name		e-mail	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	تصميم منطقي Logic Design		Module Delivery
Module Type	C		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CSI123		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	UGI	Semester of Delivery	2
Administering Department	Cyber Security	College	Science
Module Leader	Ahmed Ali Taleeb	e-mail	ahmed.ali@alkafeel.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Ahmed Ali Taleeb	e-mail	ahmed.ali@alkafeel.edu.iq
Peer Reviewer Name		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 Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of logic design theory through the application of techniques.
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	2. This course deals with the basic concept of electrical circuits. 3. To understand Counting systems, codes, and conversion between different numerical systems. 4. To understand foundations and laws of the algebraic general. 5. To understand abbreviation of logical functions using Karnaugh map 6. To understand all seven logic gates and the truth table of each gate. 7. The ability to analyze electronic circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identify the binary, decimal, octal, and hexadecimal number systems, and learn about conversion methods between these systems. 2. Learn about the foundations and laws of Boolean algebra. 3. Learn about the logic gate. 4. Learn about the Karnaugh map. 5. Learn about cascade circuit analysis such as flip-flop and recorders. 6. Having the ability to design electronic circuits.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Introduction to Logic Systems: • Overview of digital logic systems • Binary representation and number systems • Logic levels: HIGH and LOW • Basic logic operations: AND, OR, NOT 2. Boolean Algebra: • Boolean variables and expressions • Laws and theorems of Boolean algebra • Simplification of Boolean expressions • De Morgan's theorem • Boolean functions and truth tables 3. Logic Gates: • Introduction to logic gates • Basic logic gates: AND, OR, NOT • Universal gates: NAND, NOR • XOR and XNOR gates • Gate-level implementation of Boolean functions

	4. Combinational Logic Design: - Combinational logic circuits - Designing combinational circuits using logic gates - Half-adder and full-adder circuits - Multiplexers and demultiplexers - Encoders and decoders 5. Sequential Logic Design: - Introduction to sequential logic circuits - Flip-flops: SR, D, JK, T - Latches and registers - Designing sequential circuits using flip-flops - Counters and shift registers
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.5
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)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	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)

المناهج الاسبوعي النظري

Week	Material Covered
Week 1	Number systems
Week 2	Binary number systems
Week 3	Octal number systems
Week 4	Hexadecimal number systems
Week 5	Arithmetic operation on numbering systems
Week 6	Logic gates (AND, OR, NOT)
Week 7	Logic gates (NAND, NOR XOR, & XNOR)
Week 8	Simplification and Boolean function
Week 9	Simplification and Boolean function
Week 10	Karnaugh map
Week 11	Karnaugh map
Week 12	Logic operations
Week 13	Combinational and sequential analysis and design
Week 14	Combinational and sequential analysis and design
Week 15	Digital circuit design optimization methods
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Application of Basic logic gates (AND, OR, NOT) and their Truth Table, Boolean Expression, Function
Week 2	Application of Boolean Algebra
Week 3	Application of De-Morgan theorem
Week 4	Application of Combinational Circuits
Week 5	Application of Combinational Circuits simplification using Boolean Algebra
Week 6	Application of Combinational Circuits simplification using Karnaugh map
Week 7	Application of Digital logic design circuits
Week 8	A Application of Binary adders (Half-Full adders, Half-Full Subtractor)
Week 9	Application of Decoder, Encoder, Multiplexer, De-Multiplexer
Week 10	Application of Sequential circuits (SR_latch and D_latch)
Week 11	Application of Master-slave flip-flop(SR , JK, D and T)
Week 12	Application of Counters and Registers
Week 13	Application of Memory (Static RAM)
Week 14	Application of Memory (ROM)
Week 15	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Introduction to Logic Design" (2nd) edition), Sajjan G. Shiva, 2007. - Digital Design, Fifth Edition, by M. Morris Mano. Prentice-Hall, Inc. 2012 - Digital Design and Computer Architecture Second Edition, by David Money Harris and Sarah L. Harris. Elsevier Inc. 2013	
Recommended Texts	Ashkan PASHAMEHR, Mahdi ZAVVARI and Hamed ALIPOURBANAEI. : All-optical AND/OR/NOT logic gates based on photonic crystal ring resonators. Front. Optoelectron. 2016.	

	- J.Srinivas Raju, Satish Kumar and L.V.S.S.Sai Sneha. : Realization of Logic Gates Using Mcculloch-Pitts Neuron Model. International Journal of Engineering Trends and Technology (IJETT) – Volume-45 Number2 –March(2017) - G.Nagasundari and R.Prabhakari. : Design of Three-Input XOR/XNOR using Systematic Cell Design Methodology. Asian Journal of Applied Science and Technology (AJAST).(2017).	
Websites	https://www.coursera.org/learn/digital-systems	

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	النظرية الإحتسابية Computational Theory		Module Delivery
Module Type	S		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	DCS123		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	UGI	Semester of Delivery	2
Administering Department	Cyber Security	College	Science
Module Leader	Fatima Tahseen	e-mail	ayaat.maana@alkafeel.edu.iq
Module Leader's Acad. Title	Assisnt. Lec.	Module Leader's Qualification	Master
Module Tutor	Fatima Tahseen	e-mail	ayaat.maana@alkafeel.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/10/2025	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. Introduce Fundamental Concepts: Provide a solid understanding of the fundamental mathematical properties of computer hardware, software, and certain applications thereof.
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	2. Explore the Chomsky Hierarchy: Familiarize students with the hierarchy of formal languages and their corresponding abstract computational models (from finite state machines to Turing machines). 3. Develop Analytical Skills: Enhance students' ability to understand limits of computation—what can and cannot be computed (computability) and how efficiently it can be done (complexity). 4. Bridge Theory and Application: Connect abstract theoretical models to practical applications in modern computer science, including Artificial Intelligence.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define and explain the core concepts of formal languages, alphabets, strings, and automata. 2. Design Finite Automata (DFA/NFA) and formulate Regular Expressions for specific regular languages. 3. Prove whether a language is regular or non-regular (e.g., using the Pumping Lemma). 4. Construct Context-Free Grammars (CFGs) for specific languages, draw parse trees, and resolve grammar ambiguity. 5. Simplify CFGs and convert them into standard forms, specifically Chomsky Normal Form (CNF). 6. Design Pushdown Automata (PDA) for context-free languages and Turing Machines for complex computational problems. 7. Evaluate how the theoretical concepts of automata and computation apply to modern AI systems.
Indicative Contents المحتويات الإرشادية	1- Fundamentals of Computation and Regular Languages (Weeks 1–5) Introduction to computation theory: Automata, computability, and complexity. Mathematical foundations: Alphabets, strings, sets, and basic language operations. Regular Languages and the design of Finite Automata. Regular Expressions and their equivalence to Finite Automata. Identifying and proving Non-Regular Languages. 2- Grammars and Context-Free Languages (Weeks 7–11) Introduction to the formal definitions of Grammars. Context-Free Grammars (CFG), Regular Grammars, and parsing concepts (Parse Trees). Identifying and resolving Ambiguity in Grammars and Languages.

	Techniques for the Simplification of Context-Free Grammars. Standardization of grammars into Chomsky Normal Form. 3- Advanced Computational Models and Applications (Weeks 12–15) Architecture and design of Pushdown Automata (PDA). The Turing Machine model and its role as the foundation of modern computing. Real-world and advanced computational applications, specifically focusing on Artificial Intelligence. Seminar discussions bridging theory with modern computational research.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1- Giving scientific lectures in classrooms and using (Data show) to indicate the main ideas of the subject. 2- Data collection and reporting. 3- Directing students to some websites to benefit from them. 4- Assign students to solve a set of statistical questions through discussions among students 5- Assign the student to prepare brief reports on some topics and carry out homework. 6- Panel discussions to address the problems faced by the student in the course. 7- Giving importance to group activities by assigning grades to group activities. 8- Managing the lecture in a way that makes the student feel the importance of time. 9- Enabling the student to link the theoretical and practical aspects. 10- Encouraging the student to present creative works in the specialty that keep pace with quality standards in community service.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
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Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
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 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects				
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	20% (20)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction - Introduction to computation theory (Automata, computability, and complexity)
Week 2	Basics of language (alphabet, string, set, operations)
Week 3	Regular Languages and Finite Automata
Week 4	Regular Expression
Week 5	Non-Regular Languages
Week 6	Mid-term Exam
Week 7	Introduction to Grammars
Week 8	Context-Free Grammars; Regular Grammars; Parse Trees.
Week 9	Ambiguity in Grammars and Languages.
Week 10	Simplification of Context-free Grammars
Week 11	Standard Forms; Chomsky Normal Forms
Week 12	Pushdown Automata (PDA)
Week 13	The Turing Machine
Week 14	Applications with AI

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		
Recommended Texts	Introduction to the Theory of Computation" by Michael Sipser Introduction to Automata Theory, Languages, and Computation" by John E. Hopcroft, Rajeev Motwani, and Jeffrey D. Ullman	
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	التوعية والتدريب الآمن Awareness and Training for Security		Module Delivery	
Module Type	C		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	DCS123			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	UGI	Semester of Delivery	2	
Administering Department	Cyber Security	College	Science	
Module Leader	Hashim Ali Hashim	e-mail	hashim.ali@alkafeel.edu.iq	
Module Leader's Acad. Title	Assisnt. Lec.	Module Leader's Qualification	Master	
Module Tutor	Hashim Ali Hashim	e-mail	hashim.ali@alkafeel.edu.iq	
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	01/10/2025	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. Cultivate a Security Mindset: Develop a foundational understanding of why human behavior is the most critical element in cybersecurity.
2. Identify and Mitigate Risks: Train students to recognize common cyber threats, social engineering tactics, and online scams.
3. Promote Best Practices: Equip students with actionable skills to secure their digital identities, devices, and communications.
4. Foster Organizational Compliance: Ensure students understand the importance of privacy laws, physical security, and corporate security policies.
5. Enable Proactive Response: Teach the correct protocols for reporting security incidents and minimizing damage.

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

Identify and describe common cyber threats, including phishing, malware, and social engineering attacks.

Implement robust personal security measures, including password managers, Multi-Factor Authentication (2FA), and secure browsing habits.

Secure physical and mobile assets against unauthorized access and data loss.

Articulate the principles of data privacy, including GDPR, and the importance of safeguarding sensitive information.

Evaluate organizational security policies and execute proper incident reporting procedures.

Design and participate in security awareness training simulations (e.g., phishing tests) to improve behavioral responses to threats.

Indicative Contents

المحتويات الإرشادية

1 .The Threat Landscape and Human Element (Weeks 1, 2, 4, 6, 12)

Introduction to security awareness and the risk of human error.

Common cyber threats targeting end-users (malware, phishing).

Identifying risks in messaging and email communications.

The psychology of social engineering (pretexting, baiting, tailgating).

	Recognizing and avoiding online and offline scams. 2 .Defense Mechanisms and Best Practices (Weeks 3, 5, 7, 8) Identity protection through password management and 2FA. Safe internet habits, identifying secure connections (HTTPS), and avoiding malicious downloads. Securing mobile devices (biometrics, app permissions, secure Wi-Fi). Safely navigating and storing data in Cloud Services. 3 .Privacy, Policy, and Physical Security (Weeks 9, 10, 11, 13) Data privacy laws (GDPR) and protecting personal/sensitive information. Physical security measures for devices and workspaces. Organizational security policies (acceptable use, password policies). The lifecycle of Incident Reporting and Response. 4 .Practical Application and Assessment (Weeks 14, 15) Utilizing security awareness training tools and phishing simulators. Capstone awareness project synthesizing course concepts into actionable security campaigns.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Giving scientific lectures in classrooms and using (Data show) to indicate main ideas • Application: Project real-world examples of phishing emails, malicious URLs, and fake login screens on the board (Weeks 2 & 4). Visualizing these threats is the best way to train the eye to catch them. 2. Data collection and reporting • Application: Have students collect data on recent, high-profile data breaches in the news or check their own email addresses against breach databases, then write a short report on how human error contributed to the breach (Week 9). 3. Directing students to some websites to benefit from them • Application: Direct students to interactive educational sites like Have I Been Pwned (to check for compromised accounts) or the

	Google Phishing Quiz (Jigsaw) to test their ability to spot fake emails (Week 4 & 14). 4. Assign students to solve a set of questions/scenarios through discussions • <i>(Adapted for security contexts)</i> • Application: Present the class with a "Security Incident Case Study" (e.g., an employee clicks a bad link and a ransomware screen appears). Have students discuss in groups the exact step-by-step response to contain the threat (Week 11). 5. Assign the student to prepare brief reports on some topics and carry out homework • Application: Assign practical homework, such as setting up a personal Password Manager, enabling 2FA on their main email account, and writing a brief reflection on the setup process (Week 3). 6. Panel discussions to address the problems faced by the student in the course • Application: Host an open discussion about the inconvenience of security (e.g., "Why are password policies so annoying?"). This allows students to vent frustrations while you explain the vital trade-off between convenience and security (Week 13). 7. Giving importance to group activities by assigning grades to group activities • Application: For the final Awareness Project (Week 15), group students together to design a "Security Awareness Campaign" for a hypothetical small business, including creating posters and a mock presentation. 8. Managing the lecture in a way that makes the student feel the importance of time • Application: Tie the concept of time directly to Incident Response (Week 11). Emphasize the "golden hour" of reporting—how every minute saved in reporting a clicked phishing link can save an organization from a massive data breach. 9. Enabling the student to link the theoretical and practical aspects • Application: Link the theory of encryption and secure protocols (SSL/TLS in Week 5) to the highly practical act of checking for the padlock icon and verifying website certificates before entering credit card information. 10. Encouraging the student to present creative works that keep pace with community service • Application: Have students create Arabic/English infographics or short TikTok/YouTube style videos on "How to Avoid Scams" or "Mobile Device Security" to share with their families, elderly relatives, or the local community (Week 12).
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعاً

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects				
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	20% (20)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Introduction - Understand what security awareness means and why it is critical for individuals and organizations. Discuss common security risks caused by human error and lack of knowledge.
Week 2	BUnderstanding Cyber Threats Description: Learn about common cyber threats that target users, such as phishing, social engineering, malware, and weak passwords.
Week 3	Password Management & Authentication Description: Learn best practices for creating strong passwords, using password managers, and multi-factor authentication (2FA).
Week 4	Email and Messaging Security

	Description: Understand risks in email and messaging apps: spam, phishing, attachments, unsafe links. Discuss safe communication practices.
Week 5	Safe Internet and Browsing Practices Description: Learn how to identify secure websites (HTTPS, SSL/TLS), avoid malicious downloads, and protect personal data online.
Week 6	Mid-term Exam
Week 7	Mobile Device Security Description: Learn how to secure smartphones and tablets: PINs, biometrics, app permissions, updates, and secure Wi-Fi.
Week 8	Safe Use of Cloud Services Description: Learn best practices for cloud storage and services: strong passwords, 2FA, sharing policies, and data backup..
Week 9	Data Privacy and Protection Description: Understand the importance of protecting personal and sensitive information online and offline. Discuss GDPR, data breaches, and personal privacy practices
Week 10	Physical Security Awareness Description: Learn about physical security measures: locking devices, secure workspaces, preventing unauthorized access.
Week 11	Incident Reporting and Response Description: Learn how to report security incidents, suspicious activities, and potential breaches in a timely manner. Discuss why quick reporting reduces damage.
Week 12	Recognizing and Avoiding Scams Description: Understand common online and offline scams: lottery, investment, tech support scams, and social media scams.
Week 13	Security Policies and Best Practices Description: Learn the purpose of organizational security policies and how following them keeps data safe. Topics: acceptable use, password policy, device policy.
Week 14	Security Awareness Training Tools Description: Introduction to training tools and simulations: online modules, phishing simulators, and awareness quizzes. Discuss how training improves security behavior.
Week 15	Review and Awareness Project Description: Apply all learned knowledge in a mini project. Students integrate multiple awareness and training concepts.
Week 16	Preparatory week before the final Exam

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
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