MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**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	1		**Semester of Delivery**	1	
Administering Department			**College**		
Module Leader	Dhiah Al-Shammary		**e-mail**	d.alshammary@qu.edu.iq	
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name	Talib Turkey		**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. 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. 3. Learning and understanding basic concepts and methods of structured programming using C++. 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. Part A: • Programming and programming languages. • Algorithms and Flowcharts. • C++ Basics. Part B: • Selection Statements. • If and IF Else statements. • Switch – case statements. Part C: • 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.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	136	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	9.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	5% (5)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	3, 5 and 8 and 9	LO #3, #4 and #6, #7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)		
Summative assessment	**Midterm Exam**	2hr	15% (15)	12	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction 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 C++ language • C++ languages basics. • Write a simple program. • Converting algorithms to programs.
Week 5	C++ basics • Keywords and Identifier. • Data types. • Variables and their Declarations. • Variable initialization. • Variable scope.
Week 6	More about C++ basics • Arithmetic operation. • Operation order. • Comparison and logic operations.
Week 7	More about C++ basics • Unary operators • Increment and decrement operators. • Characters and Literal in C++. • 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	
	Material Covered
Week 1	Introduction to C++ 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	• C++: How To Program, Deitel and Deitel, 4th edition, Pren ce Hall, 2002. • Programming in C, Stephen Kochan, 3rd edi on, Sams, 2004. • The C Programming Language, Brian W. Kernighan and Dennis M. Ritchie, 2nd edition, Prentice Hall, 1988.	No
Recommended Texts	• C Programming: A Complete Guide to Mastering the C Language, Augie Hansen and August Hansen, Addison-Wesley, 1989.	No
Websites	https://www.coursera.org/courses?query=c%20plus%20plus	

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	**Foundations of Information Systems**	**Module Delivery**	
Module Type	**Basic learning activities**		☒ **Theory**
Module Code	**IS111**		☒ **Lecture**
ECTS Credits	**6**		☐ **Lab**
SWL (hr/sem)	**150**		☐ **Tutorial**
			☐ **Practical**
			☐ **Seminar**
Module Level	1	**Semester of Delivery**	1
Administering Department		**College**	
Module Leader	Talib Turkey	**e-mail**	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	
Module Tutor		**e-mail**	
Peer Reviewer Name	Rafeef Hamza	**e-mail**	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. This course aims to provide students with an overview of information systems. 2. This course aims to provide students with comprehensive review of the digital word 3. Provide the student with knowledge about the information systems components 4. Provide comprehensive review about the IS infrastructure
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding the Introduction to Information Systems. 2. Understanding the Characteristics of the Digital World 3. Understanding the Information systems in organizations 4. Understanding the Information systems components 5. Understanding the Valuing information systems 6. Understanding the Globalization 7. Understanding the Information systems infrastructure
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Introduction to Information Systems. • Characteristics of the Digital World • Information systems in organizations • Information systems components • Valuing information systems • Globalization • Information systems infrastructure

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	In this course, the student learned the basics of programming through theoretical lectures, in addition to daily assignments and daily tests, asking some questions and using the brainstorming method.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	101	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	7 and 12	LO #1- #4 and #5-
	Assignments	1	5% (5)	Continues	All
	Projects / Lab.				
	Report	1	5%(5)		
	Midterm Exam	2hr	30% (30)	9	LO #1 - #5

Summative assessment	**Final Exam**	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Information Systems
Week 2	Introduction to Information Systems
Week 3	Characteristics of the Digital World
Week 4	Characteristics of the Digital World
Week 5	Information systems components • Hardware • Software • Data • Networks • Facilities • Personnel • Services • Partners
Week 6	Information systems components • Hardware • Software • Data • Networks • Facilities • Personnel • Services Partners
Week 7	Information systems in organizations • Characteristics of IS professionals • IS career paths

	• Cost/value information • Quality of information • Competitive advantage of information • IS and organizational strategy Value chains and networks
Week 8	Information systems in organizations • Characteristics of IS professionals • IS career paths • Cost/value information • Quality of information • Competitive advantage of information • IS and organizational strategy Value chains and networks
Week 9	Globalization • What is globalization? • Technology enabled change • Digital divide • Cultural, ethnic, political challenges Global information systems strategies
Week 10	Globalization • What is globalization? • Technology enabled change • Digital divide • Cultural, ethnic, political challenges Global information systems strategies
Week 11	Valuing information systems: • How information systems enable organizational processes. • Making a business case for information systems. • Productivity paradox of information systems. • Investment evaluation: ▪ Multi-criteria analysis. ▪ Cost-benefit analysis. Identifying and implementing innovations.
Week 12	Valuing information systems: • How information systems enable organizational processes. • Making a business case for information systems. • Productivity paradox of information systems. • Investment evaluation: ▪ Multi-criteria analysis. ▪ Cost-benefit analysis. Identifying and implementing innovations.

Week 13	Information systems infrastructure: • Hardware. • Software. • Collaboration and communication technologies. • Data and knowledge. • Faculties. • Services. • Personnel. • Partnerships.
Week 14	Information Systems infrastructure: • Hardware. • Software. • Collaboration and communication technologies. • Data and knowledge. • Faculties. • Services. • Personnel. • Partnerships.
Week 15	**Comprehensive review**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	• Ralph M. Stair, George W. Reynolds, *Principles of Information Systems*, 13th edition, 2018.	No
Recommended Texts	• Joseph Valacich, Christoph Schneider, *Information Systems Today Managing in the Digital World* , 8th edition, Pearson Education Limited, 2018.	No
Websites	https://www.coursera.org/courses?query=information%20systems	

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	**(Mathematics) رياضيات**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CSI112**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		1	**Semester of Delivery**		1
Administering Department		IS	**College**	CSI	
Module Leader	Elaf Hussein		**e-mail**	E-mail	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Master
Module Tutor	Elef Hussein		**e-mail**	Elaf.hussien@qu.edu.iq	

Peer Reviewer Name	Firas Hussein	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1-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-Applying 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 للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	103	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	
	Assignments	1	5% (5)	2and 12	
	Projects / Lab.				
	report	1	5%(5)		
Summative assessment	Midterm Exam	2hr	30% (30)	6 and 13	
	Final Exam	2hr	50% (50)	7	
Total assessment			100% (100 Marks)	15	

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	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
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	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	**Electronic Commerce**	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS112**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		

Module Level	1	**Semester of Delivery**	1
Administering Department	IS	**College**	CSI
Module Leader	Miad Kadhum	**e-mail**	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Master
Module Tutor		**e-mail**	hayder.hossein@qu.edu.iq
Peer Reviewer Name	Gaith Hakim	**e-mail**	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The choice of appropriate software tools and a good understanding of the main concepts and the framework of E-Commerce applications are the main key to develop an efficient E-Commerce web application. This module aims 1. To study EC Framework, major types of EC transactions, E-commerce technology and the main concept of Business Models, Business Plan, and Business Case. 2. To understand the main concept of Web Security: Electronic Payment Systems and their Security. 3. To learn how to build dynamic commercial and corporate Web site using client-side scripting with VBScript language. 4. To learn how to build dynamic commercial and corporate Web site using server-side scripting with ASP and VBScript. 5. To Integrate ASP with databases using ActiveX Data Objects (ADO). 6. To learn object-oriented programming principals. 7. To gain experience writing programs (scripts) in VBScript language, ASP and ADO technologies.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Knowledge and understanding 2. Understand the process of setting up an interactive web site, displaying product catalog, deploying 3. shopping carts, handling credit card transaction. 4. Have knowledge in XML technology related to Business-to-Business E-commerce. 5. Be able to build an online store. 6. Cognitive skills (thinking and analysis). 7. Understand the process of setting up an interactive web site, displaying

	product catalog, deploying 8. shopping carts, handling credit card transaction. 9. Communication skills (personal and academic). 10. Understand the process of maintaining security on the E-commerce site. 11. Understand the process of setting up an interactive web site, displaying product catalog, deploying 12. shopping carts, handling credit card transaction. 13. Practical and subject specific skills (Transferable Skills). 14. Be able to build an online store. 15. Understand the process of setting up an interactive web site, displaying product catalog, deploying 16. shopping carts, handling credit card transaction. 17. Assessment instruments
Indicative Contents المحتويات الإرشادية	1. E-Government E-Learning Report +presentation) 3 weeks 2. Business Plan Report +presentation 3 weeks . 3. Public Key Infrastructure (Report +presentation) 2 weeks 4. Project: Part 1 E-Commerce Application (Interface) 2 weeks 5. Project: Part 2 E-Commerce Application (Client-Side Scripting) 2 weeks 6. Project: Part 3 E-Commerce Application (Server-Side Scripting) 6 weeks

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Course module description: The ramification of electronic commerce has already been felt in many functional areas-- organizational design, marketing, finance and operations. The computerizing infrastructure that is necessary for implementing electronic commerce is becoming crucial in shaping the future of business. Relevant technology-management issues include Internet and intranet application design and deployment, business applications that leverage off the World Wide Web, firewalls and transactional security, intelligent agents, and electronic payment systems. To show how these concepts are implemented in practice, students are given hands-on experience of building an online store, through in-depth study of Active Server Pages (ASP) and database language SQL.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to e-commerce: EC definitions and concepts - . EC Framework - major types of EC transactions
Week 2	E-commerce technology: Business Models - Business Plan - Business Case
Week 3	Web Security: Electronic Payment Systems - E-cards, Security for E-Payments – Introduction- First Assignment
Week 4	Web design VBScript Language Elements - Internet Information Server (IIS) Concepts
Week 5	Client Side Scripting: Browser scripting object model (MSIE Model) Document Object Model (DOM) Technology - HTML Intrinsic Controls
Week 6	Client Side Scripting: Shopping Card (Programming) - Product Catalog (Programming) -Second Assignment
Week 7	Active Server Pages(ASP) Concepts: IIS Server Object Model - ASP Collections
Week 8	Active Server Pages: Using the Request object - Using the Response object Third Assignment

Week 9	Active Server Pages: Example: Customer Information Form Cookies and Applications: Cookie Definition - Types of Cookies
Week 10	Cookies and Applications: Example: Read All Cookies ASP Server Components: Ad Rotator - Email Program
Week 11	Integrating with Database: Active Data Objects (ADO) Essentials Retrieving data from a database with ADO and - Displaying it with HTML - Example: building product catalog
Week 12	Integrating with Database: Adding New Records- Using the Errors Collection Example: Building a search page for product catalog
Week 13	Integrating with Database: Modifying the record -Deleting the records Fourth Assignment
Week 14	Case Study Shopping Carts
Week 15	**XML, business-to-business E-commerce Fifth Assignment**
Week 16	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	E-Commerce Programming with ASP, Walther & Levine, Sams, 2000 Mastering Active Server Pages 3, Russell Jones, Sybex inc., 2000 . Developing Distributed and E-commerce Applications, Darrel Ince, Addison Wesley, 2002 Eric A. Smith: Active Server Page Bible, IDG Books Worldwide, Inc., 2000. Paul Lomax: Learning VBScript, O'REILLY& Associates, Inc. 1997	Yes
Recommended Texts	Noel Jerke: E-Commerce Developer's Guide to Building Community and Using Promotional Tools,	No

	SYBEX Inc., 2001	
Websites	www.Microsoft.com • msdn.micrsoft.com (MSDN library's documentation) • www.w3schools.com (Online Training Courses)	

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	**Economy/اقتصاد**			**Module Delivery**	
Module Type	**Supportive**			☒ **Theory**	
Module Code	**UNV111**			☒ **Lecture**	
ECTS Credits	**4**			☐ **Lab**	
SWL (hr/sem)	**100**			☐ **Tutorial**	
				☐ **Practical**	
				☐ **Seminar**	
Module Level	1		**Semester of Delivery**	1	
Administering Department	IS		**College**	CSI	
Module Leader	Gaith Hakim		**e-mail**		
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Master	
Module Tutor			**e-mail**		
Peer Reviewer Name	Miad Kadhum		**e-mail**		
Scientific Committee Approval Date	20/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	ان يتعرف الطالب على أنماط التحليل الاقتصادي والإداري. ان يتمكن الطالب من التمييز بين الجانب التطبيقي والتحليلي. ان يمتلك الطالب تصور كامل عن الأمور الاقتصادية. ان يتمكن الطالب من الاستفادة من الأمور التي تعلمها في سوق العمل.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	ان يتمكن الطالب من معرفة الأسس المفاهيمية للنظريات الاقتصادية وكيفية الاستفادة منها في الحياة العملية ان يتعرف الطالب على علم الاقتصاد وعلاقته بالعلوم الأخرى مما يحقق له الاستفادة القصوى من المقرر. ان يتعرف الطالب على عوامل التحليل الاقتصادي وعوامل الإنتاج ودراسة سلوك المستهلك بما يجعله قادرا على المنافسة في سوق العمل. ان يتعرف الطالب على مفهوم الطلب والعرض والعوامل المؤثرة فيهما. الأهداف المهاراتية الخاصة بالمقرر. ان يتملك الطالب مهارة التعامل مع الموارد الاقتصادية المتاحة و كيفية استخدامها الاستخدام الأمثل. ان يمتلك الطالب القدرة على تفسير المضامين الاقتصادية و بمهارة عالية
Indicative Contents المحتويات الإرشادية	مقدمة في مبادئ الاقتصاد تعريف النظرية الاقتصادية الاقتصاد الكلي والجزئي التحليل الاقتصادي علاقة الاقتصاد بالعلوم الأخرى تعريف اهم المشاكل الاقتصادية و اسبابها الفعاليات الاقتصادية مفهوم الطلب, قانون الطلب, منحنى الطلب, العوامل المؤثرة على الطلب, مرونة الطلب مفهوم المنفعة, النظرية الكلاسيكية لسلوك المستهلك المنفعة الكلية والمنفعة الحدية مفهوم العرض, قانون العرض, منحنى العرض العوامل المؤثرة في العرض

	نظرية الإنتاج, دالة الإنتاج, قانون الغلة المتناقصة عوامل الانتاج

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	تتمثل الإستراتيجية الرئيسية التي سيتم تبنيها في تقديم هذه الوحدة في تشجيع الطلاب على المشاركة في التدريبات ، مع تحسين مهارات التفكير النقدي لديهم وتوسيعها في نفس الوقت. سيتم تحقيق ذلك من خلال الفصول والبرامج التعليمية التفاعلية ومن خلال التفكير في نوع التجارب البسيطة التي تتضمن بعض أنشطة أخذ العينات التي تهم الطلاب.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	مقدمة في مبادئ الاقتصاد
Week 2	تعريف النظرية الاقتصادية
Week 3	الاقتصاد الكلي والجزئي
Week 4	التحليل الاقتصادي
Week 5	علاقة الاقتصاد بالعلوم الأخرى
Week 6	تعريف اهم المشاكل الاقتصادية و اسبابها
Week 7	الفعاليات الاقتصادية
Week 8	مفهوم الطلب, قانون الطلب, منحنى الطلب,
Week 9	العوامل المؤثرة على الطلب, مرونة الطلب

Week 10	مفهوم المنفعة, النظرية الكلاسيكية لسلوك المستهلك
Week 11	المنفعة الكلية والمنفعة الحدية
Week 12	مفهوم العرض, قانون العرض, منحنى العرض
Week 13	العوامل المؤثرة في العرض
Week 14	نظرية الإنتاج, دالة الإنتاج, قانون الغلة المتناقصة
Week 15	عوامل الانتاج
Week 16	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	مبادئ الاقتصاد – الدكتور عبد الكريم الحسناوي اساسيات علم الاقتصاد – دكتور حسين عجلان و اخرون	Yes
Recommended Texts	المجلات العلمية في الاختصاصات الخاصة بعلم الاقتصاد	No
Websites	المواقع الالكترونية المتخصصة .	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
(50 - 100)	**B -** Very Good	جيد جدا	80 - 89	Above average with some errors

	C – Good	جيد	70 - 79	Sound work with notable errors
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(0 – 49)	**F –** Fail	راسب	(0-44)	Considerable amount of work required

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Module Information
معلومات المادة الدراسية

Module Title	**حقوق الإنسان**	**Module Delivery**	
Module Type	Supportive	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UNV112**		
ECTS Credits	**1**		
SWL (hr/sem)	**50**		
Module Level	1	**Semester of Delivery**	1
Administering Department	IS	**College**	CSI
Module Leader	Nasir Allah Galib	**e-mail**	E-mail
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.

Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Makarim Kishan	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	تهدف المادة الى تعريف الطلبة بحقوق الإنسان وابرز مصادرها وخصائصها والمراحل التاريخية التي مرت بها حقوق الإنسان, ثم التعرف على الاعلان العالمي لحقوق الإنسان وأبرز المواد التي تضمنها الإعلان ، والمعاهدات والمواثيق الدولية وابرز المنظمات الدولية في مجال حقوق الإنسان وتعريف الطلبة بحقوق الإنسان في الديانات السماوية.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**أ- الأهداف المعرفية:** 1-إكساب الطلبة المعرفة المتعلقة بحقوق الإنسان. 2-تعريف الطالب بأهمية حقوق الإنسان في الدين الإسلامي الحنيف ودور النبي(ص) في ترسيخها. 3-إكساب الطالب المعرفة الضرورية بالتجارب الإقليمية لحقوق الإنسان. 4-تعريف الطالب بحقوق الإنسان ضمن الدستور العراقي. 5-تعريف الطالب بالحقوق و الواجبات على المستوى الوطني و الدولي. 6-تعريف الطالب بالملكية الفكرية ومايتعلق بها. **ب-الأهداف المهاراتية الخاصة بالمادة:** 1-أن يكتسب الطالب الحس الأخلاقي وربطه بالعمل.

2-أن يكتسب الطالب القدرة والفهم الصحيح لحقوق الإنسان. 3-أن يكتسب الطالب المعرفة الضرورية بالحقوق و الواجبات. ج-الأهداف الوجدانية: 1-تشجيع الطلبة على الاستفادة من مادة حقوق الإنسان عن طريق الإيمان بأهميتها في العملية التعليمية وفي مجال التخصص بشكل عام. 2-تشجيع الطلبة ورفع روح المنافسة بينهم. 3-تعزيز التعاون بين الطلبة عن طريق التطبيق الفعلي في الجانب التطبيقي. 4- تنمية الطاقات الفكرية والإبداعية لدى الطلبة من خلال تنفيذهم لمختلف الواجبات.	
	Indicative Contents المحتويات الإرشادية

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
أ-طرائق التعليم والتعلم 1.إلقاء المحاضرات العلمية في القاعات الدراسية. 2.إرشاد الطلاب إلى بعض المواقع الإلكترونية للإفادة منها. 3.تكليف الطالب بإعداد تقارير مختصرة لبعض المواضيع وتنفيذ الواجبات المنزلية. 4.حلقات نقاشية لمعالجة المشاكل التي يواجهها الطالب في المادة. 5-إعطاء الأنشطة الجماعية أهمية من خلال تخصيص درجات على الأنشطة الجماعية . 6-إدارة المحاضرة على شكل يجعل الطالب يشعر بأهمية الوقت. 7-تشجيع الطالب على تقديم أعمال إبداعية في التخصص تواكب معايير الجودة في خدمة المجتمع. **ب-طرائق التقييم** 1.تنفيذ الواجبات اليومية. 2.الإختبارات اليومية والشهرية والنهائية. 3. الالتزام بالحضور لقاعة الدرس وانهاء الاعمال المكلف بها والواجبات والتقارير ضمن توقيتات محددة. 4-المناقشة والمشاركة الفاعلة في قاعة الدرس.	**Strategies**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	17	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	33	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري	
	Material Covered
Week 1	المفاهيم الأساسية مفهوم حقوق الإنسان (التعريف – الخصائص – الفئات)
Week 2	التعرف على تاريخ حقوق الإنسان (حقوق الإنسان في الحضارات القديمة)
Week 3	الدين وحقوق الإنسان (حقوق الإنسان في الشرائع السماوية :الدين الإسلامي – الديانة المسيحية – الديانة اليهودية)
Week 4	الإسلام وحقوق الإنسان (دور شخصية النبي محمد (ص) في ترسيخ حقوق الإنسان)
Week 5	الإسلام وحقوق الإنسان (حقوق الإنسان في الحقبة مابعد النبي محمد (ص))
Week 6	التعرف على اهم تجارب حقوق الإنسان (مصادر حقوق الإنسان العالمية)
Week 7	التجارب الاقليمية (مصادر حقوق الإنسان الإقليمية والوطنية)
Week 8	دستور العراق مابعد 2005م وحقوق الإنسان (حقوق الإنسان في دستور جمهورية العراق لسنة 2005م)
Week 9	التعرف على الحقوق والواجبات (ضمانات حقوق الإنسان وحمايتها على المستوى الدولي)
Week 10	التعرف على الحقوق والواجبات (ضمانات حقوق الإنسان وحمايتها على المستوى الوطني)
Week 11	التعرف على الحقوق والواجبات (الضمانات الدستورية لحقوق الإنسان في الدستور العراقي)
Week 12	النظرة المستقبلية (مستقبل حقوق الإنسان)
Week 13	ترسيخ فكرة منظمات المجتمع المدني الداعمة لحقوق الإنسان(دور منظمات المجتمع المدني والنقابات والجمعيات في حماية حقوق الإنسان)
Week 14	حقوق الإنسان والملكية الفكرية (تأريخ الملكية الفكرية,تعريفها,حقوقها,فئاتها,أنواعها,حمايتها)
Week 15	حقوق الإنسان والملكية الفكرية (المنظمة العالمية للملكية الفكرية, حماية الملكية الفكرية وحق المؤلف في العراق)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	حقوق الإنسان والحريات الأساسية تأليف فيصل شنطاوي قانون حقوق الإنسان مصادره وتطبيقاته الوطنية والدولية تأليف محمد بشير الشافعي القانون الدولي لحقوق الإنسان تأليف عبد الكريم خليفة حقوق الإنسان بين المفهوم الغربي والإسلامي تأليف نبيل قرقور حقوق الإنسان والحريات الأساسية تأليف هاني الطعيمات.	
Recommended Texts		
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
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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	**Programming C++**			**Module Delivery**	
Module Type	**B**			☒ **Theory**	
Module Code	**CSI121**			☒ **Lecture**	
ECTS Credits	**8**			☒ **Lab**	
SWL (hr/sem)	**200**			☐ **Tutorial**	
				☐ **Practical**	
				☐ **Seminar**	
Module Level	1		**Semester of Delivery**	2	
Administering Department	IS		**College**	CSI	
Module Leader	Dhiah Al-Shammary		**e-mail**		
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name	Talib Turkey		**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	6. Understanding more C++ libraries. 7. Understanding the function in C++, and knowing how to write programs efficiently by creating and using the functions. 8. Learning different instructions, programming concepts, ideas and data structures like array, pointers, functions, strings and structures in order to build different programs efficiently. 9. Increasing the student ability to write, test, debug and run different programs. 10. Enhancing the student's ability to program in C++, taking into account the program's storage space and execution time.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding the Function. 2. Understanding the recursive functions. 3. Understanding the array (1D array) 4. Understanding the 2D array 5. Learn the references and pointers. 6. Understanding the structures
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A:

	• Function in C++ • Passing parameters to functions. • Overloading • Recursive functions. Part B: • Array in C++ • 1D array in C++ • 2D array in C++ Part C: • Pointers and references • References in C++ • Pointers in C++ • Pointers and array. • Pointer to pointer Part D: • String in C++ • cstring library in C++ • pointers and string Part E: • Structure in C++ • Array of structures.

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.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem)	64	**Structured SWL (h/w)**	4.2

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	136	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	9.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	7 and 11	LO #1,#2,#3,#4 and #5,#6
	Assignments	1	5% (5)	4, 5 ,10 and 13	LO #1, #2and #3,#4, and #5 ,and #6
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)		
Summative assessment	**Midterm Exam**	2hr	15% (15)	12	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Function in C++ • 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 C++ • 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 C++ • Pointer to pointers • Pointer and array • Examples on pointer to pointer • Examples on pointer and array
Week 10	• String in C++ • Defining the string. • Examples on reading and writing the string • Pointer and string
Week 11	More about the string in c++ • Using cstring library • Examples on cstring liberary
Week 12	Structure in C++ • Defining the structure in c++ • 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	
	Material Covered
Week 1	Perform examples on Function in C++
Week 2	Perform examples on Passing parameters in C++ and overloading
Week 3	Perform examples on Recursive functions
Week 4	Perform examples on 1D array in C++
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	• C++: How To Program, Deitel and Deitel, 4th edition, Pren ce Hall, 2002.	No

	• Programming in C, Stephen Kochan, 3rd edi on, Sams, 2004. • The C Programming Language, Brian W. Kernighan and Dennis M. Ritchie, 2nd edition, Prentice Hall, 1988.	
Recommended Texts	• C Programming: A Complete Guide to Mastering the C Language, Augie Hansen and August Hansen, Addison-Wesley, 1989.	No
Websites	https://www.coursera.org/courses?query=c%20plus%20plus	

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	**Information Systems**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS121**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	IS		**College**	CSI	
Module Leader	Talib Turkey		**e-mail**		
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name	Rafeef Hamza		**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

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

Module Objectives أهداف المادة الدراسية	11. This course aims to provide the student with knowledge about the internet and their effect in the information systems. 12. Provide the student with knowledge about the security. 13. Learning the basics of business intelligence. 14. Learning the ethics and crime of the information systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding the internet and WWW. 2. Understanding the security 3. Understanding the Business intelligence. 4. Understanding the Enterprise-wide information systems. 5. Understanding the Development and acquisition. 6. Understanding the Information systems ethics and crime
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • The Internet and WWW. • Security of information systems. • Business intelligence. • Enterprise-wide information systems. • Development and acquisition. • Information systems ethics and crime

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	In this course, the student learned the basics of programming through theoretical lectures, in addition to daily assignments and daily tests, asking some questions and using the brainstorming method.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	101	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.7
Total SWL (h/sem)	**150**		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	4 and 8	LO #1 #2 and #3
	Assignments	1	5% (5)	Continues	All
	Projects / Lab.				
	Report	1	5%(5)		
Summative assessment	Midterm Exam	2hr	30% (30)	12	LO #1 - #5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered

Week 1	The Internet and WWW:
	• E-business:
	  • B-to-C.
	  • B-to-B
	• Intranets, Internet, extranets.
	• E-government.
	• Web 2.0:
	  • Technologies: e.g., wikis, tags, blogs, netcasts, self-publishing.
	  • New forms of collaboration: social networking, virtual teams, viral marketing, crowd – sourcing.

Week 2	The Internet and WWW: • E-business: • B-to-C.

	• B-to-B
	• Intranets, Internet, extranets.
	• E-government.
	• Web 2.0:
	  • Technologies: e.g., wikis, tags, blogs, netcasts, self-publishing.
	  • New forms of collaboration: social networking, virtual teams, viral marketing, crowd – sourcing.

Week 3	Security of information systems: • Threats to information systems. • Technology-based safeguards. • Human-based safeguards. • Information systems security planning and management.
Week 4	Security of information systems: • Threats to information systems. • Technology-based safeguards. • Human-based safeguards. • Information systems security planning and management.

Week 5	Business intelligence:
	• Organizational decision making, functions, and levels:
	  • Executive, managerial, and operational levels.
	  • Systems to support organizational functions and decision making.
	• Information and knowledge discovery:
	  • Reporting systems.
	  • Online analytical processing.
	  • Data, text, and Web mining.
	  • Business analytics.
	• Application systems:
	  • Executive, managerial, and operational support systems.
	  • Decision support systems.
	  • Functional area information systems.
	  • Collaboration technologies.
	  • Intelligent systems.
	  • Knowledge management systems.
	• Information visualization:
	  • Visual analytics.
	  • Dashboards.
	  • Geographic information systems.

Week 6	Business intelligence:
	• Organizational decision making, functions, and levels:
	  • Executive, managerial, and operational levels.
	  • Systems to support organizational functions and decision making.
	• Information and knowledge discovery:
	  • Reporting systems.

	• Online analytical processing. • Data, text, and Web mining. • Business analytics. • Application systems: • Executive, managerial, and operational support systems. • Decision support systems. • Functional area information systems. • Collaboration technologies. • Intelligent systems. • Knowledge management systems. • Information visualization: • Visual analytics. • Dashboards. • Geographic information systems.
Week 7	Business intelligence: • Organizational decision making, functions, and levels: • Executive, managerial, and operational levels. • Systems to support organizational functions and decision making. • Information and knowledge discovery: • Reporting systems. • Online analytical processing. • Data, text, and Web mining. • Business analytics. • Application systems: • Executive, managerial, and operational support systems. • Decision support systems. • Functional area information systems. • Collaboration technologies. • Intelligent systems. • Knowledge management systems. • Information visualization: • Visual analytics. • Dashboards • Geographic information systems.
Week 8	Business intelligence: • Organizational decision making, functions, and levels: • Executive, managerial, and operational levels. • Systems to support organizational functions and decision making. • Information and knowledge discovery: • Reporting systems. • Online analytical processing. • Data, text, and Web mining. • Business analytics. • Application systems:

	• Executive, managerial, and operational support systems. • Decision support systems. • Functional area information systems. • Collaboration technologies. • Intelligent systems. • Knowledge management systems. • Information visualization: • Visual analytics. • Dashboards • Geographic information systems.
Week 9	Enterprise-wide information systems: • Enterprise resource planning. • Supply chain management. • Customer relationship management.
Week 10	Enterprise-wide information systems: • Enterprise resource planning. • Supply chain management. • Customer relationship management.
Week 11	Development and acquisition: • Systems development lifecycle. • Alternative development approaches. • External acquisition. • Outsourcing. • End-user development.
Week 12	Development and acquisition: • Systems development lifecycle. • Alternative development approaches. • External acquisition. • Outsourcing. • End-user development.
Week 13	Information systems ethics and crime: • Information privacy, accuracy, property, and accessibility. • Computer crime. • Cyberwar / cyberterrorism.
Week 14	Information systems ethics and crime: • Information privacy, accuracy, property, and accessibility. • Computer crime. • Cyberwar / cyberterrorism.
Week 15	A comprehensive review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Ralph M. Stair, George W. Reynolds, *Principles of Information Systems*, 13th edition, 2018. • Joseph Valacich, Christoph Schneider, *Information Systems Today Managing in the Digital World* , 8th edition, Pearson Education Limited, 2018.	No
Recommended Texts		No
Websites	https://www.coursera.org/courses?query=information%20systems	

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	**Discrete Mathematics**	**Module Delivery**	
Module Type	B	☒ **Theory** ☒ **Lecture** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CSI122**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		

Module Level	1	**Semester of Delivery**	2
Administering Department	IS	**College**	CSI
Module Leader	Firas Hussean Maghool	**e-mail**	firas.maghool@qu.edu.iq
Module Leader's Acad. Title	Assist. Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name	**e-mail**	E-mail
Peer Reviewer Name	Alaa Hussin Hammadi	**e-mail**	alaa.hammadi@qu.edu.iq
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The student is able to understand the basics of mathematical logic, methods of mathematical proof, study groups and operations on them, in addition to understanding relationships and their types, reviewing the concept of functions and familiarizing themselves with them, in a way that enhances the student's ability in mathematics
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Express a given logic sentence in terms of predicates, quantifiers, and logical connectives. 2. Derive the solution for a given a problem, using deductive logic and prove the solution based on logical inference. 3 . Classify a mathematical problem into its algebraic structure. 4 .Evaluate Boolean functions and simplify expressions using the properties of Boolean algebra. 5.Develop the given problem as graph networks and solve with techniques of graph theory.
Indicative Contents المحتويات الإرشادية	mathematical Logic: Statements and notations, Connectives, Well-formed formulas, Truth Tables, tautology, equivalence implication, Normal forms. Predicates: Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction. Set Theory: Properties of binary Relations, equivalence, compatibility and partial ordering relations, Functions, Inverse Function Composite of functions, recursive Functions, Lattice and its Properties, Pigeon hole principle and its application. Algebraic Structures: Algebraic systems Examples and general properties, Semi groups and monads, groups sub groups' homomorphism, Isomorphism. Elementary Combinatorics : Basics of counting, Combinations & Permutations…

Learning and Teaching Strategies استراتيجيات التعلم والتعليم

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

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	103	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	5%(5)	6 and 13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Mathematical Logic
Week 2	Predicates
Week 3	Rules of inference
Week 4	Relations, properties of Binary Relation
Week 5	Partial ordering relations
Week 6	Set Theory:
Week 7	Algebraic structures
Week 8	Functions,
Week 9	Composition of functions
Week 10	inverse function
Week 11	Karnaugh map
Week 12	Simplification and Boolean function
Week 13	Combinational and sequential analysis and design
Week 14	Combinational and sequential analysis and design
Week 15	Graph Theory
Week 16	**Preparatory week before the final 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

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Module Information معلومات المادة الدراسية					
Module Title	**الديمقراطية**			**Module Delivery**	
Module Type	S			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UNV121				
ECTS Credits	**1**				
SWL (hr/sem)	**50**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	IS		**College**	CSI	
Module Leader	Nasir allah Galib		**e-mail**	E-mail	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Makarim Kishan		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	تهدف المادة الدراسية من خلال مفرداتها الى بيان مفهوم الديمقراطية ومميزاتها وأنواعها، ومن ثم البحث في اثر الديمقراطية المباشرة وغير المباشرة على المجتمع، وهل ان ركائز الديمقراطية بأنواعها المختلفة المترابطة تحقق الأهداف التي يسمو لها المجتمع في ظل تطور اليات الديمقراطية عبر التأريخ، وكيف يمكن مواجهة التحديات التي تنفرد بها الأنظمة الحاكمة للحد من الديمقراطية.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	أ- **الأهداف المعرفية:** **اكتساب ما تم توضيحه من المفردات في حقل "المواضيع المطلوب بحثها و شمولها "** **اكتساب مهارات الحوار الديمقراطي** **التأكد من ان الطالب قادر علي طرح افكارة في أسلوب ديمقراطي بناء** **ب- الأهداف المهاراتية الخاصة بالمادة:** **أن يكتسب الطالب المهارات الخاصة بالتعامل الديمقراطي.** **أن يكتسب الطالب القدرة الفهم الصحيح للديمقراطية.** **أن يكتسب الطالب المعرفة الضرورية بالحقوق و الواجبات.** **ج - الأهداف الوجدانية والقيمية.** **تشجيع الطلاب على الاستفادة من المقرر من خلال الايمان بأهمية المقرر في العملية التعليمية وفي مجال التخصص بشكل عام.** **تشجيع الطلبة ورفع روح المنافسة بينهم.** **تعزيز التعاون بين الطلاب من خلال تنفيذ الواجبات العملية.**
Indicative Contents المحتويات الإرشادية	تهدف المادة الدراسية من خلال مفرداتها الى بيان مفهوم الديمقراطية ومميزاتها وأنواعها، ومن ثم البحث في اثر الديمقراطية المباشرة وغير المباشرة على المجتمع، وهل ان ركائز الديمقراطية بأنواعها المختلفة المترابطة تحقق الأهداف التي يسمو لها المجتمع في ظل تطور اليات الديمقراطية عبر التأريخ، وكيف يمكن مواجهة التحديات التي تنفرد بها الأنظمة الحاكمة للحد من الديمقراطية.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	طرائق التعليم والتعلم . إعطاء الأنشطة الجماعية أهمية من خلال تخصيص درجات على الأنشطة الجماعية .إدارة المحاضرة على شكل يجعل الطالب يشعر بأهمية الوقت .تشجيع الطالب على تقديم اعمال إبداعية في التخصص تواكب معايير الجودة في خدمة المجتمع

طرائق التقييم الالتزام بالحضور لقاعة الدرس وانهاء الاعمال المكلف بها (الواجبات والتقارير) ضمن توقيتات محددة المناقشة والمشاركة الفاعلة في قاعة الدرس إعطاء الأنشطة الجماعية أهمية من خلال تخصيص درجات على الأنشطة الجماعية . إدارة المحاضرة على شكل يجعل الطالب يشعر بأهمية الوقت. تشجيع الطالب على تقديم اعمال إبداعية في التخصص تواكب معايير الجودة في خدمة المجتمع. تحفيز المهارات العامة والتأهيلية المنقولة المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي .أن يكتسب الطالب القدرة على العمل الديمقراطي .تنمية روح التعاون لدى الطلبة و تعزيز مفاهيم الحرية .تعزيز العمل الديمقراطي لدى الطلبة و احترام رأي الآخرين	

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	17	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	33	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation

تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome

Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	5%(5)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**مفهوم الديمقراطية**
Week 2	**التعرف على مميزات الديمقراطية**
Week 3	**أنواعها**
Week 4	**المزايا والعيوب**
Week 5	**ركائز الديمقراطية**
Week 6	**المفاهيم الأساسية**
Week 7	**التعرف على البعد التاريخي**
Week 8	**النهوض بالواقع العربي**
Week 9	**التعرف على الاليات**
Week 10	**ترسيخ الأفكار**
Week 11	**حقوق الانسان والديمقراطية**
Week 12	**الأصل التاريخي**

Week 13	**الديمقراطية في الدستور العراقي**
Week 14	**التعرف على التحديات**
Week 15	**المشكلات التي واجهت الديمقراطية في العراق**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**منشورات مفوضية حقوق الانسان في العراق/ مركز البحوث. - الديمقراطية/ تأليف د. رياض عزيز هادي، بغداد 2008.** **- الديمقراطية من الفكر الى التطبيق/تأليف د. حامد حمزة، مجلة دراسات سياسية، بيت الحكمة، العدد(15) لسنة 2010 بغداد.**	
Recommended Texts	**– جدلية العلاقة بين الديمقراطية و تداول السلطة، مجلة دراسات سياسية، بيت الحكمة، العدد(16) لسنة 2010 بغداد.**	
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 Information
معلومات المادة الدراسية

Module Title	اللغة العربية		**Module Delivery**	
Module Type	S		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UNV122			
ECTS Credits	**4**			
SWL (hr/sem)	100			
Module Level	1		**Semester of Delivery**	2
Administering Department	IS		**College**	CSI
Module Leader	Makarim Kishan		**e-mail**	E-mail
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)		**e-mail**	E-mail
Peer Reviewer Name	Nasir allah Galib		**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**تعليم الطلبة مهارات الكتابة الصحيحة على مستوى الأملاء والنحو والصرف فضلا عن تعليم الطلبة أسلوب تحليل النص بالرجوع الى نصوص قرآنية, ونصوص أدبية معتبرة, إلى جانب تنمية قدرة الطلبة على الإلقاء بأسلوب مناسب.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	أ- الأهداف المعرفية: اكتساب ما تم توضيحه من المفردات في حقل "المواضيع المطلوب بحثها و شمولها " اكتساب مهارات الكتابة الادبية الصحيحة التأكد من ان الطالب قادر علي الكتابة الموافقة لقواعد اللغة وعلامات الترقيم ب- الأهداف المهاراتية الخاصة بالمقرر: اكساب الطالب المهارة التي تمكنه من كتابة النصوص العربية بشكل صحيح و مراعاة علامات التنقيط و قواعد اللغة العربية. اكساب الطالبة المهارة التي تمكنه من صياغة الجمل بشكل واضح و بأسلوب ادبي شيق.
Indicative Contents المحتويات الإرشادية	**تعليم الطلبة مهارات الكتابة الصحيحة على مستوى الأملاء والنحو والصرف فضلا عن تعليم الطلبة أسلوب تحليل النص بالرجوع الى نصوص قرآنية, ونصوص أدبية معتبرة, إلى جانب تنمية قدرة الطلبة على الإلقاء بأسلوب مناسب.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم

Strategies	• **قراءات ، تعلم ذاتي ، حلقات نقاش.** • **التدريبات والأنشطة في قاعة الدرس.** • **إرشاد الطلاب إلى بعض المواقع الالكترونية للإفادة منها.** • **عقد حلقات بحثية يتم من خلالها شرح وتحليل النصوص الأدبية.**

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	34	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	66	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	5%(5)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الأسبوعي النظري	
	Material Covered
Week 1	**تعليم الطلبة كيفية كتابة الهمزة**
Week 2	**تعليم الطلبة كيفية كتابة الهمزة**
Week 3	**تعليم الطلبة قواعد العدد والنعت العددي**
Week 4	**تعليم الطلبة كيفية صياغة العدد على وزن فاعل**
Week 5	**تعليم الطلبة كيفية وضع علامات الترقيم في النص الكتابي**
Week 6	**تعليم الطلبة كيفية كتابة الضاد والظاء**
Week 7	**تعليم الطلبة كيفية التمييز بين الألف المقصورة والألف الممدودة**
Week 8	**تعليم الطلبة الحروف التي يجب حذفها من الكلمة والحروف التي يجب إضافتها للكلمة**
Week 9	**تعليم الطلبة علامات الإعراب الأصلية والفرعية**
Week 10	**تعليم الطلبة التمييز بين التاء المربوطة والهاء في آخر الكلمة**
Week 11	**تعليم الطلبة بقواعد الجملة الإسمية**
Week 12	**تعليم الطلبة بقواعد الجملة الفعلية**
Week 13	**تعليم الطلبة مفهوم الأدب العربي وأهم عصوره التأريخية وفنونه الأدبية**
Week 14	**تعليم الطلبة حفظ نص قرآني وتحليله**
Week 15	**تعليم الطلبة حفظ نص أدبي وتحليله**

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

Required Texts	• **كتاب اللغة العربية لغير الاختصاص تأليف الدكتور رشيد العبيدي وأخرين** • **كتاب الأملاء الواضح تأليف علي الجارم وأحمد أمين** • **النحو الوافي تأليف عباس حسن**	
Recommended Texts	• **العصر الجاهلي تأليف شوقي ضيف** • **الميزان في تفسير القرآن تأليف محمد حسين الطباطبائي**	
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 Information
معلومات المادة الدراسية

Module Title	**English 1**		**Module Delivery**	
Module Type	**S**		☒ **Theory**	
Module Code	**UNV123**		☒ **Lecture**	
ECTS Credits	**4**		☐ **Lab**	
SWL (hr/sem)	**100**		☐ **Tutorial**	
			☐ **Practical**	
			☐ **Seminar**	
Module Level	1	**Semester of Delivery**	2	
Administering Department	IS	**College**	CSI	
Module Leader	Maitham Abdalhamza	**e-mail**	E-mail	
Module Leader's Acad. Title	Assist. Lecturer	**Module Leader's Qualification**	Master	
Module Tutor		**e-mail**		
Peer Reviewer Name	Qaiser Abid	**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0	

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1-The aim of this course is to provide English learners with integrated language skills such as reading, listening and writing resulting in a level of basic language knowledge. 2-This course will focus on grammar rules, basic word knowledge and usage, reading comprehension, reading out of the lesson, and Paragraph writing. 3- A student may be able to listen to native speakers and speak English Language. 4- A student may be able to write and have creativity in his writing.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Uses expressions of Quantity in elementary level of English. 2- Constructs sentences in Present Perfect Tense, Simple Future Tense and Going to Future Tense both in an oral and written task. 3- Defines basic Modals and employ them in elementary level of communication and writing skills. 4- Translates sentences in elementary level from English to another language. 5- Interprets the texts written in elementary level of English. **6-Language** is a rule-governed behavior. It is defined as the comprehension and/or use of a spoken (i.e., listening and speaking), written (i.e., reading and writing), and/or **other communication symbol system** (e.g., American Sign Language). **7-Spoken and written language** are composed of receptive (i.e., listening and reading) and expressive (i.e., speaking and writing) components. Spoken language, written language, and their associated components (i.e., receptive and expressive) are each a synergistic system comprised of individual language domains (i.e., phonology, morphology, syntax, semantics, pragmatics) that form a dynamic integrative whole

Indicative Contents المحتويات الإرشادية	1- Language and vocabulary 2- Grammar 3- Writing skill

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Uses the available material to increase his efficiency. 2- Constructs sentences in Present Perfect Tense, Simple Future Tense and Going to Future Tense both in an oral and written task. 3-Defines basic Modals and employ them in elementary level of communication and writing skills. 4- Develop and enhance students' language skills to communicate in English properly. 5- Interprets the texts written in elementary level of English.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	How to say your name , sociol expression
Week 2	Cities and countries (your word)
Week 3	Jobs, personal information ,Negatives and Questions
Week 4	Family and friends (possessives),has, have, the.
Week 5	The way I live (languages and national-ities)
Week 6	Every day (adverbs, Days of week, word that go together)
Week 7	Mid term exam
Week 8	Where I live (Rooms and furniture)
Week 9	Preposition , Direction

Week 10	Times Past (saying Years, irregular verbs)
Week 11	We had a great time (sport and leisure)
Week 12	I can do that(can, can't , everyday problems))
Week 13	Please and thank you(I'd like, some/any/signs all around)
Week 14	Colours and Clothes ,present continuous, opposite verbs)
Week 15	Revision as preparation for the final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Soars & John, (2019). New Headway plus (Beginners)Oxford University Press.	Yes
Recommended Texts		
Websites	https://www.bbc.co.uk/learningenglish/	

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	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	**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	**Object Oriented Programming**	**Module Delivery**	
Module Type	**Core**		☒ **Theory**
Module Code	**IS211**		☒ **Lecture**
ECTS Credits	**8**		☒ **Lab**
SWL (hr/sem)	**200**		☐ **Tutorial**
			☐ **Practical**
			☐ **Seminar**
Module Level	2	**Semester of Delivery**	1
Administering Department	IS	**College**	CSI
Module Leader	Dhiah Al-Shammary	**e-mail**	E-mail d.alshammary@qu.edu.iq
Module Leader's Acad. Title	Assist. Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail

Peer Reviewer Name	Talib Turkey	**e-mail**	E-mail talib.turkey@qu.edu.iq
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI111	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	• Learn the basics of object-oriented programming (class and object). • Learn the basics of programming languages used with the concept of OOP. • Teach the student the difference between an object and a constraint. • Learn the concept of encapsulation. • Programming the concept of inheritance. • Programming the concept of polymorphism
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Learn a new concept in programming. • Enabling the student to know the principles of the Class • Enabling the student to know the principle of Class • Enable the student to know the benefits of Object • Enabling the student to know the principle of inheritance

	• Enable the student to understand Constrictor and De-Constrictor • Design programs within the concept of OOP. • Provide the student with the necessary knowledge to build good programs and possess the necessary knowledge to link programs and applications with each other using the concepts of entity programming.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Introduction and definition of the object-oriented programming method and what are its characteristics that distinguish it from other types and methods of programming • Introducing how to build entities and their parts and what are their benefits • Building special functions to perform specific operations of general interest • The method of overlapping functions, how they work with each other, and how data moves between them • Method of protection and its benefits and what are the different types • The method of inheritance between parents and children • The method of inheritance between parents and children • The method of inheritance between parents and children • The method of inheritance between parents and children

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials

	and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	136	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	9.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	15% (15)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Classes, Constructors and Destructors
Week 2	Overloading Constructors, Default Constructors, Pointers to Classes
Week 3	Overloading Operators
Week 4	Keyword 'This', Static members
Week 5	Friend function, Friend Class
Week 6	Inheritance
Week 7	Inheritance
Week 8	Polymorphism
Week 9	Polymorphism
Week 10	Pointers to Base Class, Virtual Members
Week 11	Abstract Base Classes
Week 12	Function Templates, Class Templates
Week 13	Template Specialization, Templates and multiple-file projects
Week 14	Namespace, using, namespace alias
Week 15	Exceptions
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Classes, Constructors and Destructors
Week 2	Overloading Constructors, Default Constructors, Pointers to Classes
Week 3	Overloading Operators
Week 4	Keyword 'This', Static members
Week 5	Friend function, Friend Class
Week 6	Inheritance
Week 7	Inheritance
Week 8	Polymorphism
Week 9	Polymorphism
Week 10	Pointers to Base Class, Virtual Members
Week 11	Abstract Base Classes
Week 12	Function Templates, Class Templates
Week 13	Template Specialization, Templates and multiple-file projects
Week 14	Namespace, using, namespace alias
Week 15	Exceptions

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Object-Oriented Programming in C++, Fourth Edition	Yes

Recommended Texts	Thinking in C++, Volume 2: Practical Programming	No
Websites	www.studytonight.com/cpp/cpp-and-oops-concepts	

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	Essential System Analysis and Design	Module Delivery
Module Type	Core	☒ Theory
Module Code	IS212	☒ Lecture
ECTS Credits	4	☐ Lab
SWL (hr/sem)	100	☐ Tutorial
		☐ Practical
		☐ Seminar

Module Level	2	Semester of Delivery	1
Administering Department	IS	College	CSI
Module Leader	Lamia Abid Noor	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Rafid Nabeel	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	IS111	Semester	1
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	• The general introduction to the system is recognized in terms of its concept, components, features, and comparison with other systems. • Recognize the basic concepts related to the field of analysis and design of information systems. • A detailed explanation of the stages of building the system, with a focus on the analysis and design stages. • Describe the data flow diagrams of the system for the environmental level and the first and second levels. • Conducting proposed systems analysis through the use of requirements extraction techniques. • Preparing a requirements specification document on which the system designer relies. • Building analysis models (data model, functional model, behavioral model).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Enable the student to know the basics of building the system. • Enable the student to know the basics of requirements extraction and collection techniques. • Enable the student to learn about building analysis models for the system. • Enabling the student to know the mechanism of planning for any system and determining its requirements. • Enabling the student to know the economic feasibility of the system, which includes (cost and return). •

Indicative Contents المحتويات الإرشادية	• The general introduction to the system is recognized in terms of its concept, components, features, and comparison with other systems. • Recognize the basic concepts related to the field of analysis and design of information systems. • A detailed explanation of the stages of building the system, with a focus on the analysis and design stages. • Describe the data flow diagrams of the system for the environmental level and the first and second levels. • Conducting proposed systems analysis through the use of requirements extraction techniques. • Preparing a requirements specification document on which the system designer relies. • Building analysis models (data model, functional model, behavioral model).

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered

Week 1	System Definition, System components, Systems Analysis, Importance of System Analysis, Systems Design, Need for System Analysis and Design, Roles of the System Analyst, How can the system analyst starting the analysis?, The analyst's approach to problem solving
Week 2	An analyst should have fundamental technology knowledge of, There are four main skills of a system analysts, Kinds of technical skills are needed for systems analysts
Week 3	Kinds of managerial skills are needed for systems analysts, Kinds of communication skills are needed for systems analysts, Interpersonal and communication skills are crucial to, Stakeholders
Week 4	IDENTIFYING PROBLEMS, OPPORTUNITIES, AND OBJECTIVES, DETERMINING REQUIREMENTS, ANALYZING SYSTEM, DESIGNING THE SYSTEM
Week 5	DEVELOPING AND DOCUMENTING SOFTWARE (Coding), TESTING AND MAINTAINING THE SYSTEM, IMPLEMENTING AND EVALUATING THE SYSTEM, THE IMPACT OF MAINTENANCE (Change)
Week 6	FEASIBILITY ANALYSES: TECHNICAL FEASIBILITY, ECONOMIC FEASIBILITY, ORGANIZATIONAL FEASIBILITY
Week 7	Components of DFD: Entity, Process, Data Flow, Data Store, DFD General rules, Context Level Diagram – Level 0
Week 8	Course Registration System: Context Diagram for Course Registration System, Level 1 DFD, Course Registration System: Level 1 DFD, Course Registration System: Level 2 DFD
Week 9	Five areas of effort: Problem recognition, Evaluation and solution synthesis, Modeling, Specification, Review, Requirements Elicitation
Week 10	Context-Free Questions, Facilitated Action Specification Techniques (FAST)
Week 11	Quantity Function Deployment (QFD), Use-Cases: Example - Article Printing Use-Case, ATM machine, Advanced Use Case Diagrams
Week 12	Extend Relations, Analysis Model: Analysis Principles, Analysis Guiding Principle, Analysis Principle I Model the Data Domain: Data Modeling
Week 13	Analysis Principle II Model Function, Analysis Principle III Model Behavior, Behavioral Modeling: Example of State Transition Diagram for Photocopier Software, Analysis Principle IV Partition the Models: Partitioning, Analysis Principle V Essence & Implementation Views
Week 14	Software Prototyping: Prototyping Methods and Tools, Software Requirements Specification: Specification Principles, Representation
Week 15	Specification Review, Modeling, Design Engineering-Translating the analysis model into a software design, Design Specification Models
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	System Analysis and Design by Alan Dennis, 7th Ed., 2018	Yes
Recommended Texts	Introduction to Systems Analysis and Design by Hawryszkiewycz, 2nd Ed., 1995	No
Websites	www.studytonight.com/cpp/cpp-and-oops-concepts	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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Module Information معلومات المادة الدراسية					
Module Title	طرق عددية Numerical Methods			**Module Delivery**	
Module Type	B			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CSI211				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	2		**Semester of Delivery**	1	
Administering Department	IS		**College**	CSI	
Module Leader	Alaa Hussien		**e-mail**	E-mail	
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Firas Hussien		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	

Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Numerical analysis is used to solve mathematical equations that are difficult to solve or require a long time to solve. 2. Saving time and effort, especially in equations that need a lot of repetition in order to reach the result or solution 3. The ability to collect, classify, tabulate, represent and interpret quantitative and numerical data 4. Generalization of numerical mathematical superlatives to symbolic phrases. 5. The ability to build mathematical models. 6. Using different ways of thinking and the ability to judge the correctness and reasonableness of the solution
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Introducing the concepts of different numerical methods, the difference between them and the characteristics of each one. 2. Apply the concepts of numerical methods. 3. Realizing the importance of the concepts of numerical methods in practical life. 4. Developing students' concepts of numerical methods. 5. Trying to reach new numerical concepts. 6. Giving the student the skill and ability to solve complex mathematical problems related to the class. 7. Provide the student with the necessary skill to build mathematical models. 8. Developing the student's skill in proper mathematical thinking, which reflects positively on solving programming problems facing students.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following.

	Part A - Solution methods Learn the method of discussing issues scientifically by asking and answering questions The ability to implement numerical methods for the various subjects taught by the student using the computer The ability to discuss and compare computational results Provide the student with the skill of completing and approximating using polynomials Learn the method of discussing issues scientifically by asking and answering questions The ability to use different numerical methods in solving nonlinear equations, analyze the error associated with these methods and solutions, calculate the convergence rate Solving nonlinear equations using different numerical methods (Bisection method, fixed point, Newton, modified Newton, secant) and analyzing the error related to these methods, calculating the convergence rate for the iterative methods Solving systems of linear equations (direct methods (Gaussian method and trigonometric analysis) and repetition methods (Jacobi and Gauss-Seidel method), error analysis of recurrence methods, defining our residual product and number of condition and how to distinguish between a good and a linear system Part B - application and skill Fundamentals Solving systems of linear equations by direct methods and iterative methods The ability to write algorithms to solve various problems and implement them by computer Applying numerical methods in solving some mathematical models that appear in daily life, differentiating between actual solutions and approximate numerical solutions The ability to use different numerical methods in solving nonlinear equations, analyze the error associated with these methods and solutions, calculate the convergence rate.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Giving scientific lectures in classrooms and using the (Data Show) for the purpose of clarifying the main ideas of the subject and linking the theoretical aspect with practical examples in the laboratory. 2. Guiding students to some websites to benefit from them. 3. Assigning the student to prepare brief reports on some topics. 4. .4Scientific discussion inside the hall.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)		
	Assignments	1	5% (5)		
	Projects / Lab.	15	20% (20)		
	Report	1	5% (5)		
Summative assessment	**Midterm Exam**	2hr	15% (15)		
	Final Exam	2hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Numerical Methods
Week 2	Relative error, absolute error, inherent error, omitted error
Week 3	Non-Linear Equation
Week 4	Numerical Methods for Solving Non-linear Equations: Bisection Method, False Mode, Fixed Point Method, Newton's Method, Sequential Method, Modified Newton's Formula
Week 5	Convergence rate and error analysis, Newton's method for solving a system of nonlinear equations
Week 6	System of linear Equations
Week 7	Solving Systems of Linear Equations: Direct Methods: Gaussian Elimination, Factoring Method for Upper and Lower Triangular Matrices
Week 8	Iterative methods: Jacobi method, Gauss-Siddal method for error analysis in solving systems of linear equations
Week 9	Completion and approximation with polynomials Grange's complement formula, division differences, Newton's formulas for interpolation, error analysis in polynomial interpolation
Week 10	Differential - first derivative: two-point formula, three-point formulas anterior, central,posterior
Week 11	The second derivative: the three-point formula, the central formula
Week 12	Ordinary Differential Equations: Euler's Method and Improved Euler's Method
Week 13	Rung Kuta method of second and fourth order and ordinary differential equations of higher order
Week 14	Definite integration: method of rectangles, method of trapezoids
Week 15	Simpson's method and error analysis these methods

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Finding the actual and relative error using the computer
Week 2	Solving nonlinear equations using the bisection and fixed point method using the computer
Week 3	Solving nonlinear equations using Newton's method, modified Newton's secant method using the computer
Week 4	Solving nonlinear equations, analyzing the error related to the previous methods, and calculating the convergence rate for the iterative methods using the computer.
Week 5	Solving systems of linear equations (directly) using the Gaussian method and trigonometric analysis using the computer
Week 6	Solving systems of linear equations (and iteration methods) using the Jacobi and Gauss-Seidel method using the computer
Week 7	Solving systems of linear equations Error analysis of the previous iteration methods using the computer
Week 8	How to distinguish between a good and a bad linear system using a computer
Week 9	Completion and approximation using polynomials Grange's complement formula, division differences using the computer
Week 10	Completion and approximation using Newton's formula for interpolation and error analysis in polynomial interpolation using the computer
Week 11	Ordinary differential equations: Using Euler's method in the computer
Week 12	Using the improved Euler method in the computer
Week 13	Runge Kuta method in the computer

Week 14	Application of the method of rectangles, the method of trapezoids in the computer
Week 15	Simpson's method and error analysis These methods and their application in the computer

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	K, Atkinson, Elementary numerical analysis, john Wiley, 1985.	
Recommended Texts	https://www.coursera.org/campus?utm_content=corp-to-landing-for-campus&utm_campaign=website&utm_medium=coursera&utm_source=header&utm_term=b-out	
Required Texts	Numerical analysis James. Buchanan, Peter R. Turner 1992 McGraw-Hill College	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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Module Information
معلومات المادة الدراسية

Module Title	Essential Data Management and Information			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	IS213				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	1	
Administering Department	IS		**College**	CSI	
Module Leader	Rafid Nabeel		**e-mail**		
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	Master	
Module Tutor			**e-mail**		
Peer Reviewer Name	Lamia Abid Noor		**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	IS121	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Understand the principles of databases and methods of design. 2. Understand what database management systems are. 3. Know the reasons that led to the emergence of distributed databases. 4. Knowledge of what architectures are available and used to build distributed database systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Introducing the principles and basics of distributed databases, systems and types. 2. Apply the concepts of distributed databases. 3. Realizing the importance of distributed database systems. 4. Determine the difference between database systems and distributed database systems. 5. The ability to describe distributed database systems. 6. The ability to deliver lectures related to distributed database systems. 7. The ability to design a distributed database system. 8. The ability to learn and train on various traditional and distributed database systems. 9. The ability to manage dialogues and discussions related to database systems and distributed databases.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Circuit Theory DC circuits – Current and voltage definitions, Passive sign convention and circuit elements, Combining resistive elements in series and parallel. Kirchhoff's laws and

	Ohm's law. Anatomy of a circuit, Network reduction, Introduction to mesh and nodal analysis. [15 hrs] AC circuits I – Time dependent signals, average and RMS values. Capacitance and inductance, energy storage elements, simple AC steady-state sinusoidal analysis. [15 hrs] AC Circuits II - Phasor diagrams, definition of complex impedance, AC circuit analysis with complex numbers. [10 hrs] RL, RC and RLC circuits - Frequency response of RLC circuits, simple filter and band-pass circuits, resonance and Q-factor, use of Bode plots, use of differential equations and their solutions. Time response (natural and step responses). Introduction to second order circuits. [15 hrs] Revision problem classes [6 hrs] <u>Part B - Analogue Electronics</u> Fundamentals Resistive networks, voltage and current sources, Thevenin and Norton equivalent circuits, current and voltage division, input resistance, output resistance, coupling and decoupling capacitors, maximum power transfer, RMS and power dissipation, current limiting and over voltage protection. [15 hrs] Components and active devices – Components vs elements and circuit modeling, real and ideal elements. Introduction to sensors and actuators, self-generating vs modulating type sensors, simple circuit interfacing. [7 hrs] Diodes and Diode circuits – Diode characteristics and equations, ideal vs real. Signal conditioning, clamping and clipping, rectification and peak detection, photodiodes, LEDs, Zener diodes, voltage stabilization, voltage reference, power supplies. [15 hrs]

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.

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

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
	Quizzes	2	5% (5)	5 and 10	LO #1, #2 and #10, #11

Formative assessment	**Assignments**	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	15% (15)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Approaches to and evolution of database systems
Week 2	Approaches to and evolution of database systems
Week 3	Components of database systems
Week 4	Components of database systems
Week 5	Database architecture and data independence
Week 6	Database architecture and data independence
Week 7	Design of core DBMS functions (e.g., query mechanisms, transaction management, buffer management, access methods)
Week 8	Design of core DBMS functions (e.g., query mechanisms, transaction management, buffer management,access methods)
Week 9	Design of core DBMS functions (e.g., query mechanisms, transaction management, buffer management, access methods)
Week 10	Design of core DBMS functions (e.g., query mechanisms, transaction management, buffer management, access methods)

Week 11	Use of a declarative query language
Week 12	Use of a declarative query language
Week 13	Systems supporting structured and/or stream content
Week 14	Systems supporting structured and/or stream content
Week 15	Systems supporting structured and/or stream content
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to database systems
Week 2	Components of database
Week 3	Database architecture
Week 4	Design of core DBMS functions (e.g., query mechanisms, transaction management, buffer)
Week 5	Design of core DBMS functions (e.g., query mechanisms, transaction management, buffer management, access methods)
Week 6	Use of a declarative query language
Week 7	Systems supporting structured and/or stream content

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Database system concept, 5\E, Abraham silberschatz and Merry F. Koth, 2006 • Database Systems: The Complete Book • Book by Héctor García-Molina, Jeffrey Ullman, and Jennifer Widom	Yes
Recommended Texts	• Fundamentals of Database Systems Book by Ramez Elmasri	No
Websites	• **المواقع العلمية الرصينة**	

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	Data structure			Module Delivery	
Module Type	Core			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	IS214				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	2		Semester of Delivery	1	
Administering Department	IS		College	CSI	
Module Leader	Zuhal Adel		e-mail		
Module Leader's Acad. Title	Assist. Lecturer		Module Leader's Qualification	Master	
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name	Alaa Taima		e-mail		
Scientific Committee Approval Date	01/06/2023		Version Number	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CSI111	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 the graphic types that can be used when dealing with the computer 2. •Understand the graphic structures that can be used to facilitate the process of dealing with the problem 3. •View the graphic structures in detail and explain how each one works and how to add and delete them. 4. •Presentation of search and arrangement algorithms and how to program them in the laboratory. 5. •Teaching students how to program algorithms for graphic structures in scientific laboratories using the C++ language
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize and understand graphic structures 2. Recognize and understand algorithms in the field of data structures. 3. Recognize and understand useful applications of data structures 4. Identify and understand the possible types of operations on each graphic structure. 5. Learn and understand search and ranking algorithms. 6. Developing the student's skill in writing programs and choosing the appropriate structure to solve programming problems. 7. Providing the student with the necessary skill to choose the appropriate algorithm to deal with the required issue. 8. Developing the student's skill in developing algorithms to deal with different cases. 9. Providing the student with the skill of writing efficient programs to implement algorithms.
Indicative Contents المحتويات الإرشادية	1. At the beginning of this course, we learn about graphic structures and their definition, then we move to data types, and then we determine what are the mechanisms by which we identify how to choose the appropriate graphic structure. 2. Then we move on to explaining the graphic structures in detail and start with the matrix 3. Explain the one-dimensional array and the two-dimensional array, how to calculate their addresses, and how to store them in memory 4. Explain the stack, operations on the stack, and implementations of the stack 5. Explain queuing and operations on queuing 6. Explanation of the linked list and its types and operations

	7. Explain the concept of tree and binary search tree and how to use them as a graphical structure 8. Explanation of search algorithms and ranking algorithms

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Giving scientific lectures in classrooms and using the (Data Show) for the purpose of clarifying the main ideas of the subject. 2. Using a computer to implement programs. 3. Guiding students to some websites to benefit from them. 4. Assigning the student to implement a set of programs in the practical laboratories. 5. ٥Assign the student to prepare brief reports on some topics and carry out homework.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4.27
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome

Formative assessment	Quizzes	2	5% (5)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	6	LO #3, #4 and #6, #7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5%(5)		
Summative assessment	Midterm Exam	2hr	15% (15)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	General concepts
Week 2	Matrices and their types
Week 3	The concept of constraint
Week 4	stack concept
Week 5	The concept of arithmetic expressions
Week 6	stack applications
Week 7	Queue concept
Week 8	The concept of linked list and its types
Week 9	The circular and double linked list

Week 10	tree concept
Week 11	Binary search tree
Week 12	The concept of ranking and search algorithms
Week 13	The concept of ranking and search algorithms
Week 14	Search concept and search algorithms
Week 15	Search concept and search algorithms

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	General concepts
Week 2	Matrices and their types
Week 3	The concept of constraint
Week 4	stack concept
Week 5	The concept of arithmetic expressions
Week 6	stack applications
Week 7	Queue concept
Week 8	The concept of linked list and its types
Week 9	The circular and double linked list
Week 10	tree concept
Week 11	Binary search tree
Week 12	The concept of ranking and search algorithms
Week 13	The concept of ranking and search algorithms

Week 14	Search concept and search algorithms
Week 15	Search concept and search algorithms

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Data structures and algorithms Made Easy, 2017	
Recommended Texts	Data structure and Algorithmic Thinking with Python, 2016	

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	**Websites Development**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	IS221			
ECTS Credits	**8**			
SWL (hr/sem)	**200**			
Module Level	**2**	**Semester of Delivery**	**4**	
Administering Department	**IS**	**College**	**CSI**	
Module Leader	**Sudad Najim**	**e-mail**		
Module Leader's Acad. Title	**Assist. Lecturer**	**Module Leader's Qualification**	**Master**	
Module Tutor		**e-mail**		
Peer Reviewer Name	**Salwa Shakir**	**e-mail**		
Scientific Committee Approval Date	**01/06/2023**	**Version Number**	**1.0**	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**CSI121**	**Semester**	**2**
Co-requisites module	**None**	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives **أهداف المادة الدراسية**	• This course aims to provide the student with an overview of programming websites. • Enables the student to design advanced web pages through an integrated set of programming languages. • The student can program web pages through a set of programming languages. • The student can design web pages that deal with relational databases stored on the Internet. • Enable the student to build effective databases for web applications and update them via the Internet. • Enables the student to deal with the Client-Server environment
Module Learning Outcomes **مخرجات التعلم للمادة الدراسية**	• Enable the student to know the types and basics of designing and programming websites via the Internet and the Web. • •Enable the student to know the languages needed to design and program various types of websites on the Internet. • •Enable the student to know the basic functions provided by the various design and programming languages for the Web. • •Enable the student to build websites that work effectively on the Internet. • •Providing students with programming skills for programming websites on the Internet. • •Providing students with skills in updating programs, discovering and identifying software errors, and how to deal with them. • •Providing the student with the logical analysis skill of structuring databases related to websites
Indicative Contents المحتويات الإرشادية	• This course aims to provide the student with an overview of programming websites.

	• Enables the student to design advanced web pages through an integrated set of programming languages. • The student can program web pages through a set of programming languages. • The student can design web pages that deal with relational databases stored on the Internet. • Enable the student to build effective databases for web applications and update them via the Internet. • Enables the student to deal with the Client-Server environment

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.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**64**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**4**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**136**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**9**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	5% (5)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	50% (50)	7	LO #1 - #7
	Final Exam	2	5% (5)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	HTML Language/Design Language
Week 2	HTML Language
Week 3	HTML Language
Week 4	HTML Language
Week 5	HTML Language
Week 6	HTML Language
Week 7	HTML Language
Week 8	CSS Language/ Format Language
Week 9	CSS Language

Week 10	**CSS Language**
Week 11	**Java Script/ Programming Language**
Week 12	**Java Script**
Week 13	**Java Script**
Week 14	**Java Script**
Week 15	**Java Script**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Lab 1: HTML Language/ Design Language**
Week 2	**Lab2: HTML Language**
Week 3	**Lab 3: CSS Language/ Format Language**
Week 4	**Lab 4: CSS Language**
Week 5	**Lab5: Java Script/ Programming Language**
Week 6	**Lab 6: Java Script**
Week 7	**Lab 7: Java Script**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Puntambekar, A.A., 2020. Internet Programming. Technical Publications.**	Yes

Recommended Texts	**Grove, R.F., 2009. Web Based Application Development. Jones & Bartlett Publishers.**	No
Websites	**scientific sites**	

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	**Data Management and Information**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS223**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		

Module Level		**Semester of Delivery**	4
Information Systems	IS	**College**	CSI
Module Leader	Lamia Abid Noor	**e-mail**	E-mail
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Zuhal Adel	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	IS111	**Semester**	1
Co-requisites module	None	**Semester**	

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

Module Aims أهداف المادة الدراسية	introduces a range of topics that underpin the successful use and management of information in contemporary organisations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The student will demonstrate an understanding of the scope, purpose and value of information in an organization. 2. The students will demonstrate an understanding of the principles, issues and trends in managing information infrastructure and services. 3. The students will demonstrate an understanding of the Information Management and processes involved in utilizing the Internet for Interacting with consumers. 4. The students will demonstrate skills on the processes involved in securing Information Systems. 5. The students will be able to identify important features of organizations in order to build and use information systems successfully. 6. The students will be able to define and describe the fundamentals of hardware, software, database management, data communications and systems related to the management activities in an organization. 7. The students will be able to assess how information management support the activities of managers and end-users in organizations in an industry analysis scenario. 8. The students will demonstrate understanding of the ethical issues associated with the integration systems into society. 9. The students will be able to identify the principal management challenges posed by the ethical and social impact of information systems and management solutions
Indicative Contents المحتويات الإرشادية	1. Data, Information and Knowledge 2. Characteristics of Valuable Information 3. Input, Processing, Output and Feedback 4. Categories of Information Management 5. Business Information Systems 6. Electronic and Mobile Commerce 7. Enterprise Systems: Transaction Processing Systems and Enterprise Resource Planning 8. Information and Decision Support Systems 9. Data Warehouse and Business Intelligence Concepts

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

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

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5, 10	LO #1, 2, 3
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 5,6
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 7-9

Summative assessment	**Midterm Exam**	2hr	15% (15)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week 1	Data, Information and Knowledge
Week 2	Characteristics of Valuable Information
Week 3	Characteristics of Valuable Information
Week 4	Input, Processing, Output and Feedback
Week 5	Categories of Information Management
Week 6	Business Information Systems
Week 7	Business Information Systems
Week 8	Electronic and Mobile Commerce
Week 9	Electronic and Mobile Commerce
Week 10	Enterprise Systems: Transaction Processing Systems and Enterprise Resource Planning
Week 11	Enterprise Systems: Transaction Processing Systems and Enterprise Resource Planning
Week 12	Information and Decision Support Systems
Week 13	Data Warehouse and Business Intelligence Concepts
Week 14	Data Warehouse and Business Intelligence Concepts
Week 15	Data Warehouse and Business Intelligence Concepts
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Data, Information and Knowledge
Week 2	Characteristics of Valuable Information
Week 3	Characteristics of Valuable Information
Week 4	Input, Processing, Output and Feedback
Week 5	Categories of Information Management
Week 6	Business Information Systems
Week 7	Business Information Systems
Week 8	Electronic and Mobile Commerce
Week 9	Electronic and Mobile Commerce
Week 10	Enterprise Systems: Transaction Processing Systems and Enterprise Resource Planning
Week 11	Enterprise Systems: Transaction Processing Systems and Enterprise Resource Planning
Week 12	Information and Decision Support Systems
Week 13	Data Warehouse and Business Intelligence Concepts
Week 14	Data Warehouse and Business Intelligence Concepts
Week 15	Data Warehouse and Business Intelligence Concepts

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

Required Texts	Anand, V., Manz, C.M. and Glick, W.H. (1998) An Organizational Memory Approach to Information Management. The Academy of Management Review, Vol. 23(4), pp. 796-809.	No
Recommended Texts	The Data Warehouse Lifecycle Toolkit 2nd Edition by Ralph Kimball, Margy Ross, Warren Thornthwaite, Joy Mundy, Bob Becker Management Information Systems 7th Edition by Ken J. Sousa	No
Websites	Information Management - What is it? Definition, Examples and More (kbmanage.com)	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module Information
معلومات المادة الدراسية

Module Title	Statistics and Probability			**Module Delivery**	
Module Type	B			☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	CSI221				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level	2		**Semester of Delivery**	4	
Administering Department	IS		**College**	CSIT	
Module Leader	Sahar Jaafar		**e-mail**		
Module Leader's Acad. Title	Assisnt. Professor		**Module Leader's Qualification**	Master	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Elaf Hussein		**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1-This course aims to provide the student with an overview of the principles and concepts of statistics and probability. 2- The student will be able to differentiate between quantitative and qualitative data and how to represent them. 3- Enable the student to know the types of distribution such as the normal distribution and use it to represent the types of probabilities. 4- Introducing students to modern topics in the principles of statistics and probability.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	8. Identify the types of quantitative and qualitative data. 9. Learn about data and data representation methods. 10. Enabling the student to know the basic functions provided by programming languages. 11. Identify the types of distribution and use it to represent the types of probabilities. 12. The student acquires the skill of structural thinking and logical analysis of statistical and probability problems. 13. The possibility of finding the probability for each variable. 14. The possibility of finding the distribution of discrete and continuous random variables. 15. Encouraging students to benefit from the course by believing in the importance of the course in the educational process and in the field of specialization in general. 16. Developing the intellectual and creative energies of students through their implementation of various duties. 17. Encouraging students and raising the spirit of competition among them. 18. Developing the student's ability to deal with technical means. 19. Developing the student's ability to deal with the Internet. 20. Developing the student's ability to learn ways and means of personal development beyond the course. 21. Develop the student's ability to dialogue and discussion. 22. Developing the spirit of creativity, perseverance and searching for new things in his field of work.
Indicative Contents	

المحتويات الإرشادية	Part A – probability Theory Introduction - General concepts of statistics Introduction to the topic of compatibility and permutations .Probability theory, probability laws with some applications Conditional probability, independence, Bayes' theorem and some of its applications (10hrs) Distribution Theory ,The use of distribution theory for a single random variable, definition of discrete and continuous variables .Some important functions are the probability density function, the distribution function, the mathematical expectation, and the variance.(10 hrs) Moments: special cases of moments, central absolute moments, and working moments. The moment generating function, study of the function and a special case of the moment generating function. Mode, median definitions and examples.(10hrs) Revision problem classes (6hrs) Part B - probability distributions / Descriptive statistics Some special distributions (discontinuous and distributions) common distribution. Joint distributions and joint distribution function joint probability density function, marginal. (10hrs) Conditional distribution, joint expectation, conditional expectation, variance, definition and examples. Probability distributions, discrete and continuous distribution. (10hrs) Descriptive statistics, frequency distribution. Measures of central tendency, arithmetic, geometric and harmonic mean. Mediator, definition and characteristics of the mediator and examples. Mode, mean deviation, and standard deviation definitions and examples. (12hrs)

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.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects				
	Report	1	5%(5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	30% (30)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - General concepts of statistics Introduction to the topic of compatibility and permutations
Week 2	Probability theory, probability laws with some applications Conditional probability, independence, Bayes' theorem and some of its applications
Week 3	Distribution Theory ,The use of distribution theory for a single random variable, definition of discrete and continuous variables
Week 4	Some important functions are the probability density function, the distribution function, the mathematical expectation, and the variance
Week 5	Moments: special cases of moments, central absolute moments, and working moments
Week 6	The moment generating function, study of the function and a special case of the moment generating function
Week 7	Mid-term Exam + Mode, median definitions and examples

Week 8	Some special distributions (discontinuous and distributions) common distribution
Week 9	Joint distributions and joint distribution function joint probability density function, marginal
Week 10	Conditional distribution, joint expectation, conditional expectation, variance, definition and examples
Week 11	Probability distributions, discrete and continuous distribution
Week 12	Descriptive statistics, frequency distribution
Week 13	Measures of central tendency, arithmetic, geometric and harmonic mean
Week 14	Mediator, definition and characteristics of the mediator and examples
Week 15	Mode, mean deviation, and standard deviation definitions and examples
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	• Data structure and Algorithmic Thinking with Python, 2016. • Introduction to mathematics statics (Hogg and Grug) . • Elment of mathematical statics (Ractliffe)	Yes
Recommended Texts	• مبادئ الاحصاء التطبيقي لغير الاختصاص /تأليف غازي عطية زراك	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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	**English 2**	**Module Delivery**	
Module Type	**S**	☒ **Theory**	
Module Code	**UNV221**	☒ **Lecture**	
ECTS Credits	**4**	☐ **Lab**	
SWL (hr/sem)	**100**	☐ **Tutorial**	
		☐ **Practical**	
		☐ **Seminar**	
Module Level	2	**Semester of Delivery**	4
Administering Department	IS	**College**	CSI
Module Leader	Maitham Abdalhamza	**e-mail**	E-mail
Module Leader's Acad. Title	Assist. Lecturer	**Module Leader's Qualification**	Master

Module Tutor		**e-mail**	
Peer Reviewer Name	Qaiser Abid	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1-The aim of this course is to provide English learners with integrated language skills such as reading, listening and writing resulting in a level of basic language knowledge. 2-This course will focus on grammar rules, devloping word knowledge and usage, reading comprehension, reading out of the lesson, and Paragraph writing. 3- A student may be able to listen to native speakers and speak English Language. 4- A student may be able to write and have creativity in his writing.
Module Learning Outcomes	

مخرجات التعلم للمادة الدراسية	1- Uses expressions of Quantity in elementary level of English. 2- Constructs sentences in Present Perfect Tense, Simple Future Tense and Going to Future Tense both in an oral and written task. 3- Defines basic Modals and employ them in elementary level of communication and writing skills. 4- Translates sentences in elementary level from English to another language. 5- Interprets the texts written in elementary level of English. **6-Language** is a rule-governed behavior. It is defined as the comprehension and/or use of a spoken (i.e., listening and speaking), written (i.e., reading and writing), and/or **other communication symbol system** (e.g., American Sign Language). **7-Spoken and written language** are composed of receptive (i.e., listening and reading) and expressive (i.e., speaking and writing) components. Spoken language, written language, and their associated components (i.e., receptive and expressive) are each a synergistic system comprised of individual language domains (i.e., phonology, morphology, syntax, semantics, pragmatics) that form a dynamic integrative whole
Indicative Contents المحتويات الإرشادية	4- Listening 5- Grammar 6- Writing skill 7- Reading skills

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Uses the available material to increase his efficiency. 2- Constructs sentences in Present Perfect Tense, Simple Future Tense and Going to Future Tense both in an oral and written task. 3-Defines basic Modals and employ them in elementary level of communication and writing skills. 4- Develop and enhance students' language skills to communicate in English properly.

	5- Interprets the texts written in elementary level of English.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Getting to Know you
Week 2	The way we live
Week 3	It all went wrong
Week 4	Let's go shopping
Week 5	What do you want to do?
Week 6	Tell me! What's it like?
Week 7	Mid term test, revision and more examples
Week 8	Present Perfect, Fame
Week 9	Do's and don'ts
Week 10	Going Places(Time clauses)
Week 11	Scared to death (Verb Patterns)
Week 12	Things that Changed the world
Week 13	Earning a living
Week 14	Family ties
Week 15	Preparation for final exam

Learning and Teaching Resources مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Soars & John, (2019). New Headway plus (Pre-Intermediate)Oxford University Press.	Yes
Recommended Texts		
Websites	https://www.bbc.co.uk/learningenglish/	

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	**Design and Analysis of Algorithms**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	IS224			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	2	**Semester of Delivery**	4	
Administering Department	IS	**College**	CSI	
Module Leader	Ali Obeid Sharrad	**e-mail**	E-mail	
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)	**e-mail**	E-mail	
Peer Reviewer Name	Qusay O. Mosa	**e-mail**	Qusay.mosa@qu.edu.iq	
Scientific Committee Approval Date	/06/2023	**Version Number**	1.0	

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI111	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. provide students with in-depth knowledge on algorithm design techniques; 2. introduce and practice advanced algorithms for various data types.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the subject, students will be able to: 1. Understand common techniques for designing algorithms; 2. acquire the skills to design efficient algorithms for solving computational problems; 3. Analyze and compare the efficiency of algorithms; 4. design and implement efficient algorithms for solving computing problems 5. Solve problems independently 6. Think critically for improvement in solutions
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Introduction to Algorithms: Introduce the idea of an algorithm, Documenting an algorithm and the use of pseudo code, Introduction to algorithm analysis. [4 hrs] • Analysis of algorithms: Mathematical techniques; big-O notation; efficiency analysis; recurring relations. [4 hrs] • Fundamental Algorithmic Problems: Searching, Sorting, String searching, Graph problems [4 hrs] • Algorithm Analysis: Asymptotic analysis of upper and average complexity bounds, Identifying differences among best, average, and worst case behaviours, Standard complexity classes, Using recurrence relations to analyze recursive algorithms, NP Complete problems [10 hrs] • Algorithm Design Techniques: General ideas for algorithm development, Brute-force algorithms, Divide-and-conquer, Dynamic programming, Greedy algorithms,[10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lectures provide students the main concepts of the topic, together with comprehensive examples for easy understanding. 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..

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	34	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	66	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab			Continuous	All

	Report	1	5%(5)		
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Algorithms: Introduce the idea of an algorithm
Week 2	Documenting an algorithm and the use of pseudo code, Introduction to algorithm analysis.
Week 3	Analysis of algorithms: Mathematical techniques;
Week 4	Big-O notation; efficiency analysis; recurring relations.
Week 5	Fundamental Algorithmic Problems: Searching, Sorting,
Week 6	Fundamental Algorithmic Problems: String searching, Graph problems
Week 7	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit
Week 8	Algorithm Analysis: Asymptotic analysis of upper and average complexity bounds
Week 9	Algorithm Analysis: Identifying differences among best, average, and worst case behaviours
Week 10	Algorithm Analysis: Standard complexity classes, Using recurrence relations to analyze recursive algorithms, NP Complete problems
Week 11	Algorithm Design Techniques: General ideas for algorithm development
Week 12	Algorithm Design Techniques: Brute-force algorithms

Week 13	Algorithm Design Techniques: Divide-and-conquer,
Week 14	Algorithm Design Techniques: Dynamic Programming
Week 15	Algorithm Design Techniques: Greedy algorithms
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	, Introduction to Algorithms, 3rd Edition, MIT Press, 2009.Cormen, Thomas H., Leiserson, Charles E., Rivest, Ronald L. and Stein, Clifford	Yes
Recommended Texts	Algorithm design. Addison-Wesley 2006, Jon M. Kleinberg, Éva TardosISBN 978-0-321-37291-8.	No
Websites	https://www.programiz.com/dsa/algorithm • https://www.tutorialspoint.com/data_struc tures_algorithms/index.htm	

Grading Scheme

مخطط الدرجات

Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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Module Information
معلومات المادة الدراسية

Module Title	**Artificial) ذكاء اصطناعي : (Intelligence**		**Module Delivery**
Module Type	**Core**		**Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**IS311**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		

Module Level	3	**Semester of Delivery**	5
Administering Department	IS	**College**	CSI
Module Leader	Rafeef Hamza	**e-mail**	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Master
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Abeer Hamza	**e-mail**	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CSI122	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**1. This course aims to introduce students to the field of artificial intelligence and its relationship to computer science in a logical and practical way** **2. Familiarize students with artificial intelligence algorithms.** **3. Explain and clarify the challenges that we face when building smart systems.** **4. .4It gives models and examples of smart systems and what are the basic technologies used in these systems.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1. Learn about the concept of intelligence, how to distinguish and evaluate smart behavior, and what is artificial intelligence.** **2. Learn about the history of artificial intelligence and what other fields of knowledge are associated with it.** **3. Identify the concept of knowledge base, its importance, types, methods of building and representing it.** **4. Identify the state space to solve the problem.** **5. Identifying search strategies, the characteristics of each method, and when to use it.** **6. Provide the student with the skill of choosing the appropriate way to represent the knowledge of a specific application, according to the size of this knowledge (information), its nature, its components, and the way it relates to it.**

	7. **Developing the student's skills in choosing the best way to represent the state space graph according to certain criteria related to the nature of the issue or the problem to be solved.** 8. **.8Provide the student with the skill of choosing the best way to search, according to certain criteria.**
Indicative Contents المحتويات الإرشادية	1. **The chapter begins with learning about artificial intelligence, what is its definition, what is the definition of intelligence, and what are the methods of obtaining information.** 2. **It then moves on to ways of representing knowledge and its types, including logical, structured, and network** 3. **Learn about the search algorithms for the optimal solution, including blinb and huristic** 4. **Clarification of the mechanism of work of the DFS and BFS search algorithms** 5. **Explanation of the mechanism of the legacy search algorithms A, A*** 6. **Clarify the applications of artificial intelligence and expert systems and their applications** 7. **.7Learn how to deal with neural networks**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. **Giving scientific lectures in classrooms and using the (Data Show) for the purpose of clarifying the main ideas of the subject.** 2. **Guiding students to some websites to benefit from them.** 3. **Assign the student to implement a set of programs in the practical laboratories.** 4. **.4Assign the student to prepare brief reports on some topics and carry out homework.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.26
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem)	**150**		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	5% (5)	5	#4
	Assignments	1	5% (5)	9	#8
	Projects / Lab.	15	20% (20)	continues	All
	Report	1	5% (5)		
Summative assessment	Midterm Exam	2hr	15% (15)	7	LO#1-#7
	Final Exam	2hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction of AI
Week 2	Acknowledge representation
Week 3	Logical representation
Week 4	Resolution proof procedure
Week 5	Examples of Acknowledge representation
Week 6	State space

Week 7	Search algorithm
Week 8	Heuristic search
Week 9	DFS and BFS algorithms
Week 10	A_ search algorithm
Week 11	A*_ algorithm
Week 12	Expert system
Week 13	Acknowledge acquisition
Week 14	Introduction of neural network
Week 15	Design of neural network

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	What is prolog?
Week 2	Basic element of prolog.
Week 3	Simple prolog programs (Facts & Rules, clause):
Week 4	Fact and rule database
Week 5	Fact and rule database
Week 6	Athematic operation with clause
Week 7	Recursion
Week 8	Backtracking
Week 9	Review and exam
Week 10	Lists in Prolog
Week 11	Lists in Prolog

Week 12	Standard String Predicates
Week 13	Standard String Predicates
Week 14	Complete Prolog Programs
Week 15	Complete Prolog Programs

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	INTRODUCTION TO ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS Edited By Dr. Anil Sharma, 2009	https://ebooks.lpude.in/computer_application/ad/DCAP310_INTRODUCTION_TO_ARTIFICIAL_INTELLIGENCE_AND_EXPERT_SYSTEMS.pdf
Recommended Texts	George F. Luger, "Artificial Intelligence Structures and Strategies for Complex Problem Solving", Pearson Eduction Asia (Singapore), 6/E, 2009	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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Module Information
معلومات المادة الدراسية

Module Title	**Computer Networks**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS312**			
ECTS Credits	**6**			
SWL (hr/sem)	**150**			
Module Level	3	**Semester of Delivery**	5	
Administering Department		**College**		
Module Leader	Ali Saeed	**e-mail**	a.s.alfoudi@qu.edu.iq	
Module Leader's Acad. Title	Assistant Prof.	**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)	**e-mail**	E-mail	
Peer Reviewer Name	Dhiah Al-Shammary	**e-mail**	E-mail	
Scientific Committee Approval Date		**Version Number**		

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI121	**Semester**	2

Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Learn about communication systems in general and learn about computer networks and their classifications. 2. Understand network architecture, OSI models, and TCP/IP. 3. Learn how to encode data to be transmitted over computer networks. 4. Learn how to route data through the Routing network and the protocols used in it.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. This course provides a technical and operational overview of digital computer networks, the foundation for all modern information systems and services. 2. It will learn about the major software and hardware technologies used on home and enterprise computer networks as well as the global Internet. 3. It will learn how information is encoded into digital packets, how it is transported across local networks like the one at SU, and how SU and other organizations interconnect over the Internet backbone. 4. This course will emphasize the critical importance of open network standards and protocols, which allow software and hardware from a variety of vendors to interoperate while also driving down the cost of network systems. 5. In addition to the exploring the capabilities and limitations of today's most popular networks, including Ethernet, Wi-Fi, and Cellular, we'll also cover topics closely related to networks.
Indicative Contents المحتويات الإرشادية	**1. Introduction:** Data communications, classification of computer networks, computer networks topologies, communication protocols and standards, layered tasks, the OSI model and layers, TCP/IP protocol suite, addressing. **2. Exploring the Network** Understand and describe the devices and services used to support communications in data networks and the Internet. 3. Network Protocols and Communications Understand and describe the role of protocol layers in data networks. **4. Physical Layer:** Data and signals, analog and digital, analog and digital signals, signals and communication, digital signals, transmission of digital signals, transmission impairments, data rate limits and transmission and performance, digital to digital conversion. **5. Data Link Layer:** Error detection and correction: introduction, CRC and checksum, framing, flow and error control. **6. Transport Layer:**

	Process to process delivery, Protocols: UDP, TCP and SCTP, congestion control, quality of service. **7. Application Layer Functionality and Protocols:** How do the functions of the three upper OSI model layers provide network services to end-user applications? How do the TCP/IP application layer protocols provide the services specified by the upper layers of the OSI model? How do people use the application layer to communicate across the information network?, What are the functions of well-known TCP/IP applications, such as the World Wide Web and e-mail, and their related services (HTTP, DNS, DHCP, STMP/POP, and Telnet).

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	In a computer network course, students will learn strategies to know the basic concepts of communications and computer networks, and identifies their basics, benefits, shapes, architectures, layers, functions, and possible services, in addition to how to network them.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (hr/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**62**	**Structured SWL (hr/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (hr/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	88	**Unstructured SWL (hr/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (hr/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	5% (5)	5 and 10	#1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	#3, #4 and #6, #7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	#5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	15% (15)	7	#1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	General concepts of communication • Communications between devices and components of the communication system and protocols.
Week 2	General concepts about networks • Definition of networks, types of connectivity, protocols and standards.
Week 3	Network models • General study of network models (OSI and Internet models).
Week 4	Learn about more network models • A detailed study of the layers of network models.
Week 5	Study of the physical layer • Study data and digital and analog signals.

Week 6	Learn more about the physical class • Signals and communications, digital and analog transmissions and specifiers.
Week 7	Studying the data link layer • Study the tasks and work of the data link layer.
Week 8	Learn more about the data link layer • Error detection and correction, framing, transmission and error control.
Week 9	Network layer study • Study the functions and work of the network layer.
Week 10	Learn more about the network layer • Addressing, networking, routing concepts.
Week 11	Learn more about the network layer • Routing, routing table components, routing algorithms.
Week 12	Transport layer study • Study the tasks and work of the transport layer.
Week 13	Learn more about the transport layer • Transport layer protocols, congestion control, and quality of service.
Week 14	Learn about cables and their types • Study the types of cables and compare them and their uses.
Week 15	Learn about devices and how to connect the network • Connecting networks using cables, routers and switches.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	General introduction about the Cisco Packet Tracer
Week 2	The basics of Cisco Packet Tracer

Week 3	Example packet tracer peer-to-peer network.
Week 4	Using the hub in Cisco Packet Tracer Simulation
Week 5	Creating a local area network (LAN) using the hub.
Week 6	Using the switch in Cisco Packet Tracer.
Week 7	Creating a LAN using the switch.
Week 8	Difference between hub and switch.
Week 9	Using the router in Cisco Packet Tracer.
Week 10	Inter-LAN communication using router.
Week 11	Creating a LAN using router
Week 12	Introduction Basics of Repeater.
Week 13	Working of repeater using Cisco Packet Tracer.
Week14	Connecting networks using cables, routers and switches.
Week15	Creating network topology using cable router, switch and repeater

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Textbook: 1. Behrouz A. Forouzan - Data Communications and Networking with TCP_IP Protocol Suite-McGraw Hill (2021) 2. Er Vikrant Vij - Computer Networks-Laxmi Publications (2018)	Yes (E-copy)

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	**Secure Computing**	**Module Delivery**
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**IS313**	
ECTS Credits	**4**	
SWL (hr/sem)	**100**	

Module Level	3	**Semester of Delivery**	5
Administering Department		**College**	
Module Leader	Ali Saeed Dayem Alfoudi	**e-mail**	a.s.alfoudi@qu.edu.iq
Module Leader's Acad. Title	Assistant Prof.	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Dhiah Al-Shammary	**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	5. Learn about security in general and learn about computer security. 6. Understand cryptography types. 7. Learn how the intrusion and malware detection work. 8. Learn how to utilize the machine learning in security and privacy.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This module introduces the principles and practices of computer security with specific emphasis on practical design and engineering challenges for building secure systems. Designed for students with a basic technical understanding of computer organization, it covers the foundations of building, using, and managing secure systems for emerging technologies such as the internet of things (IoT), machine learning, and distributed systems/blockchains. Topics will include hardware security, cyber-physical system and IoT security, machine learning security and privacy, and building secure and private distributed systems. The module covers both attacks and defenses in each topic.
Indicative Contents المحتويات الإرشادية	• Introduction to Security • Brief Introduction to Cryptography • Malware and Intrusion Detection

	• Hardware Trust and Trusted Execution Units • Memory Safety and Security • Machine Learning Security and Privacy • Side-Channels • Hardware Security

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (hr/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**32**	**Structured SWL (hr/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (hr/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (hr/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (hr/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	#1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	#3, #4 and #6, #7
	Projects / Lab.				
	Report	1	5%(5)	13	#5, #8 and #10
Summative assessment	Midterm Exam	2hr	30% (30)	7	#1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction 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

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Textbook: 3. 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) 4. Sharma, K., Gigras, Y., Sharma, V., Hemanth, D.J. and Poonia, R.C. eds., 2022. *Internet of Healthcare Things: Machine Learning for Security and Privacy*. John Wiley & Sons. 5. Tehranipoor, M. and Wang, C. eds., 2011. *Introduction to hardware security and trust*. Springer Science & Business Media.	Yes (E-copy)

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	**IS Project Management**	**Module Delivery**
Module Type	**Core**	☒ **Theory**
Module Code	**IS314**	☒ **Lecture**
ECTS Credits	**4**	☐ **Lab**
SWL (hr/sem)	**100**	☐ **Tutorial**
		☐ **Practical**
		☐ **Seminar**

Module Level	3	**Semester of Delivery**	5
Administering Department	IS	**College**	CSI
Module Leader	Rafid Nabeel	**e-mail**	E-mail
Module Leader's Acad. Title	Assist. Professor	**Module Leader's Qualification**	Master
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Suadad Najim	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**IS112**	**Semester**	**1**
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Providing students with the basics of project management in general. 2. Provide students with the types of activities needed to produce projects. 3. Study the important stages in building the project. 4. Building a high quality software system. 5. Gain knowledge at every stage of construction. 6. Knowledge, understanding and perception. 7. Clarifying the basic concepts of project management of information systems and identifying a set of required tools. 8. Acquisition of skills in project construction and problem solving. 9. Study techniques for deriving system requirements. 10. Studying the stages of building the system, the cost and the required time.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The ability to build and manage projects. 2. The ability to think about addressing the problem according to quality standards. 3. Writing scientific reports. 4. Using advanced building models to obtain efficient software.
Indicative Contents	Indicative content includes the following.

المحتويات الإرشادية	Part A - Introduction to Information Systems Basic Concepts: Information Systems in Organizations, Hardware and Software, Overview Database Systems. Data Centers and Business Intelligence, Telecommunications , The Internet, , Intranets and Extranets, Electronic and Mobile Commerce and Enterprise Systems, Information and Decision Support Systems, Knowledge Management and Specialized Information Systems [16 hrs] Systems Development, Analysis phase, Design phase, Implementation phase, Operation and Maintenance phase[6 hrs] Introduction to Project Management, What is Management, Project Management, Software Project Management, What is a (Project, Temporary, Unique), The Triangle-Triple constraints of Project Management, Double Triangle constraint, Project Management Framework [6 hrs] Part B - Risk Management Risk Identification, Risk Analysis, Risk Planning, Risk Monitoring, Risk Factors, Project Planning & Scheduling, Project Management Process, Elements of Project Management, Work Breakdown Structure (WBS), WBS Decomposition, Project Scheduling, Gantt Chart, Examples of Gantt Chart, Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), The Network Diagram, Time Estimates & Computing Algorithm, Critical Path Procedure, Determining the Project Schedule, Probabilistic Time Estimates, Probability of Project Completion [16hrs] Software Quality Management, What is Quality Management?, Software quality management, What is quality?, Software Quality Attributes, Quality Assurance and Standards, Importance of Standards, Problems with Standards [10 hrs]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Directing students to some websites to benefit from them. 2. Assign the student to prepare brief reports on some topics and carry out homework. 3. Holding research seminars through which some problems are explained and

	analyzed and the mechanism for finding solutions to them. 4. Conducting theoretical tests in the classroom (daily, monthly, and final). 5. Asking questions and oral inquiries to the students to indicate the extent of their response. 6. Organizing students in groups and assigning them to complete the requirements of building a specific system and evaluating the percentage of their completion of these works. 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. Encouraging the student to present creative works in the specialty that keep pace with quality standards in community service.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	2	10% (10)
	Assignments	1	5% (5)	1	5% (5)

	Projects/Lab				
	Report	1	5%(5)	1	5%(5)
Summative assessment	**Midterm Exam**	2hr	30% (30)	2hr	30% (30)
	Final Exam	2hr	50% (50)	2hr	50% (50)
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Information Systems, An Introduction to Information Systems in Organizations
Week 2	Introduction to Information Systems, Hardware and Software, Overview Database Systems. Data Centers and Business Intelligence
Week 3	Introduction to Information Systems, Telecommunications , The Internet, , Intranets and Extranets
Week 4	Introduction to Information Systems, Electronic and Mobile Commerce and Enterprise Systems
Week 5	Introduction to Information Systems, Information and Decision Support Systems, Knowledge Management and Specialized Information Systems
Week 6	Systems Development, Analysis phase, Design phase, Implementation phase, Operation and Maintenance phase
Week 7	Introduction to Project Management, What is Management, Project Management, Software Project Management, What is a (Project, Temporary, Unique)
Week 8	Introduction to Project Management, The Triangle-Triple constraints of Project Management, Double Triangle constraint, Project Management Framework
Week 9	**Midterm-Exam**
Week 10	Risk Management, Risk Identification, Risk Analysis
Week 11	Risk Management, Risk Planning, Risk Monitoring, Risk Factors
Week 12	Project Planning & Scheduling, Project Management Process, Elements of Project Management, Work Breakdown Structure (WBS), WBS Decomposition, Project Scheduling, Gantt Chart, Examples of Gantt Chart

Week 13	Project Planning & Scheduling, Critical Path Method (CPM), Program Evaluation and Review Technique (PERT)
Week 14	Project Planning & Scheduling, The Network Diagram, Time Estimates & Computing Algorithm, Critical Path Procedure, Determining the Project Schedule, Probabilistic Time Estimates, Probability of Project Completion
Week 15	Software Quality Management, What is Quality Management?, Software quality management, What is quality?, Software Quality Attributes, Quality Assurance and Standards, Importance of Standards, Problems with Standards
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Loudon & Loudon, Project Management, 2007	Yes
Recommended Texts		
Websites	https://www.e-booksdirectory.com/computer-science.php	

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	**User Interfaces Design**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS315**			
ECTS Credits	**6**			
SWL (hr/sem)	**150**			
Module Level	3	**Semester of Delivery**	5	
Administering Department	IS	**College**	CSI	
Module Leader	Mohamed Iqbal	**e-mail**		
Module Leader's Acad. Title	Assist Professor	**Module Leader's Qualification**	MS.c	
Module Tutor	Name (if available)	**e-mail**	E-mail	
Peer Reviewer Name	Qusay Omran	**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI121	**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 aims of this course are to: • enable students to critically evaluate user interface designs • enable students to apply user and task oriented design methods • teach students to gather and represent user needs
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Critically evaluate user interface designs 2-Apply user interface design prinicples 3-Design and implement user interfaces to target specific population of users. 4-Design the user interfaces , menu creation ,and connect between menus and windows 5- identify and define key terms related to user interfaces and user interface design and implementation 6- Identify and describe various types of user interfaces 7- Identify and describe common abstract user interface components, such as radio buttons and group boxes
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Theoretical foundations of Interaction Design Design principles and heuristics

	Usability and user experience Methods for understanding user needs (e.g., contextual inquiry, ethnography, interviews) Interview data analysis Techniques for communicating context of use (e.g., scenarios, personas, and rich pictures) Prototyping and visual design Interfaces and platforms of interactive technologies

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	5% (5)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	15% (15)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to issues involved in user interface design
Week 2	User Research; Job Shadowing and Contextual Interviews; Personas; Activity-Centered Design ; Introduction to the project
Week 3	Text Usability :Hierarchies in user Interface Design ; Card Sorting; Mental Model; Pitch the idea for the project.
Week 4	Sketching and Prototyping, Paper Prototype Testing; Realism ;Submission of project description
Week 5	Natural User Interfaces, Fitts's Law, Animations ,Consistency ;Submission of prototype design
Week 6	Discoverability ,Don't Interrupt ,Offer Undo, Modes, Preferences Evaluation of 1st iteration of design and implementation
Week 7	Mid-term Exam

Week 8	Hierarchies ,Speed ,Avoiding and Removing Features , Learning from Video Games; Work on the project and evaluation
Week 9	Nodal and Mesh Revisited, Average Power, RMS, Introduction to Polyphase Circuits
Week 10	Testing; Work on the project and evaluation
Week 11	User Design Error ,A/B Testing ,Collecting Usage Data ,Dealing with user Feedback; Work on the project and evaluation
Week 12	Work on the project, consultations, and evaluation
Week 13	Work on the project, consultations, and evaluation
Week 14	Project presentations
Week 15	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to user interface design
Week 2	Lab 2: User Research; Job Shadowing
Week 3	Lab 3: Contextual Interviews; Personas
Week 4	Lab 4: Sketching and Prototyping
Week 5	Lab 5: Natural User Interfaces
Week 6	Lab 6: Discoverability, Modes
Week 7	Lab 7: Mid exam term
Week 8	Lab 8: Hierarchies ,Speed ,Avoiding and Removing Features
Week 9	Lab 9: Introduction to Polyphase Circuits
Week 10	Lab 10: Testing; Work on the project and evaluation
Week 11	Lab 11: User Design Error ,A/B Testing ,Collecting Usage Data ,Dealing with user Feedback

Week 12	Lab 12: Work on the project
Week 13	Lab 13: consultations
Week 14	Lab 14: Project presentations
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Wilbert O. Galitz, "The Essential Guide to User Interface Design", John Wiley & Sons, Second Edition 2002.	NO
Recommended Texts	Designing the user Interface: Strategies for Effective Human-Computer Interaction ,Ben Shneiderman , Catherine Plaisant, Maxine S. Cohen, Steven M. Jacobs and Niklas Elmqvist, 6th Edition, Pearson Education; Handouts given during lecture.	No
Websites		

Grading Scheme

مخطط الدرجات

Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded

(0 – 49)	**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	**Operation) بحوث عمليات (Researches**			**Module Delivery**
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**IS316**			
ECTS Credits	**4**			
SWL (hr/sem)	**100**			
Module Level	3	**Semester of Delivery**	5	
Administering Department	IS	**College**	CSI	
Module Leader	Ahmed Mohsin	**e-mail**	E-mail	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.	
Module Tutor		**e-mail**	Elaf.hussien@qu.edu.iq	
Peer Reviewer Name	Elef Hussein	**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CSI211	**Semester**	3
Co-requisites module	none	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**1- Understand the concept of operations research** **2-The student will be able to know the field of using operations research in many applications in reality** **3-The ability to formulate simple linear programming issues** **4-Gain proper thinking on how to investigate grievance problems and then formulate them according to math model**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**.1- enable the student to know ways to solve different problems** **2- enable the student to find the maximum or minimum vales for profit and cost problems** **3-enable the student to solve linear programming using the graphical .method and analyze the sensitive of the solution** **4- enable the student to know basic function of several method of solve** **5-knowing how to solve the problems of transporting the produced .goods from the factories to the consumer less time and cost** 6- **knowing how to make a decision regarding sequential deision isssues**

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. A general explanation of the beginning of decision making, basics linear programing , how to solve by using one of the method linear programing ,explain cases and give examples for the cases , examples and solution to Sensitivity analysis ,steps the solution and give examples, Dual method. dyeing sample math transportation problem, Business network model, Integer programming, methods to solve Al dynamic programming, laws used in the waiting lines to Waiting form, Nonlinear programming, Formulation issues Nonlinear programming

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 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	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	1	5% (5)		
	Projects / Lab.				
	report	1	5%(5)		
Summative assessment	Midterm Exam	2hr	30% (30)		
	Final Exam	2hr	50% (50)		
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	What is Operation Researches ?
Week 2	Linear programing
Week 3	Method for solving linear programing
Week 4	Special cases solutions linear programing
Week 5	Simple method
Week 6	Sensitivity analysis
Week 7	Dual mathod
Week 8	Transfer form
Week 9	Business network model
Week 10	Overtime method
Week 11	Integer programming

Week 12	**Al dynamic programming**
Week 13	Waiting form
Week 14	**Nonlinear programming**
Week 15	**Formulation issues Nonlinear programming**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• **بحوث عمليات للدكتور حامد الشمرتي.** Operations Research An Introduction ,HamdyA . taha.	
Recommended Texts		

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	**Enterprise Projects**		**Module Delivery**	
Module Type	**C**		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS321**			
ECTS Credits	**4**			
SWL (hr/sem)	**100**			
Module Level	3	**Semester of Delivery**	6	
Administering Department	IS	**College**	CSI	
Module Leader	Rafid Nabil Jaffar Hassan Al Asady	**e-mail**	rafid.jaffar@qu.edu.iq	
Module Leader's Acad. Title	Assistant Prof.	**Module Leader's Qualification**	Master	
Module Tutor	Name (if available)	**e-mail**	E-mail	
Peer Reviewer Name	Lamia Abednoor Muhammed	**e-mail**	lamia.abed@qu.edu.iq	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CSI121	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Students will learn to: 1. Understand the fundamentals of enterprise systems and issues associated with their implementation. 2. Evaluate the costs and benefits of implementing an enterprise system. 3. Understand how enterprise systems integrate functional areas into one enterprise-wide information system. 4. Explain how “best practices” are incorporated in enterprise systems. 5. Recognize how an organizational process often spans different functional areas. 6. Describe the role of enterprise systems in carrying out processes in an organization. 7. Learn to integrate key concepts from functional-oriented courses, such as accounting, marketing, and organizational behavior, to promote the development of integrative skills. 8. Explain how integrated information sharing increases organizational efficiencies. 9. Identify, describe, and evaluate the major enterprise system software providers and their packaged systems.

	10. Understand current trends related to enterprise systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The course intentionally does not specify enterprise system software. Institutions have to make the decision of whether and how to provide students with experience with actual enterprise system software. It is preferable that the course includes exposure to and hands-on use of one of the many enterprise system vendors (SAP or Oracle, SSA Global, Microsoft (Axapta, Great Plains and Solomon), Intuit, or Minicom). The importance of actual use is clear. Enterprise system software is in place in a majority of large organizations and increasing in use in small and medium-sized organizations. • A group project is highly recommended to assess both practical/applied aspects and the conceptual/theoretical content of the course. For example, a group project could require students to study a real-world organization and evaluate the suitability of SAP R/3 or another software solution. This evaluation would then be compared with other enterprise system software products in terms of product functionality, support and flexibility for configuration and customization, architecture and technology compatibility, Web-based functionality, ease of interfacing with other legacy systems, and implementation costs. If software resources permit, the group could then design and configure a simple workable integrated enterprise system, using SAP R/3 for example, that demonstrates the integration of information from several modules, such as accounts receivable, sales, manufacturing/production, procurement, accounts payable, or general ledger. Student groups would analyze the functional areas in a real-world organization and map them into SAP R/3. Students would create an enterprise structure, relevant master data in the software, transactions that demonstrate integration of core processes, and provide documentation. Students thereby apply specialist skills and knowledge drawn from other traditional disciplines to an actual organization and demonstrate the development of skills such as analytical skills, communication, critical thinking, problem solving, and teamwork. • The course provides a pedagogical basis for a change in the delivery of education

	from a functional orientation to a process orientation, leading to the integration of curriculum across functions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1- Introduction on Business processes and business process integration 2- Challenges associated with the implementation of global enterprise systems applications 3- User commitment, Communications and Training 4- Enterprise system processes 5- Human resource functions

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem)	**100**		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	5%(5)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	30% (30)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Business processes and business process integration
Week 2	Making the case for acquiring and implementing enterprise systems
Week 3	Selection of enterprise systems software
Week 4	Challenges associated with the implementation of global enterprise systems applications
Week 5	Organizational change, change management and Strategic alignment
Week 6	User commitment, Communications and Training
Week 7	Job redesign, Governance of processes and data

Week 8	Post-implementation issues
Week 9	Enterprise system processes
Week 10	Order processing and purchasing
Week 11	Production logistics
Week 12	Accounting
Week 13	Planning and control
Week 14	Human resource functions
Week 15	How enterprise systems support business

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Giachetti, R.E., 2011. *Design of enterprise systems: Theory, architecture, and methods*. CRC Press.	Yes
Recommended Texts	Ferreira, D.R., 2016. *Enterprise systems integration*. Springer-Verlag Berlin An.	No
Websites	https://www.icao.int/environmental-protection/Pages/Online-CORSIA-Tutorial.aspx	

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	Business Information Systems	**Module Delivery**	
Module Type	**Core**	☒ **Theory**	
Module Code	**IS322**	☒ **Lecture**	
ECTS Credits	**4**	☐ **Lab**	
SWL (hr/sem)	100	☐ **Tutorial**	
		☐ **Practical**	
		☐ **Seminar**	

Module Level	3	**Semester of Delivery**	6
Administering Department	IS	**College**	CSI
Module Leader	Miaad AbdUlkadem Jard	**e-mail**	meaad.jard@qu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Master
Module Tutor	Name (if available)	**e-mail**	E-mail

Peer Reviewer Name	Ghaith hakim malik	**e-mail**	gaith.malik@qu.edu.iq
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	IS112	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1• The course aims to introduce students to the concept of management information systems and their types. 2• Introducing students to the strategic role of business information systems in business establishments and their role in making administrative decisions. 3• View the process of developing management information systems. 4• Studying business ethics, information security and the basic concepts of e-organizations and e-commerce.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Assign the student to develop websites that serve the needs of the labor market. 2. Understanding the ethics of the work environment and high professionalism. 3. Develop the skill of communicating with potential and actual users and understanding their needs. 4. Instilling a spirit of cooperation and working as a member of the website

	development team. 5. Providing the student with the skill of dealing with management information systems. 6. Providing the student with the skill of dealing with electronic business. 7. Providing students with electronic commerce skills.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. - Introduction to knowledge and the importance of knowledge. What is knowledge management. - Definition of data, information and types of information (structured and unstructured). - Classifications of knowledge such as the classification of Michel Zak et al. Then, identify the characteristics of knowledge and the emergence of knowledge management. - modern management concepts, Information systems and their relationship to electronic business. - Information systems and the framework of electronic commerce Definition of electronic commerce and its importance. - Information systems and the framework of electronic commerce. Business ethics to be observed when using information technology. Information technology oversight.

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. - Managing the lecture in a way that makes the student feel the importance of time. Enable the student to link the theoretical and practical side. - Encourage the student to present creative works in the specialty that keep pace with quality standards in community service.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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

Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction, A conceptual introduction to knowledge , types of knowledge.
Week 2	The concept of knowledge management and its importance , knowledge management models, An introduction to knowledge management.
Week 3	Concepts of modern management
Week 4	Introducing and analyzing the concepts of information systems, information technology and management information systems
Week 5	Information systems and electronic business
Week 6	Information systems and the framework of electronic commerce
Week 7	Business ethics and secure information systems
Week 8	Information systems security - the security and confidentiality of the information system
Week 9	The basic dimensions of information systems and their relationship to modern organizations
Week 10	Types of management information systems
Week 11	Information systems in business organizations
Week 12	functional information systems
Week 13	E-business and electronic commerce
Week 14	Basic dimensions of information systems, organization, management and information technology

Week 15	**Modern entrances to information systems**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Business information systems – Elizabeth hard castle.	NO
Recommended Texts	Administrative information system . Prof. Dr. Saad Ghaleb Yassin 2009	YES
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module Information
معلومات المادة الدراسية

Module Title	**Data and Information Visualization**	**Module Delivery**
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**IS323**	
ECTS Credits	**8**	
SWL (hr/sem)	**200**	

Module Level	3	**Semester of Delivery**	6
Administering Department	IS	**College**	CSI
Module Leader	Abeer Hamza	**e-mail**	E-mail
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor		**e-mail**	
Peer Reviewer Name	Alaa Taima	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI112	**Semester**	1
Co-requisites module	None	**Semester**	None

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To develop creative and technical skills to represent and transform data and information in a clear and concise manner by creating a visual format. 2. To make complex data and information easier to understand and analyze. 3. To identify patterns, trends, and relationships in data and information. 4. To enhance decision-making and problem solving processes. 5. To improve the effectiveness and efficiency of the data- driven processes. 6. To enhance the quality and accuracy of data and information analysis. 7. To facilitate the exploration and discovery of new insights and knowledge.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	18. Improve understanding and analysis of complex data and information. 19. Development of new theories and hypotheses. 20. Enhanced user experience and engagement with data and information. 21. Improved ability to identify and address issues and challenges in data and information analysis. 22. Identification of new insights and knowledge. 23. Increased efficiency and effectiveness of data-driven processes. 24. Improved ability to identify and mitigate risks and uncertainties. . 25. Increased ability to respond to changing market conditions and customer needs. 26. Improved ability to identify and address biases and errors in data and information analysis. 27. Enhanced ability to communicate complex data and information to a wider audience.
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** - Charts and graphs, such as bar charts, line charts, scatter plots, and pie charts.

	- Maps and geographic information systems(GIS). - Info-graphics and data dashboards. - Interactive visualizations, such as interactive charts and maps. - Data visualizations libraries and software applications, such as Tableau , and PowerBI. - Programming languages and tools, such as Python, R, and MATLAB. - Data analysis and statistics . - Data modeling and simulation. - Data mining and machine learning

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- Lectures and presentations on data and information visualization principles, techniques and tools. - Hands-on workshops and tutorials on data and information visualization software and programming languages. - Group projects and assignments that require students to create visualizations to communicate complex data and information. - Case studies and real world examples of data and information visualizations in various fields and industries. - Peer-review and feedback on data and information visualizations created by students. - Guests lectures and talks by experts in data and information visualizations. - Online courses and tutorials on data and information visualization. - Events that bring together students and professionals to create innovative data and information visualizations. - Collaborative research projects that involve data and information visualization as a key component.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.26
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	136	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	9.06
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	15% (15)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered

Week 1	Introduction To Data and Information Visualization.
Week 2	Data Types and Data Preparation.
Week 3	Introduction to Data Analysis and Statistics.
Week 4	Charts and Graphs.
Week 5	Color and Design Principle
Week 6	Tools and Software
Week 7	Advanced Charts and Graphs
Week 8	Data Visualization Libraries and Software Applications.
Week 9	Interactive data visualization.
Week 10	Data Modeling and Simulation.
Week 11	Data Mining and Machine Learning.
Week 12	Maps and Geographic Information Systems (GIS).
Week 13	Info-Graphics and Data Dashboards.
Week 14	Case Studies and Real-World Examples.
Week 15	Visualization Best Practice and Design Principles
Human	Preparatory Week Before the Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Getting Started with Using Excel Spreadsheets
Week 2	Lab 2: Cleaning and Wrangling Different Types of Data Using Spreadsheets.
Week 3	Lab 3: Visualizing Data Using Spreadsheets

Week 4	Lab 4: Demonstrate the Use Of Spreadsheets to Complete Basic Tasks of the Data Analyst Including Entering and Organizing Data.
Week 5	Lab 5: Create Different Types of Charts and Plots Such as Line, Area, Histograms, Bar, Pie, Box, Scatter, and Bubble.
Week 6	Lab 6: Work On Different Types Of Color Models.
Week 7	Lab 7: Explore Maps, Bullet Graphs, Pie Charts, Donut Charts, Heat Maps, and Tables.
Week 8	Lab 8: Select the Appropriate Visual Reports for Different Visualization Scenarios.
Week 9	Lab 9: Examine the Capacity of Tableau for Data And Information Visualization.
Week 10	Lab 10: Build a Single Plot Using Tableau
Week 11	Lab 11: Build a Complete Dashboard Using Tableau for a Given Visualization Task.
Week 12	Lab 12: Visualize Spatial Data in Tableau Using Maps.
Week 13	Lab 13: Create and Visualize a Model Or Simulation Using Python
Week 14	Lab 14: Comparing Tableau vs Python
Week 15	Lab 15: Design Maps Using GIS Software

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	- Sleeper, Ryan. Practical Tableau: 100 Tips, Tutorials, and Strategies from a Tableau Zen Master. 1 edition. Beijing: O'Reilly Media, 2018. - Knaflic, Cole Nussbaumer, Storytelling with Data, 2015.	No
Recommended Texts	- Few, Stephen. Now You See It: Simple Visualization Techniques for Quantitative Analysis. 1st edition. Oakland, Calif: Analytics Press, 2009.Jones, Ben. Communicating Data with Tableau: Designing,	No

	Developing, and Delivering Data Visualizations 1 edition. Sebastopol, CA: O'Reilly Media, 2014. [Ebook, data files] - Wexler, Steve, Shaffer, Jeffrey, & Cotgreave, Andy. (2017). The big book of dashboards. Wiley. - Wexler, S. (n.d.). The Big Picture: How to Use Data Visualization to Make Better Decisions--Faster. McGraw-Hill Education. - Yau, Nathan. Data Points: Visualization That Means Something. Indianapolis, IN: John Wiley & Sons, Inc, 2013	
Websites	https://library.harvard.edu/services-tools/visualization-support	

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	**Decision Support Systems**			**Module Delivery**	
Module Type	**E**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS324**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	3		**Semester of Delivery**	6	
Administering Department	IS		**College**	CSI	
Module Leader	Miaad AbdUlkadem Jard		**e-mail**	meaad.jard@qu.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Master	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Ghaith hakim malik		**e-mail**	gaith.malik@qu.edu.iq	
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	IS121	**Semester**	2
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. Familiarize students with the importance of information technology in institutions. 2. The impact of information technology on the speed and accuracy of decision-making. 3. How to deal with forms instead of real information. 4. How to make a decision in a changing environment between ensuring the influencing elements and uncertainty or with a known or expected possibility. 5. Using decision tables and decision trees to obtain the final decision.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Theoretical knowledge about the nature of the work of large institutions and the complexity and ramifications of influencing factors. 2. How to convert big data into models to deal with. 3. How to convert descriptive problems into data tables that facilitate the work of decision makers. 4. How to benefit from Business Intelligent software in decision-making. 5. Converting big data for organizations into simple and clear formats such as graphics and charts. . 6. . Using statistical and probability theories in evaluating decisions 7. . Benefit from the spreadsheet method in summarizing large data 8. Using software to support decision makers.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Studying the concept of decision support systems (the system, support, the concept of administrative decision) the importance of decision support systems - the emergence and development of decision support systems. The importance of decision support systems and the benefits of these systems. Types of decision support systems An example of this is a model-oriented decision support system. Components of decision support systems The main components can be identified by a number of components such as the user interface, the database, and the models database. Types of decision support systems Web-based customer decision support systems.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	-The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in the exercises, while improving and expanding their critical thinking skills at the same time. This will be achieved through classes and interactive tutorials. - Giving scientific lectures in classrooms and using the (Data Show) for the purpose of clarifying the main ideas of the subject. Panel discussions to address the problems faced by the student in the course. - Giving importance to group activities by assigning grades to group activities. - Encouraging the student to present creative works in the specialty that keep pace with quality standards in community service.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.			Continuous	All
	Report	1	5%(5)		
Summative assessment	Midterm Exam	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - The concept and importance of decision support systems
Week 2	The emergence and development of decision support systems
Week 3	The importance of decision support systems
Week 4	Types of decision support systems
Week 5	Components of decision support systems
Week 6	decision support systems patterns
Week 7	Web-based customer decision support systems
Week 8	Enterprise information systems

Week 9	Areas of application of decision support systems
Week 10	Factors of effectiveness of decision support systems
Week 11	Obstacles and problems facing the application of decision support systems.
Week 12	Group decision support systems
Week 13	Enterprise resource planning systems.
Week 14	Decision support systems and competitive advantage
Week 15	**Strategic use of decision support systems**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Administrative information system. Prof. Dr. Saad Ghaleb Yassin 2009	Yes
Recommended Texts	The basics of business in light of globalization. Nabil Abbas and others2006 .	No
Websites		

Grading Scheme

مخطط الدرجات

Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group	**A** - Excellent	امتياز	90 - 100	Outstanding Performance

(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	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	**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.

Application Development and Programming

معلومات المادة الدراسية

Module Title	**Application Development and Programming**		**Module Delivery**	
Module Type	**Core**		☒ **Theory**	
Module Code	**IS325**		☒ **Lecture**	
ECTS Credits	**4**		☐ **Lab**	
SWL (hr/sem)	**100**		☐ **Tutorial**	
			☐ **Practical**	
			☐ **Seminar**	
Module Level	3	**Semester of Delivery**	6	
Administering Department	IS	**College**	CSI	
Module Leader	Alaa Taima Abd Alkadhem	**e-mail**	alaa.taima@qu.edu.iq	

Module Leader's Acad. Title	Assistant Prof.	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Ali Alfoudi	**e-mail**	a.s.alfoudi@qu.edu.iq
Scientific Committee Approval Date	20/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI121	**Semester**	2
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. Develop data storage strategies using primitive data types in a computer's volatile memory 2. Apply data transformations using arithmetic, assignment, and transpositional operators 3. Develop predicate expressions using relational and logical operators 4. Express algorithmic problem-solving using sequence, selection, and repetition structures 5. Modularize the algorithmic and operating capabilities of a program using functions, methods, subroutines, or similar organizing structures. 6. Select and utilize appropriate linear and non-linear data structures to maintain and manage sets of related data in non-volatile memory. 7. Utilize Object-Oriented concepts in the organization and structuring of programs for behavior and concept management.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Evaluate and Design the architecture of contemporary Business Applications 2. Analyze programming principles to develop applications. 3. Apply programming concepts to develop applications. 4. Implement programming techniques to develop applications. 5. Test technologies needed for developing applications. 6. Evaluate entrepreneurial opportunities related to using Web applications and technologies. 7. Synthesize managerial and entrepreneurial issues related to using applications in a new or existing business.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Programming</u> Introduction – (Course overview - Java syntax review), Using Data Structures: Arrays, Arrays, HashMap (Programming with arrays - Arrays in methods) , Classes- (Class definitions - Instance variables) , Class methods- (Object oriented programming- Packages - Method definitions - Variable scope) , Inheritance – (Superclass or base class - Subclass or derived class - Overloading methods), Polymorphism – (Interfaces and abstract cases - Overloading methods) <u>Part B - Application Development</u> Introduction to Android- (Android Architecture - Configuring Eclipse) Activities, Manifest, Resources – (Activities - Activity Lifecycle – Resources – Logging – Toasts - XML Listeners) UI, Layout, and View – (Layouts - Views and attributes - Image views - Action bar – WebView – Menus) Listeners and Event Handling – (Listeners and inner classes - Event Handling) Intents and Extras – (Activity Stack and Navigation - Intents + Extras) MVC and Data Persistence – (Software pattern: Model-View-Controlled – SharedPreferences – PreferenceActivity) Lists and Adapters – (Collections - Lists and adapters – Singletons - Image lists) Publishing Apps – (Google Play store - Monetizing apps - Optimizing apps)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction – (Course overview - Java syntax review)
Week 2	Using Data Structures: Arrays, Arrays, HashMap (Programming with arrays - Arrays in methods)
Week 3	Classes- (Class definitions - Instance variables)
Week 4	Class methods- (Object oriented programming- Packages - Method definitions - Variable scope)
Week 5	Inheritance – (Superclass or base class - Subclass or derived class - Overloading methods)
Week 6	Polymorphism – (Interfaces and abstract cases - Overloading methods)
Week 7	Mid-term Exam
Week 8	Introduction to Android- (Android Architecture - Configuring Eclipse)
Week 9	Activities, Manifest, Resources – (Activities - Activity Lifecycle – Resources – Logging – Toasts - XML Listeners)
Week 10	UI, Layout, and View – (Layouts - Views and attributes - Image views - Action bar – WebView – Menus)
Week 11	Listeners and Event Handling – (Listeners and inner classes - Event Handling)
Week 12	Intents and Extras – (Activity Stack and Navigation - Intents + Extras)
Week 13	MVC and Data Persistence – (Software pattern: Model-View-Controlled – SharedPreferences – PreferenceActivity)
Week 14	Lists and Adapters – (Collections - Lists and adapters – Singletons - Image lists)
Week 15	Publishing Apps – (Google Play store - Monetizing apps - Optimizing apps)
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Savitch, Walter, and Frank M. Carrano. Java: Introduction to Problem Solving and Programming. Pearson Prentice Hall, 2012. ISBN: 9780132162708	Yes
Recommended Texts	Annuzzi, Jr., Joseph, et. al. Introduction to Android Application Development: Android Essentials (4th Edition). Addison-Wesley Professional, 2013. ISBN: 0321940261	No
Websites	https://www.coursera.org/professional-certificates/meta-android-developer	

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	**Information Retrieval and Web Search**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS326**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		

Module Level	3	**Semester of Delivery**	6
Administering Department	IS	**College**	CSI
Module Leader	Salwa Shakir	**e-mail**	E-mail
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Osama Majeed	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI121	**Semester**	2
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 present the basic concepts in information retrieval and more advanced techniques of multimodal based information systems. 2. To develop skills of using recent Information Retrieval software for solving practical problems. 3. To understand the underlined problems related to information retrieval and acquired the necessary experience. 4. To gain experience of doing independent study and research. 5. To design, and implement real applications using Information Retrieval. 6. Demonstrate genesis and diversity of information retrieval situations for text and hyper media. 7. Describe hands-on experience store, and retrieve information from www using semantic approaches. 8. Demonstrate the usage of different data/file structures in building computational search engines.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Introducing students to the basics of web search and information retrieval. 2. Provide the student with the necessary knowledge to design a simple information retrieval system. 3. Learn some information retrieval algorithms. 4. Skills objectives of the course: 5. Providing the student with the skill of designing research programs and information retrieval. 6. Providing the student with the skill of teamwork to complete scientific research projects.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Introduction</u> Definition of Information Retrieval (IR) and Web Search, IR Terminologies (Document, QUERY, Collection or Databases vs. IR, Corpora), Dimensions of IR, Tasks of IR and Big issues in IR. And giving an Overview of text retrieval systems [15 hrs]

	Retrieval models and implementation: Vector Space Models: Vector Space Model, TF-IDF Weight, and evaluation in information retrieval. [15 hrs] Query expansion and feedback: Relevance feedback, pseudo-relevance feedback, and Query Reformulation. [10 hrs] Probabilistic models; statistical language models: Okapi/BM25; Language models, KL-divergence, and Smoothing. [15 hrs] Text classification & Text clustering The text classification problem, Naive Bayes text classification, k- nearest neighbors, Support vector Machine. [15 hrs] Feature Selection, Vector-space clustering; K-means algorithm, Hierarchical clustering, DBSCAN algorithm, PAM and PAMK• EM algorithm. [15 hrs] Web search basics, crawling, indexes, Link analysis: Web Characteristics, Crawling, Web As a graph, Page Rank, and Hubs and Authorities plex Frequency, s-Plane, Poles and Zeros, Response Function, and Bode Plots. [15 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The major strategy for presenting this module will be to encourage students to participate in the tasks while also polishing and improving their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration

	of various types of simple experiments involving activities such as assigning the student to prepare a simple retrieval system, preparing brief reports on various topics, or preparing projects for specific retrieval systems, or making optional lectures on information retrieval-related topics. and assessed on a daily, mid-term, and final exam.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	101	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction** Definition of Information Retrieval (IR) and Web Search. IR Terminologies (Document, QUERY, Collection or Databases vs. IR, Corpora) Dimensions of IR, Tasks of IR Big issues in IR.
Week 2	**Overview of text retrieval systems** □ Boolean retrieval □ The term vocabulary and postings lists □ Dictionaries and tolerant retrieval □ Index construction and compression
Week 3	**Retrieval models and implementation: Vector Space Models** □ Vector Space Model □ TF-IDF Weight □ Evaluation in information retrieval
Week 4	**Query expansion and feedback** □ Relevance feedback □ pseudo relevance feedback □ Query Reformulation
Week 5	**Probabilistic models; statistical language models**

	□ Okapi/BM25; □ Language models
Week 6	**Probabilistic models; statistical language models** □ KL-divergence □ Smoothing
Week 7	**Text classification & Text clustering** □ The text classification problem □ Naive Bayes text classification
Week 8	**Text classification & Text clustering** □ k- nearest neighbors □ Support vector Machine
Week 9	**Text classification & Text clustering** □ Feature Selection □ Vector-space clustering;
Week 10	**Text classification & Text clustering** □ K-means algorithm □ Hierarchical clustering
Week 11	**Text classification & Text clustering** □ DBSCAN algorithm □ PAM and PAMK □ EM algorithm
Week 12	**Web search basics, crawling, indexes, Link analysis** □ Web Characteristic

	□ Crawling □ Web As a graph
Week 13	**Web search basics, crawling, indexes, Link analysis** □ Page Rank □ Hubs and Authorities plex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots
Week 14	**IR applications** □ Information extraction □ Question answering
Week 15	**IR applications** □ Opinion summarization □ Social Network

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introduction to Information Retrieval, by Manning, Raghavan, Schütze, Cambridge University Press 2008	Yes
Recommended Texts	Search Engines Information Retrieval in Practice by W. Bruce Croft, Donald Metzler, and Trevor Strohman, Pearson Education, Inc 2015.	yes
Websites	https://nlp.stanford.edu/IR-book/	

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	**Internet of Things**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS411**			
ECTS Credits	**6**			
SWL (hr/sem)	**150**			
Module Level	4	**Semester of Delivery**	7	
Administering Department	IS	**College**	CSI	
Module Leader	Alaa Taima	**e-mail**		
Module Leader's Acad. Title	Assist. Professor	**Module Leader's Qualification**	Ph.D.	

Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Zainab Fahad	**e-mail**	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI121	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1- Learn about the Internet of Things, its importance and advantages, and the benefit of the continuous development of these systems in our daily lives 2- Identifying the tasks and system models of the Internet of Things 3- Identifying the structure of models of Internet of Things systems. 4- Learn about managing the operations of Internet of Things systems and their priorities. 5- Identify the important functions in the parts of the Internet of Things
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Enable the student to know the basics of the Internet of Things 2- Enabling the student to know and understand the functions of the Internet of Things 3- Enabling the student to know the basic functions provided by the Internet of Things systems 4- Providing students with the skills to deal with Internet of Things systems 5- Providing students with knowledge of Internet of Things protocols and environments

	6- Enable the student to know and distinguish the environments used in the Internet of Things and classify them
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** **Definition and characteristics ,Material design ,Logical design of , architectures and protocols the Internet of Things . [15 hrs]** **Different platforms for IOT [15 hrs]** **Revision problem classes [8 hrs]** **Real-world examples of the Internet of Things. [15hrs] IoT and M2M [15hrs]** **Reference model for the Internet of Things and Big Data and the Internet of Things . [15 hrs], sensors with Arduino . [10 hrs] . Sensors with Raspberry Pi [10 hrs]** **smart cities, Smart environment and smart home [15hrs]**

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.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	118	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects				
	Report	1	5%(5)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Definition and characteristics of the Internet of Things**
Week 2	**Material design for the Internet of Things**
Week 3	**Logical design for the Internet of Things**
Week 4	**IOT architectures and protocols**
Week 5	**Different platforms for the Internet of Things**
Week 6	**Real-world examples of the Internet of Things**
Week 7	**Internet of Things challenges**
Week 8	**IoT and M2M**
Week 9	**Reference model for the Internet of Things**
Week 10	**Big Data and the Internet of Things**
Week 11	**sensors with arduino**
Week 12	**Sensors with Raspberry Pi**
Week 13	**IOT cloud platforms**
Week 14	**smart cities**
Week 15	**Smart environment and smart home**
Week 16	**Preparatory week before the final Exam**

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

Required Texts	IOT by Mehdi Hamid Khani	No
Recommended Texts	https://www.pvpsiddhartha.ac.in/dep_it/lecture%20notes/IOT/UNIT-1.pdf	No
Websites	https://www.tutorialspoint.com/internet_of_things/internet_of_things_tutorial.pdf	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module Information معلومات المادة الدراسية					
Module Title	**Mobile Applications**			**Module Delivery**	
Module Type	**Core learning activity**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS412**				
ECTS Credits	8				
SWL (hr/sem)	**200**				
Module Level	4		**Semester of Delivery**	7	
Administering Department	IS		**College**	CSI	
Module Leader	Sudad Najim		**e-mail**	E-mail	
Module Leader's Acad. Title	Assist. Lecturer		**Module Leader's Qualification**	Master	
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Firas Hussean Maghool		**e-mail**	E-mail: Firas.maghool@qu.edu.iq	
Scientific Committee Approval Date			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CSI121	**Semester**	2
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 course aims to introduce students to the importance of studying and using different mobile applications. 2. The course aims to introduce students to the basics of mobile devices and the limitations of working on them. 3. Understanding the principles of designing applications suitable for various mobile devices. 4. The course aims to introduce students to how to conserve device resources such as battery and memory. 5. Application testing and evaluation from the user's point of view. 6. Understanding the mechanism of teamwork and inculcating team spirit. 7. Providing students with the necessary skills to produce applications that benefit the community
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Gaining the ability and skill to produce applications that serve the community. 2. Deepening the programming skill in the Android Studio system for mobile devices. 3. Design clear and easy interfaces usable on limited screens. 4. How to use device resources such as GPS and camera. 5. Understanding the Android system architecture and how it works. 6. Test the application on the actual device.
Indicative Contents المحتويات الإرشادية	-Introduction to mobile devices. - Understanding of Android system architecture. - Programming and implementing the first single-screen application. - Include more than one screen in the application. - Using of databases. - Understanding of design principles for the small screen - Using and programming the camera and embedding multimedia.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم	
Strategies	• Giving scientific lectures in classrooms and using the (Data Show) for clarifying the main ideas of the subject. • Directing students to some websites to benefit from them. • Assign the student to prepare brief reports on some topics and carry out homework. • Panel discussions to address the problems faced by the student in the course.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	136	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	9
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	15% (15)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to mobile devices
Week 2	Introduction to mobile devices
Week 3	Android Framework: Understanding of Android system architecture.
Week 4	Android Framework: Understanding of Android system architecture.
Week 5	Activity: Programming and implementing the first single-screen application
Week 6	Activity: Programming and implementing the first single-screen application
Week 7	Activity: Programming and implementing the first single-screen application
Week 8	Intent: Include more than one screen in the application.
Week 9	Intent: Include more than one screen in the application.
Week 10	SQLite: Use of databases
Week 11	SQLite: Use of databases
Week 12	Mobile Design: Understanding of design principles for the small screen
Week 13	Mobile Design: Understanding of design principles for the small screen
Week 14	Multimedia: Using and programming the camera and embedding multimedia
Week 15	Multimedia: Using and programming the camera and embedding multimedia
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction of mobile devices.
Week 2	Lab 2: Understanding of Android system architecture.
Week 3	Lab 3: Programming and implementing the first single-screen application
Week 4	Lab 4: Include more than one screen in the application.
Week 5	Lab 5: Use of databases
Week 6	Lab 6: Understanding of design principles for the small screen
Week 7	Lab 7: Using and programming the camera and embedding multimedia

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Valentino Lee, Heather Schneider, and Robbie Schell, Mobile Applications: Architecture, Design, and Development, Prentice Hall, 2004. 2- Brian Fling, Mobile Design and Development, O'Reilly Media, 2009. • Maximiliano Firtman, Programming the Mobile Web, O'Reilly Media, 2010. Christian Crumlish and Erin Malone, Designing Social Interfaces, O'Reilly Media, 2009.	
Websites	• https://developer.android.com/guide	

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	**Operating Systems**		**Module Delivery**	
Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS413**			
ECTS Credits	**4**			
SWL (hr/sem)	**100**			
Module Level	4	**Semester of Delivery**	7	
Administering Department	IS	**College**	CSI	
Module Leader	Rana Juma	**e-mail**		
Module Leader's Acad. Title	Assist. Professor	**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)	**e-mail**	E-mail	

Peer Reviewer Name	Sudad Najim	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI121	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives

أهداف المادة الدراسية

1. Understand the purpose and functions of an operating system:
   - Learn about the role of an operating system in managing computer hardware and software resources.
   - Understand how an operating system provides a user interface and facilitates communication between applications and hardware.
2. Study process management:
   - Understand the concept of a process and its components.
   - Learn about process scheduling algorithms, process synchronization, and inter-process communication mechanisms.
3. Explore memory management:
   - Understand the concept of memory hierarchy and memory organization in a computer system.
   - Learn about memory allocation techniques, virtual memory, and memory protection mechanisms.
4. Study file systems:
   - Understand the concept of a file and file system organization.
   - Learn about file operations, directory structures, and file system implementation techniques.
5. Explore input/output (I/O) management:
   - Understand the principles of I/O devices and their interaction with the operating system.
   - Learn about I/O device drivers, buffering, and I/O scheduling algorithms.
6. Study deadlock handling:
   - Understand the concept of a deadlock and its causes.
   - Learn about deadlock prevention, avoidance, detection, and recovery strategies.

	7. Understand security and protection mechanisms: • Learn about access control mechanisms, authentication, and authorization. • Study different security threats and techniques for protecting the operating system and user data. 8. Explore distributed systems: • Understand the concepts and challenges of distributed systems. • Learn about network protocols, distributed file systems, and synchronization algorithms in distributed environments. 9. Analyze case studies: • Study real-world operating systems like Unix, Linux, Windows, or macOS. • Understand these operating systems' design principles, architectural components, and functionalities.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the fundamental concepts and principles of operating systems. 2. Understand the relationship between hardware and software components in an operating system. 3. Understand memory management in operating systems: 4. Describe virtual memory concepts, including paging, segmentation, and demand paging. 5. Understand the structure of a file system. 6. Describe the principles of I/O devices and their interaction with the operating system. 7. Explain I/O device drivers, buffering, and I/O scheduling algorithms. 8. Understand the security and protection mechanisms in operating systems. 9. Describe access control mechanisms, including authentication and authorization. 10. Explain security threats and countermeasures in an operating system. 11. Implement security measures to protect the system and user data. 12. Understand the architectural components and functionalities of these operating systems. 13. Compare and evaluate the strengths and weaknesses of different operating systems.
Indicative Contents المحتويات الإرشادية	1. Introduction to Operating Systems: • Purpose and types of operating systems. • Evolution and history of operating systems. 2. Process Management: • Processes, threads, and scheduling. • Process synchronization and communication. 3. Memory Management: • Memory organization and allocation techniques. • Virtual memory and paging. 4. File Systems:

	• File system structure and operations. • Directory structures and file allocation methods. 5. I/O Management: • I/O devices, drivers, and operations. • I/O buffering and scheduling. 6. Deadlocks: • Deadlock concept, prevention, detection, and recovery. 7. Security and Protection: • User authentication, access control, and security threats. 8. Distributed Systems: • Concepts, challenges, and synchronization in distributed systems. 9. Case Studies: • Analysis of real-world operating systems and their features.

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (hr/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**32**	**Structured SWL (hr/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (hr/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (hr/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (hr/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	#1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	#3, #4 and #6, #7
	Projects / Lab.				
	Report	1	5%(5)	13	#5, #8 and #10
Summative assessment	Midterm Exam	2hr	30% (30)	7	#1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Operating Systems • Lecture: Purpose and types of operating systems • Discussion: Evolution and history of operating systems
Week 2	Process Management • Lecture: Processes, threads, and scheduling • Lab Session: Implementing process scheduling algorithms
Week 3	Process Synchronization • Lecture: Process synchronization and inter-process communication • Lab Session: Implementing synchronization mechanisms

Week 4	Memory Management • Lecture: Memory Organization and allocation techniques • Lab Session: Simulating memory allocation strategies
Week 5	Virtual Memory • Lecture: Virtual memory concepts and demand paging • Lab Session: Implementing a basic virtual memory system
Week 6	File Systems • Lecture: File system structure and Operations • Lab Session: Implementing file operations and directory structures
Week 7	I/O Management • Lecture: I/O devices, drivers, and operations • Lab Session: Simulating I/O buffering and scheduling algorithms
Week 8	Deadlocks • Lecture: Deadlock concept and necessary conditions • Lab Session: Implementing deadlock detection and recovery algorithms
Week 9	Security and Protection • Lecture: User authentication, access control, and security threats • Discussion: Case studies on security vulnerabilities and countermeasures
Week 10	Distributed Systems • Lecture: Concepts, challenges, and Synchronization in distributed systems • Lab Session: Simulating distributed file systems and synchronization algorithms
Week 11	Case Study: Unix • Lecture: Analysis of Unix architecture and features • Group Project: Analyzing Unix file system and process management
Week 12	Case Study: Linux • Lecture: Analysis of Linux architecture and features • Group Project: Comparing Linux and Unix system calls and utilities
Week 13	Case Study: Windows • Lecture: Analysis of Windows architecture and features

	• Group Project: Exploring Windows Registry and security mechanisms
Week 14	Review and Exam Preparation • Review of key topics and concepts • Exam practice and preparation
Week 15	Project Presentations and Wrap-up • Group project presentations • Discussion and reflection on the course
Week 16	**A preparatory week before the Final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Textbook: 6. "Operating System Concepts" by Abraham Silberschatz, Peter B. Galvin, and Greg Gagne, 2020 7. "Modern Operating Systems" by Andrew S. Tanenbaum and Herbert Bos, 2014.	Yes (E-copy)
Recommended Texts	"Operating Systems: Internals and Design Principles" by William Stallings.	Yes (E-copy)
Websites	GeeksforGeeks: https://www.geeksforgeeks.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 is 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	**Cloud Computing**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS414**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level		**Semester of Delivery**	7
Administering Department	IS	**College**	CSI
Module Leader	Lamia Abid Noor	**e-mail**	E-mail
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail

Peer Reviewer Name	Osama Majeed	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI121	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	To provide students with the fundamentals and essentials of Cloud Computing. To provide students a sound foundation of the Cloud Computing so that they are able to start using and adopting Cloud Computing services and tools in their real life scenarios. To enable students exploring some important cloud computing driven commercial systems and applications. To expose the students to frontier areas of Cloud Computing and information systems, while providing sufficient foundations to enable further study and research.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After successful completion of this course, student will be able to 1. Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing. 2. Apply the fundamental concepts in datacenters to understand the tradeoffs in power, efficiency and cost. 3. Identify resource management fundamentals, i.e. resource abstraction, sharing and sandboxing and outline their role in managing infrastructure in cloud computing. 4. Analyze various cloud programming models and apply them to solve problems on the cloud.

Indicative Contents المحتويات الإرشادية	Recent trends in computing, evolution of cloud computing, Cloud computing (NIST model), properties, characteristics and disadvantages, role of open standards **CLOUD COMPUTING ARCHITECTURE:** Cloud computing stack, Service models (XAAS), Deployment models. **INFRASTRUCTURE AS A SERVICE**: Introduction, Hypervisors, Resource virtualization, examples. **PLATFORM AS A SERVICE**: Introduction, Cloud Platform and Management, examples. **SOFTWARE AS A SERVICE**: Introduction, Web services, Web 2.0, Web OS, examples. **SERVICE MANAGEMENT IN CLOUD COMPUTING**: Service Level Agreements (SLAs), Billing & Accounting, Comparing scaling hardware, economics of scaling, managing data. **CLOUD SECURITY**: Infrastructure security, Data security and storage, Identity and Access Management, Access Control, Trust and Reputation, Authentication in Cloud computing. **CASE STUDY ON OPEN SOURCE AND COMMERCIAL CLOUDS**: Eucalyptus, VMware Cloud.

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

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2,
	Assignments	1	5% (5)	2, 12	LO # 3, 4
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 3,4
Summative assessment	Midterm Exam	2hr	30% (30)	7	LO # 1-3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week 1	OVERVIEW OF COMPUTING PARADIGM

Week 2	INTRODUCTION TO CLOUD COMPUTING
Week 3	INTRODUCTION TO CLOUD COMPUTING
Week 4	CLOUD COMPUTING ARCHITECTURE
Week 5	CLOUD COMPUTING ARCHITECTURE
Week 6	INFRASTRUCTURE AS A SERVICE
Week 7	INFRASTRUCTURE AS A SERVICE
Week 8	PLATFORM AS A SERVICE
Week 9	SOFTWARE AS A SERVICE
Week 10	SOFTWARE AS A SERVICE
Week 11	SERVICE MANAGEMENT IN CLOUD COMPUTING
Week 12	SERVICE MANAGEMENT IN CLOUD COMPUTING
Week 13	CLOUD SECURITY
Week 14	CLOUD SECURITY:
Week 15	CASE STUDY ON OPEN SOURCE AND COMMERCIAL CLOUDS
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Barrie Sosinsky: "Cloud Computing Bible", Wiley-India, 2010	No
Recommended Texts	Rajkumar Buyya, James Broberg, Andrzej M. Goscinski: "Cloud Computing: Principles and Paradigms", Wiley, 2011	No

Websites	Introduction to Cloud Computing | Coursera

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	**Information Technology Security**	**Module Delivery**
Module Type	**Core**	☒ **Theory**

Module Code	**IS415**	☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
ECTS Credits	**8**	
SWL (hr/sem)	**200**	

Module Level	4	**Semester of Delivery**	7
Administering Department	IS	**College**	CSI
Module Leader	Salwa Shakir Baawi	**e-mail**	salwa.baawi@qu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Osama Majeed	**e-mail**	E-mail
Scientific Committee Approval Date		**Version Number**	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI121	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Learn the fundamentals of information system security. 2. Understand network security threats, security services, and countermeasures. 3. Understand vulnerability analysis of network security. 4. Acquire background on hash functions; authentication; firewalls; intrusion detection techniques. 5. Obtain background for original research in network security, especially wireless network, and MANET security. 6. Apply methods for authentication, access control, intrusion detection, and prevention. 7. Identify and mitigate software security vulnerabilities in existing systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completion of the course, students should be able to: 1. Identify and prioritize information assets. 2. Identify and prioritize threats to information assets. 3. Define an information security strategy and architecture. 4. Plan for and respond to intruders in an information system. 5. Describe the legal and public relations implications of security and privacy issues. 6. Present a disaster recovery plan for the recovery of information assets after an incident
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Introduction Introduction to Information Security: Attacks, Vulnerability, Security Goals, Security Services, and mechanisms [15 hrs] Conventional Cryptographic Techniques. [10 hrs] Symmetric and Asymmetric Cryptographic Techniques. Authentication and Digital Signatures: Use of Cryptography for authentication, Secure Hash function, Key management – Kerberos [25 hrs] Conventional Cryptographic Techniques: Conventional substitution and transposition ciphers, One-time Pad, Block cipher and Stream Cipher, Steganography Symmetric and Asymmetric Cryptographic Techniques: DES, AES, RSA algorithms [25 hrs]

	Program Security: Nonmalicious Program errors – Buffer overflow, Incomplete mediation, Time-of-check to Time-of use Errors [15 hrs] Viruses, Trapdoors, Salami attacks, Man-in-the-middle attacks, Covert channels Mid-term Exam [15 hrs] Security in Networks: Threats in Networks, Network Security Controls – Architecture Encryption, Content Integrity, Strong Authentication, Access Controls [15 hrs] Computer Crime, Mobile Risk Management [25 hrs] Security For Organizations, Overview Of E-Security [15 hrs] Government Cybersecurity Policies [15 hrs] Information Security, Identification And Authentication Server Security Network Security, Attacks And Defenses Detecting And Managing A Break-In, System-Specific Guidelines. [25 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The major strategy for presenting this module will be to encourage students to participate in the tasks while also polishing and improving their critical thinking skills. This will be accomplished through classes, interactive tutorials, and the consideration of various types of simple experiments involving activities such as assigning the student to prepare a simple encryption system, preparing brief reports on various topics, or preparing projects for specific encryption systems, or making optional lectures on information system security-related topics. and assessed on a daily, mid-term, and final exam

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	136	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	9
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	15% (15)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Information Security : Attacks, Vulnerability, Security Goals, Security Services and mechanisms

Week 2	Conventional Cryptographic Techniques : Conventional substitution and transposition ciphers, One-time Pad, Block cipher and Stream Cipher, Steganography
Week 3	Symmetric and Asymmetric Cryptographic Techniques : DES, AES, RSA algorithms
Week 4	Authentication and Digital Signatures : Use of Cryptography for authentication, Secure Hash function, Key management – Kerberos
Week 5	Program Security : Non malicious Program errors – Buffer overflow, Incomplete mediation, Time-of-check to Time-of use Errors
Week 6	Viruses, Trapdoors, Salami attack, Man-in-the middle attacks, Covert channels
Week 7	**Mid-term Exam**
Week 8	Security in Networks : Threats in networks, Network Security Controls – Architecture
Week 9	Encryption, Content Integrity, Strong Authentication, Access Controls
Week 10	Computer Crime, Mobile Risk Management
Week 11	Security For Organizations, Overview Of E-Security
Week 12	Government Cyber-Security Policies
Week 13	Information Security, Identification And Authentication server Security
Week 14	Network Security, Attacks And Defenses Detecting And Managing A Break-In, System-Specific Guidelines.
Week 15	**Final Exam**

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to Information Security : Attacks, Vulnerability, Security Goals, Security Services and mechanisms
Week 2	Conventional Cryptographic Techniques : Conventional substitution and transposition ciphers, One-time Pad, Block cipher and Stream Cipher, Steganography
Week 3	Symmetric and Asymmetric Cryptographic Techniques : DES, AES, RSA algorithms
Week 4	Authentication and Digital Signatures : Use of Cryptography for authentication, Secure Hash function, Key management – Kerberos
Week 5	Program Security : Non malicious Program errors – Buffer overflow, Incomplete mediation, Time-of-check to Time-of use Errors
Week 6	Viruses, Trapdoors, Salami attack, Man-in-the middle attacks, Covert channels
Week 7	**Mid-term Exam**
Week 8	Security in Networks : Threats in networks, Network Security Controls – Architecture
Week 9	Encryption, Content Integrity, Strong Authentication, Access Controls
Week 10	Computer Crime, Mobile Risk Management
Week 11	Security For Organizations, Overview Of E-Security
Week 12	Government Cyber-Security Policies
Week 13	Information Security, Identification And Authentication server Security
Week 14	Network Security, Attacks And Defenses Detecting And Managing A Break-In, System-Specific Guidelines.
Week 15	**Final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Security in Computing, Fourth Edition, by Charles P. Pfleeger, Pearson Education	Yes
Recommended Texts	Network Security Essentials: Applications and Standards, by William Stallings. Prentice Hall.	yes
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module Information معلومات المادة الدراسية					
Module Title	**Data Mining**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS421**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	4		**Semester of Delivery**	8	
Administering Department	IS		**College**	CSI	
Module Leader	Qusay Mosa		**e-mail**	qusay.mosa@qu.edu.iq	
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Ali Hakim		**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CSI221	**Semester**	4
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 data mining applications and techniques. 2. This course deals with the basic concept of data mining techniques and tasks. 3. To understand techniques used to extract the required information quickly and efficiently. 4. To understand modern techniques used in the field of data classification and forecasting 5. To understand basic methods for converting and reducing the volume of data, especially big data.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. List the various terms associated with data mining. 2. The course aims to provide the student with the necessary knowledge to manage, analyze and mine a huge amount of data. 3. Provide students with some advanced concepts in data mining techniques, especially, data classification, clustering, and regression methods. 4. Provide students with the necessary skills to deal with a huge amount of data and retrieve the required information. 5. Provide students with data classification skills. 6. Provide students with analytical skills.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: 1. Data Mining Functionalities and Process (Report+ presentation) (2 weeks) 2. Architecture of Data Mining Systems (Report+ presentation) (2 weeks) 3. Data Preprocessing: dealing with Data Cleaning and Data Integration (Presentation) (2 weeks) 4. Data Transformation and Data Reduction

	(Presentation) (2 weeks) 5. Data Generalization and Summarization-Based Characterization Mining (Report+ presentation) (2 weeks) 6. Association Rules In Large Databases: Classification and Prediction (Project+ presentation) (2 weeks) 28. Classification By Decision Tree Induction, Bayesian Classification and Prediction (Report) (1 week) 29. Cluster Analysis: Categorization of Major Clustering Methods: Partitioning and Hierarchical Methods (Report+ presentation) (2 weeks)

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

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

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	136	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	9
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	15	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	15% (15)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Data Mining: Data Mining Functionalities, Data Mining Process
Week 2	Architecture of a Typical Data Mining Systems, Classification of Data Mining Systems

Week 3	Data Mining Techniques, Data Preprocessing, Data Cleaning, Data Integration, Data Transformation and Data Reduction
Week 4	Data Mining Techniques, Data Preprocessing, Data Cleaning, Data Integration, Data Transformation and Data Reduction
Week 5	Data Generalization and Summarization Based Characterization
Week 6	Mining Association Rules In Large Databases, Classification and Prediction
Week 7	Classification By Decision Tree Induction, Bayesian Classification
Week 8	Review
Week 9	Prediction, Clusters Analysis
Week 10	Types of Data in Cluster Analysis
Week 11	Categorization of Major Clustering Methods
Week 12	Partitioning Methods, Hierarchical Methods
Week 13	Applications of Data Mining
Week 14	Social Impacts of Data Mining, Mining WWW
Week 15	Mining Text Database, Mining Spatial Databases
Week 16	**Final Exam**

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Data Mining: Data Mining Functionalities, Data Mining Process
Week 2	Architecture of a Typical Data Mining Systems, Classification of Data Mining Systems
Week 3	Data Mining Techniques, Data Preprocessing, Data Cleaning, Data Integration, Data Transformation and Data Reduction

Week 4	Data Mining Techniques, Data Preprocessing, Data Cleaning, Data Integration, Data Transformation and Data Reduction
Week 5	Data Generalization and Summarization Based Characterization
Week 6	Mining Association Rules In Large Databases, Classification and Prediction
Week 7	Classification By Decision Tree Induction, Bayesian Classification
Week 8	Review
Week 9	Prediction, Clusters Analysis
Week 10	Types of Data in Cluster Analysis
Week 11	Categorization of Major Clustering Methods
Week 12	Partitioning Methods, Hierarchical Methods
Week 13	Applications of Data Mining
Week 14	Social Impacts of Data Mining, Mining WWW
Week 15	Mining Text Database, Mining Spatial Databases
Week 16	**Final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Han, Jiawei, Jian Pei, and Micheline Kamber. Data mining: concepts and techniques. Elsevier, 2011.	Yes
Recommended Texts	• Ponniah, Paulraj. Data warehousing fundamentals for IT professionals. John Wiley & Sons, 2011.	No

	• Kimball, Ralph, and Joe Caserta. The Data WarehouseÂ ETL Toolkit: Practical Techniques for Extracting, Cleaning, Conforming, and Delivering Data. John Wiley & Sons, 2011.	
Websites	https://www.coursera.org/courses?query=data%20mining	

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 is required but credit awarded
	F – Fail	راسب	(0-44)	A 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	**Research Project**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS422**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		4	**Semester of Delivery**		8
Administering Department		IS	**College**	CSI	
Module Leader	Ali Saeed		**e-mail**	E-mail	
Module Leader's Acad. Title		Assist. Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Firas Hussien	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI121	**Semester**	2
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 research principles. 2. To develop brain storming skills and how obtain efficient solutions. 3. Learn principles of problem analysis and critical thinking. 4. Learn programming coding in a complete projects and systems. 5. Learn the basics of benchmarking. 6. Learn basic academic writing and how to finalize a thesis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The ability for solving skills and understanding of research principles. 2. The ability to have brain storming skills and how obtain efficient solutions. 3. The ability to be a problem analyst and critical thinker. 4. The ability for developing programming coding in a complete projects and systems. 5. The ability to perform research benchmarking. 6. The ability to develop academic writing for research thesis.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Literature Survey</u> Students is guided to gain knowledge by working on deep literature survey about the field <u>Data preparation and organization</u> Student develops their skills in information gathering and data organization <u>develop system and project analysis</u> Students develop final required system analysis <u>System design</u> Develop complete design for the proposed system using design techniques and platforms like UML (Unified Modeling Language)

	System implementation Perform system implementation including any programming tasks Evaluation/ Experiments and Results This is completely dedicated for evaluating the proposed models by investigating specific criterion and achieve benchmarking. Thesis Writing This is completely dedicated for writing up thesis and submit for debate examination

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage student to read external text books and research articles, while at the same time refining and expanding their critical thinking skills. This will be achieved through library reading, electronic libraries reading and by considering laboratory simple experiments to implement the proposed project. Encourage the student to perform professional academic writing task and exercises for research thesis structure and contents.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3

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

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**				
	Assignments	2	10% (10)	5, 10	LO # 1-9
	Projects / Lab.	1	30% (30)	Continuous	All
	Report	1	10% (10)	13	LO # 1-12
Summative assessment	**Midterm Exam**				
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Data preparation and organization
Week 2	Lab 2: develop system and project analysis
Week 3	Lab 3: continue system and project analysis
Week 4	Lab 4: develop system design

Week 5	Lab 5: continue system design
Week 6	Lab 6: system implementation
Week 7	Lab 7: continue system implementation
Week 8	Lab 8: System test and investigation
Week 9	Lab 9: gathering and obtain primary results
Week 10	Lab 10: compiling and organizing results
Week 11	Lab 11: Benchmarking
Week 12	Lab 12: Finalize results and conclusions
Week 13	Lab 13: Represent and visualize results for thesis
Week 14	Lab 14: Document system design and analysis in thesis
Week 15	Lab 15: finalize thesis

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition, John W. Creswell, 2014	Yes
Recommended Texts	Qualitative Research: A Guide to Design and Implementation 4th Edition, Sharan B. Merriam, Elizabeth J. Tisdell, 2015	No
Websites	https://www.coursera.org/learn/research-methodologies	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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	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	**Software Engineering**	**Module Delivery**
Module Type	**E**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**IS423**	
ECTS Credits	**4**	
SWL (hr/sem)	**100**	

Module Level		4	**Semester of Delivery**		2
Administering Department		IS	**College**	CSI	
Module Leader	Rafid Nabeel		**e-mail**	E-mail	
Module Leader's Acad. Title		Assist. Professor	**Module Leader's Qualification**		Master
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Ali Hakim	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	**CSI121**	**Semester**	**2**
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. Provide students with a comprehensive introduction to software engineering. 2. Provide students with the types of activities needed to produce the system. 3. Study the important stages of software development. 4. Building a high quality software system. 5. Explain the system build life cycle. 6. Gain knowledge at every stage of building the system. 7. Understand the application of software engineering principles to a project.
Module Learning Outcomes	1. Clarifying the basic concepts of software engineering principles and getting acquainted with a set of tools. 2. Gain skills in system building and problem solving. 3. Study techniques for deriving system requirements. 4. Studying the stages of building the system, the cost and the required time.

مخرجات التعلم للمادة الدراسية	5. The ability to accurately build systems using software engineering principles. 6. The ability to think about addressing the problem according to quality standards. 7. Writing scientific reports. 8. Using advanced building models to obtain efficient software.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Fundamental of Software Engineering Basic Concepts: Software product, Software crisis, software engineering, software process, software process model, methodologies, methods, tools, artifacts, Software Process (I): process models, iterative process, Software Process (II): software process activities (specification, design and implementation ,validation/verification, evolution); Software Requirement Engineering (I) [16 hrs] Software requirements: Functional/Non Functional requirements, User requirements, System requirement, Requirement document, Software requirements elicitation, Software Requirement Engineering(II): Software requirement, elicitation and analysis, basics on Use case [6 hrs] System Model: System Models (I): Context models, Behavioural Models; System Models (II): Data Models, Objects Models, Uniform Modelling Language, Architectural Design: system structuring, control models, modular decomposition; Object Oriented Design, UML notation; User interface design: user interface design principles, user interaction [10 hrs] Part B - Risk Analysis Risk analysis concept and principles, Software Quality Assurance, Software Quality Assurance, Quality control, Software Testing, Software Testing ,Verification and Validation: planning, software Inspections, defect testing, integration testing.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. The ability to accurately build systems using software engineering principles. 2. The ability to think about addressing the problem according to quality standards. 3. Writing scientific reports.

	4. Using advanced building models to obtain efficient software. 5. Directing students to some websites to benefit from them. 6. Assign the student to prepare brief reports on some topics and carry out homework. 7. Holding research seminars through which some problems are explained and analyzed and the mechanism for finding solutions to them. 8. Conducting theoretical tests in the classroom (daily, monthly, and final). 9. Asking questions and oral inquiries to the students to indicate the extent of their response. 10. Organizing students in groups and assigning them to complete the requirements of building a specific system and evaluating the percentage of their completion of these works.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	2, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	3, 12	LO # 3, 4, 6 and 7
	Projects/ Lab				
	Report	1	5%(5)		
	Midterm Exam	2hr	30% (30)	9	LO # 1-9

Summative assessment	**Final Exam**	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Fundamental of Software Engineering, Basic Concepts: Software product, Software crisis, software engineering.
Week 2	Fundamental of Software Engineering, software process, software process model, methodologies, methods, tools, artifacts
Week 3	Software process, Software Process (I): process models, iterative process
Week 4	Software process, Software Process (II): software process activities (specification, design and implementation, validation/verification, evolution); Software Requirement Engineering (I)
Week 5	Software requirements, Functional/Non Functional requirements, User requirements, System requirement, Requirement document
Week 6	Software requirements elicitation, Software Requirement Engineering(II): Software requirement, elicitation and analysis, basics on Use case
Week 7	System Model, System Models (I): Context models, Behavioural Models ; System Models (II): Data Models, Objects Models
Week 8	Uniform Modelling Language, Architectural Design: system structuring, control models, modular decomposition; Object Oriented Design, UML notation; User interface design: user interface design principles, user interaction
Week 9	**Midterm-Exam**
Week 10	Risk Analysis, Risk analysis concept and principles
Week 11	Software Quality Assurance, Software Quality Assurance, Quality control
Week 12	Software Quality Assurance, Software Quality Assurance, Quality control
Week 13	Software Quality Assurance, Software Quality Assurance, Quality control

Week 14	Software Testing, Software Testing ,Verification and Validation: planning, software Inspections
Week 15	Software Testing, defect testing, integration testing
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Software Engineering, Roger S.Pressman, 2014	Yes
Recommended Texts	Introduction to Software Engineering, Ian Somerville, 2007	Yes
Websites	https://www.e-booksdirectory.com/computer-science.php	

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	Modeling and Simulation	**Module Delivery**	
Module Type	E	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	IS424		
ECTS Credits	8		
SWL (hr/sem)	200		
Module Level	4	**Semester of Delivery**	8
Administering Department	IS	**College**	CSI
Module Leader	Dr. Firas Hussean Maghool	**e-mail**	firas.maghool@qu.edu.iq
Module Leader's Acad. Title	Assistant Prof.	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Sahar Jaffer	**e-mail**	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	CSI221	**Semester**	4
Co-requisites module	None	**Semester**	

odule Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Learn the basics of modeling and simulation 2. Developing the student and his analytical, deductive, remedial and self-education 3. Abilities identify the most important statistical distributions mathematically to build a sound mathematical foundation. 4. Application of queuing theory in digital systems 5. Benefit from the curriculum of the project course by building smart systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Be familiar with a variety of simulation environments and tools. 2. Be familiar with concepts in discrete-event simulation models. 3. Be familiar with statistical models and discrete distributions. 4. Be exposed to random numbers and their generation. 5. Be exposed to input modeling and parameter estimation. 6. Be familiar with verification, validation, and documentation of simulation models. 7. Master development of simulation models to address topics in the above outcomes.
Indicative Contents المحتويات الإرشادية	Modeling Concepts and Definitions, Various type of models ,Review of probability, Sampling discrete and continuous random variables, Variance reduction techniques, Statistical analysis of simulated data, Statistical validation techniques Queueing theory, Independent Monte Carlo method, Markov-Chain Monte Carlo methods, Discrete-event simulation, Simulated annealing

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	153	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	10
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	2	10% (10)
	Assignments	1	5% (5)	1	5% (5)
	Projects / Lab.				
	Report	1	5%(5)	1	5%(5)

Summative assessment	**Midterm Exam**	2hr	30% (30)	2hr	30% (30)
	Final Exam	2hr	50% (50)	2hr	50% (50)
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	introduction to Modeling
Week 2	Modeling Concepts and Definitions, Various type of models
Week 3	Properties of linear models
Week 4	Review of probability
Week 5	Sampling discrete and continuous random variables
Week 6	Discrete-event simulation
Week 7	Statistical analysis of simulated data
Week 8	Variance reduction techniques
Week 9	Hand Simulation
Week 10	Rejection Methods
Week 11	Independent Monte Carlo method
Week 12	Markov-Chain Monte Carlo methods
Week 13	Queueing theory
Week 14	Simulated annealing

Week 15	dynamic modeling
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• Simulation: Principles and Methods By Wayne J. Graybeal & Udo W. Pooc • Probability, Statistics, and Stochastic Processes by Peter Olofsson & Mikael Andersson,2011.	
Recommended Texts		
Websites	http://www.abarry.net/or/or221book1.pdf	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module Information

معلومات المادة الدراسية

Module Title	**Geographic Information Systems**		**Module Delivery**	
Module Type	**C**		☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS425**			
ECTS Credits	**4**			
SWL (hr/sem)	**100**			
Module Level	4	**Semester of Delivery**	8	
Administering Department	IS	**College**	CSI	
Module Leader	Zahraa chaffat oleiwi	**e-mail**	Zahraa.chaffat@qu.edu.iq	
Module Leader's Acad. Title	lecturer	**Module Leader's Qualification**	M.Sc.	
Module Tutor	Name (if available)	**e-mail**	E-mail	
Peer Reviewer Name	Zena Hussein	**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	IS121	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Introduce students to the foundational concepts, principles, and terminology of GIS. 2. Explain why Geographic Information Technology used? 3. Explore the principles the Nature of Geographical Data. 4. Provide students with knowledge of component of GIS. 5. Introduce students to the Representation real world in GIS. 6. fundamentals of GIS data modeling
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. Gain a comprehensive understanding of the fundamental concepts, principles, and terminology related to GIS and how can use in real world. 2. Demonstrate knowledge and comprehension of various GIS data modeling depending on application used. 3. Apply the principles and techniques of Global Positioning System (GPS). 4. explain and understanding How a GPS receiver works. 5. Understand and apply the limitations of GPS. 6. Apply and understand the concept of Data visualization and GIS. 7. Demonstrate awareness and understanding of GIS Visualization problem.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Module 1: Introduction to GIS. [12 hrs] • Module 2: component of GIS. [12 hrs] • Module 3: Representation real world in GIS. [12 hrs] • Module 4: Global Positioning System (GPS). [12 hrs] • Module 5: Data visualization and GIS. [12 hrs]

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	LO #3, #4 and #6, #7

	Projects / Lab.				
	Report	1	5%(5)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction to GIS**
Week 2	**Representation the Geographical Data GIS**
Week 3	**Components of a GIS**
Week 4	**Representing the real world in GIS**
Week 5	**GIS and maps**
Week 6	**The Nature of Geographical Data**
Week 7	**GIS Data Modelling**
Week 8	**Raster, Vector, and Object GIS Data model**
Week 9	**Data Maintenance**
Week 10	**Spatial autocorrelation and scale**
Week 11	**Dimensionality of Maps**
Week 12	**Geovisualization**
Week 13	**Global Positioning System (GPS)**
Week 14	**The limitations of GPS**

Week 15	**Data visualization and GIS**
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Eric Conrad , Seth Misenar, Joshua Feldman, CISSP® Study Guide , Fourth Edition, 2023 Elsevier Inc.	No
Recommended Texts	George K. Kostopoulos, "CYBERSPACE and CYBERSECURITY," © 2013 by Taylor & Francis Group, LLC. Josiah Dykstra, "Essential Cybersecurity Science," © 2016 O'Reilly Media, Inc.	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to

condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module Information
معلومات المادة الدراسية

Module Title	Distributed databases	**Module Delivery**	
Module Type	**Elective**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	IS327		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		

Module Level	3	**Semester of Delivery**	6
Administering Department	IS	**College**	CSI
Module Leader	Qusay O. Mosa	**e-mail**	qusay.mosa@qu.edu.iq
Module Leader's Acad. Title	Assistant Prof	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Mohammed iqbal dohan	**e-mail**	mohammed.iqbal@qu.edu.iq
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	IS121	**Semester**	2
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. Understanding database principles and design methods. 2. Understand what database management systems are. 3. Know the reasons that led to the emergence of distributed databases. 4. Know what architectures are available and used to build distributed database systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive goals: 1. Introducing the principles and basics of distributed databases, systems and types. 2. Apply the concepts of distributed databases. 3. Realizing the importance of distributed database systems. 4. Determine the difference between database systems and distributed database systems. 5. The ability to describe distributed database systems. B- Course objectives: 1. The ability to deliver lectures related to distributed database systems. 2. The ability to design a distributed database system. 3. The ability to learn and train on various traditional and distributed database systems. 4. The ability to manage dialogues and discussions related to database systems and distributed databases.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. -Introduction to DB, The function of DBMS,

	DBA's responsibilities, DB facilities, DB limitations, Advantage of DB -Architecture of DB -Overview of DDB. - DDB integrity -Distributed Database Design - Concurrency control - Database recovery

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to DB, The function of DBMS, DBA's responsibilities, DB facilities, DB limitations, Advantage of DB.

Week 2	Introduction to DB, The function of DBMS, DBA's responsibilities, DB facilities, DB limitations, Advantage of DB.
Week 3	Introduction to DB, The function of DBMS, DBA's responsibilities, DB facilities, DB limitations, Advantage of DB.
Week 4	Artecheture of DB
Week 5	Artecheture of DB
Week 6	Overview of DDB.
Week 7	Overview of DDB.
Week 8	DDB integrity
Week 9	DDB integrity
Week 10	Distribuited Database Design
Week 11	Distribuited Database Design
Week 12	Distribuited Database Design
Week 13	Concurency control
Week 14	Database recovery
Week 15	Database recovery
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**

Required Texts	Database system concept, 5\E, Abraham silberschatz and Merry F. Koth, 2006	Yes
Recommended Texts	Stefano Geri and Giuseppe Pelagatti (1984), Distributed Data Bases Principles and Systems, Mc-Graw Hill.	No
Websites	Distributed database, stelane ceri, 2002.	

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.

Machine Learning معلومات المادة الدراسية					
Module Title	**Machine Learning**			**Module Delivery**	
Module Type	**E**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS426**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	4		**Semester of Delivery**	8	
Administering Department	IS		**College**	CSI	
Module Leader	Lamia Abid Noor		**e-mail**		
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Alaa Taima		**e-mail**		
Scientific Committee Approval Date	20/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	CSI221	**Semester**	4
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. Understand the concept of learning in computer and science. 2. Understand the difference between supervised and unsupervised learning. 3. Understand the difference between machine learning and deep learning. 4. Design and evaluate machine and deep learning algorithms.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the process involved in equipping machines to learn models from data. 2. Gain knowledge about a wide variety of learning algorithms and how to optimize them. 3. Be skilled at evaluating models generated from data. 4. Apply the algorithms to a real-world problem and report on the accuracy of the various models. 5. Demonstrate an understanding of the ethical concerns typically arising in the context of computing
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Introduction to Machine Learning and Evaluation of Methods: What is Machine Learning? Error and Accuracy Metrics, Machine Learning Terminology. • Introduction to Supervised Classification: K-Nearest Neighbors, Decision Trees, Random Forests, and Linear Classifiers; Experimental Design and Hyperparameter Tuning Strategies • Introduction to Neural Networks: The Perceptron and Brief history of Neural Networks; Multi-layer Perceptron; Introduction to tensorflow • Introduction to Deep Learning: Deep Learning Fundamentals and Applications; Introduction to Convolutional Neural Networks: Applications and Implementation in tensorflow.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials

	and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	153	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	10
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.				
	Report	1	5%(5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction: supervised and unsupervised learning problems, different learning tasks, etc. Review of basic mathematics (matrix computation, norms, probability, mean, variance, optimization, etc.)
Week 2	Continue review of basic mathematics Supervised learning – regression: overview, least square, overfitting, regularization (ridge, Lasso), probabilistic interpretation, (generalized) gradient descent
Week 3	Continue regression
Week 4	Supervised Learning – classification: overview, KNN, model evaluation,
Week 5	linear discriminant analysis, logistic regression
Week 6	support vector machine, neural network
Week 7	Mid-term Exam
Week 8	Unsupervised learning – clustering: overview
Week 9	K-means, hierarchical clustering, DBSCAN, clustering evaluation, spectral clustering
Week 10	Introduction to Deep Learning, Deep Learning Architectures
Week 11	Deep Learning Fundamentals and Applications
Week 12	Convolutional Neural Networks
Week 13	Recurrent neural networks
Week 14	Generative models
Week 15	Generative adversarial network
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Tom M. Mitchell- Machine Learning - McGraw Hill Education, International Edition	Yes
Recommended Texts	Aurélien Géron Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow, O'Reilly Media, Inc. 2nd Edition	No
Websites	https://www.coursera.org/learn/machine-learning	

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	**Distrbuted Systems**			**Module Delivery**	
Module Type	**Elective**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**IS427**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	4		**Semester of Delivery**	8	
Administering Department	IS		**College**	CSI	
Module Leader	Ali Saeed Dayem Alfoudi		**e-mail**	a.s.alfoudi@qu.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Sudad Najim		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	IS121	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	• Understanding Remote Communication and Interprocess Communication • Study about various distributed client server models • Create an awareness of the major technical challenges in distributed systems design and implementation

	• Emerging trends in distributed computing • Understanding Distributed Shared Memory and File System
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On successful completion of the course: • The student will be having the basic knowledge of Distributed Computing. • Student will be able to understand Distributed Models. • To know about interposes communication and remote communication. • Student will be able to know distributed service oriented architecture. • To know about emerging trends in distributed computing. • Student will be able to know Distributed Shared Memory and File System
Indicative Contents المحتويات الإرشادية	Introduction Distributed System Concepts Basic Network Communication Interprocess and Remote Communication Distributed System Synchronization Distributed System Management Distributed Shared Memory Distributed File System Emerging Trends in Distributed Systems

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (hr/sem)	**32**	**Structured SWL (hr/w)**	2

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (hr/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	**Unstructured SWL (hr/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (hr/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	#1, #2 and #10, #11
	Assignments	1	5% (5)	2 and 12	#3, #4 and #6, #7
	Projects / Lab.				
	Report	1	5%(5)	13	#5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	30% (30)	7	#1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction Distributed System Concepts: • Introduction • Distributed Computing Models • Software Concepts

	• Issues in Designing Distributed Systems • Client-Server Model • Case Studies: WWW 1.0 , 2.0 , 3.0
Week 2	Introduction Distributed System Concepts: • Software Concepts • Issues in Designing Distributed Systems • Client-Server Model • Case Studies: WWW 1.0 , 2.0 , 3.0
Week 3	Basic Network Communication: • LAN and WAN Technologies • Classification of Networks • Protocols for Network Systems • ATM • Protocols for Distributed Systems
Week 4	Basic Network Communication: • Protocols for Network Systems • ATM • Protocols for Distributed Systems
Week 5	Interprocess and Remote Communication: • Message Passing • IPC in Mach • CBCAST protocol in ISIS •
Week 6	Interprocess and Remote Communication: • RPC Introduction and Basics • RPC Implementation and Communication • Sun RPC • RMI Implementation
Week 7	Distributed System Synchronization: • Introduction

	• Clock Synchronization • Logical and Global state • Mutual Exclusion
Week 8	Distributed System Synchronization: • Election Algorithms • Deadlocks in Distributed Systems • Deadlocks in Message Communication
Week 9	Distributed System Management: • Resource Management • Task Assignment Approach • Load Balancing Approach • Load Sharing Approach •
Week 10	Distributed System Management: • Process Management and Migration • Threads • Fault Tolerance
Week 11	Distributed Shared Memory: • DSM Concepts • Hardware DSM • Design Issues in DSM Systems •
Week 12	Distributed Shared Memory: • Implementing Issues in DSM Systems • Heterogeneous and other DSM systems
Week 13	Distributed File System: • Introduction DFS • File Models • DFS Design • Semantics File Sharing

	• DFS Implementation • File Caching in DFS • Replication in DFS • Sun Network File System • Google File System
Week 14	Emerging Trends in Distributed Systems • Emerging Trends Introduction • Grid Computing • Service Oriented Architecture • Cloud Computing • The Future of Emerging Trends
Week 15	Emerging Trends in Distributed Systems • Service Oriented Architecture • Cloud Computing • The Future of Emerging Trends Discussion and reflection on the course

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Textbook: 1- Sloman, M. and Kramer, J., 1987. *Distributed systems and computer networks*. Prentice Hall International (UK) Ltd.. 2- Ölveczky, P.C., 2017. *Designing Reliable Distributed Systems*. Springer London.	Yes (E-copy)
Recommended Texts	"Operating Systems: Internals and Design Principles" by William Stallings.	Yes (E-copy)
Websites	GeeksforGeeks: https://www.geeksforgeeks.org/	

Grading Scheme

مخطط الدرجات				
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