

Academic Program Description Form



University Name: Al-Furat Al-Awsat Technical University

Faculty/Institute: Technical Collage of Management / Kufa

Scientific Department: Information Technology Management

Academic or Professional Program Name: Information Technology Management

Final Certificate Name: Information Technology Management

Academic System: Credit system

Description Preparation Date:

File Completion Date:

Signature:

Head of Department Name:

Asst. Prof. Mujtaba Zuhair Ali

Date: 14/9/2026

Signature:

Scientific Associate Name:

Asst. Prof. PhD. Baqer Khudair Abdul Abbas

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Asst. lect. Bahaa Hamza Abd Alabbas

Date: 14/9/2026

Signature:

Approval of the Dean

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



Academic Program and Course Description Guide

2026–2027

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

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1. Program Vision

The vision of the Information Technology Management program is to empower students to develop and implement innovative and sustainable technological solutions. This is achieved by providing them with the necessary knowledge and technical and practical skills, building their personal and professional capacities, and promoting values of integrity and social responsibility.

2. Program Mission

The mission of the Information Technology Management program is to offer an exceptional educational program aimed at equipping students with the knowledge and skills necessary to succeed in the field of information technology management and development, enabling them to excel in the dynamic and evolving job market. The program also aims to inspire students to innovate and excel, develop their personal and professional capacities, and guide them towards achieving success in their careers with responsibility and ethics.

3. Program Objectives

1. **Understanding Information Technology:** Providing comprehensive training on the technologies and tools used in the field of information technology, such as database management systems, information security, software development, and computer networks.
2. **Technology Project Management:** Teaching students how to plan and execute information technology projects successfully, including resource management, scheduling, and cost management.

3. **Technology Strategies:** Enhancing the ability to analyze organizations' technology needs and develop strategies for effectively using technology to improve business performance and achieve competitiveness.
4. **Information Security:** Introducing students to the concept of information security and applying best practices to protect data and sensitive information from security threats.
5. **Industry Engagement:** Encouraging communication and interaction with the industry and organizations through training programs, real-world training opportunities, and partnerships with companies.
6. **Leadership Development:** Enhancing leadership skills and strategic thinking for students, enabling them to take on leadership roles in the field of information technology.

4. Program Accreditation

Not found.

5. Other external influences

Not found.

* The Department of Information Technology Management has adopted the Bologna system for the first stage, starting from the academic year 2024–2025, in implementation of the directives of the Ministry of Higher Education and Scientific Research. Therefore, the new program structure table requires adding some details to be clearer and more detailed.

6. A– Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	12	24	15%	
College Requirements	7	21	13%	
Department Requirements	39	116	72%	
Summer Training	2	0		
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Level	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)							Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
						CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Seminar (hr/w)							
	1	P101	Programming	برمجة	English	3		3					4	94	131	225	9.00	C
	2	M102	Mathematics	الرياضيات	Arabic	2				1			3	48	102	150	6.00	S
	3	CF103	Computer Fundamentals	أساسيات الحاسوب	Arabic	1		2					3	48	27	75	3.00	S
	4	S104	Statistics	الإحصاء	Arabic	2		1					3	48	102	150	6.00	S
	5	ATU10	English Language I	اللغة الانجليزية I	English	2							2	32	18	50	2.00	B
	6	M105	Management	الإدارة	Arabic	2					1		3	48	52	100	4.00	E
	7	MIS106	Management Info. Systems	نظم إدارة المعلومات	Arabic	2					1		3	48	52	100	4.00	E
						Total	14	0	6	0	1	2	21	366	484	850	34.00	
UGI	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)							Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Seminar (hr/w)												
	1	OOP107	Object Oriented Programming	البرمجة الشيئية	English	3		3					4	94	131	225	9.00	C
	2	LD108	Logic design	تصميم منطقي	English	2		2					3	63	112	175	7.00	S
	3	API09	Applications Packages	تطبيقات الحاسوب	Arabic	1		2					3	48	27	75	3.00	S
	4	AS110	Advanced Statistics	إحصاء متقدم	Arabic	2		1					3	48	127	175	7.00	S
	5	ATU13	Human Rights and Democracy	حقوق الإنسان والديمقراطية	Arabic	2							2	32	18	50	2.00	B
	6	ATU11	Arabic Language I	اللغة العربية I	Arabic	2							2	32	18	50	2.00	B
					Total	12	0	8	0	0	0	17	317	413	750	30.00		

Level	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	
						CL (hr/w)	Leet (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semr (hr/w)							
UGI	1	ATU24	Crises of Baath Regime in Iraq	حزب البعث في العراق	Arabic	2						2	32	18	50	2.00	B	
	2	CN201	Computer Networks	شبكات الحاسوب	English	2		2				4	64	136	200	8.00	C	
	3	DS202	Data Structure	هياكل البيانات	English	2		3				4	79	121	200	8.00	C	
	4	AP203	Accounting Principles	مبادئ محاسبة	Arabic	2		2				3	63	87	150	6.00	S	
	5	ATU21	Arabic language 2	اللغة العربية 2	Arabic	2						2	32	18	50	2.00	B	
	6	DSS205	Decision Support Systems	نظمة دعم القرار	Arabic	2		1				3	48	52	100	4.00	S	
						Total	12	0	8	0	0	18	318	432	750	30.00		
	UGII	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
		CL (hr/w)	Leet (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semr (hr/w)											
		1	ATU20	English Language 2	اللغة الانجليزية 2	English	2						2	32	18	50	2.00	B
2		OS207	Operating System	نظم التشغيل	English	2		1				3	48	52	100	4.00	C	
3		SE208	Software Engineering	هندسة البرمجيات	Arabic	2					1	3	48	52	100	4.00	C	
4		DM209	Digital Marketing	التسويق الرقمي	Arabic	2					1	3	48	52	100	4.00	S	
5		DM210	Discrete Mathematics	رياضيات متقطعة	Arabic	2				1		3	48	52	100	4.00	S	
6		AG211	Algorithms	خوارزميات	English	2		2				4	64	136	200	8.00	C	
7		AIS212	Accounting Information Systems	نظم المعلومات المحاسبية	Arabic	2					1	3	48	52	100	4.00	E	
8		PM213	Project Management	إدارة مشاريع	Arabic	1		2				3	48	52	100	4.00	E	
				Total	15	0	5	0	1	3	24	384	466	850	34.00			
UGIII	1	DB301	Database	قواعد البيانات	Arabic	2		2				4	64	111	175	7.00	C	
	2	VPP302	Visual Programming Principles	أساسيات البرمجة المرئية	English	2		2				4	64	111	175	7.00	C	
	3	IS303	Information Security	أمنية المعلومات	English	2		1				3	48	52	100	4.00	C	
	4	DA304	Data Analysis	تحليل البيانات	Arabic	2		1				3	48	52	100	4.00	S	
	5	EM305	Electronic Management	إدارة إلكترونية	Arabic	2					1	3	48	52	100	4.00	S	
	6	SA306	System Analysis	تحليل نظم	Arabic	2					1	3	48	52	100	4.00	S	
					Total	12	0	6	0	0	2	20	320	430	750	30.00		
	UGIV	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
		CL (hr/w)	Leet (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semr (hr/w)											
		1	EL307	English Language 3	اللغة الانجليزية 3	English	2						2	32	18	50	2.00	S
2		AD308	Advanced Database	قواعد البيانات المتقدمة	Arabic	2		2				4	64	111	175	7.00	C	
3		AVP309	Advanced Visual Programming	برمجة مرئية متقدمة	English	2		2				4	64	111	175	7.00	C	
4		DM310	Data Mining	تقيب البيانات	English	2		2				3	63	87	150	6.00	C	
5		GH11	Graphs	مخططات	Arabic	2		1				3	48	52	100	4.00	S	
6		CY312	Cyber Security	أمن حبراني	English	2		1				3	48	52	100	4.00	E	
7		CF313	Digital Forensics	الأدلة الجنائية الرقمية	Arabic	2		1				3	48	52	100	4.00	E	
				Total	14	0	9	0	0	0	22	367	483	850	34.00			
UGIV	1	AI401	Artificial Intelligence	ذكاء اصطناعي	English	2		2				4	64	111	175	7.00	C	
	2	IP402	Image Processing	معالجة صور	Arabic	2		2				4	64	111	175	7.00	C	
	3	PE403	Professional Ethics	أخلاقيات المهنة	Arabic	2						2	32	18	50	2.00	S	
	4	OM404	Operations Management	إدارة عمليات	Arabic	2		1				3	48	77	125	5.00	S	
	5	RM405	Research Methodology	منهجية البحث العلمي	Arabic	2						2	32	18	50	2.00	S	
	6	WAD406	Web Application Development	تطوير تطبيقات الويب	English	2		3				4	79	96	175	7.00	E	
	7	MAD407	Mobile Application Development	تطوير تطبيقات الموبايل	English	2		3				4	79	96	175	7.00	E	
				Total	14	0	11	0	0	0	22	398	527	925	37.00			
	UGIV	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
		CL (hr/w)	Leet (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semr (hr/w)											
1		EL408	English Language 4	اللغة الانكليزية 4	English	2						2	32	18	50	2.00	S	
2		ML409	Machine Learning	التعلم الآلي	English	2		2				4	64	111	175	7.00	C	
3		M410	Multimedia	الوسائط المتعددة	English	2		1				3	48	77	125	5.00	S	
4		RP411	Research Project	مشروع بحث	Arabic				4			2	62	38	100	4.00	C	
5		IoT412	Internet of things	انترنت الأشياء	English	2		2				3	63	112	175	7.00	C	
6		OR413	Operations Research	بحوث العمليات	Arabic	2		1				3	48	77	125	5.00	S	
				Total	10	0	6	4	0	0	17	317	433	750	30.00			

8. Expected learning outcomes of the program

Knowledge	
1. Understanding Fundamentals of Information Technology: Students achieve a comprehensive understanding of the concepts and fundamentals of information technology, including database management systems, information security, and computer networks.	1. Empowering students to take on leadership roles and foster innovative thinking in the field of information technology, contributing to the development of innovative and effective technological solutions.
2. Application of Technical Project Management Skills: Empowering students to understand and apply technical project management skills, including planning, execution, and resource management.	2. Students can apply basic technical concepts in managing and developing systems and software applications.
3. Development of Technology Strategies: Enabling students to analyze organizational technology needs and develop effective strategies for technology utilization.	3. Students are capable of successfully executing information technology projects, achieving set goals and timelines.
4. Enhancement of Leadership and Innovation in IT: Enhancing students' leadership and innovation skills in the context of information technology.	4. Students develop their abilities to strategically apply technology to improve business

	performance and enhance competitiveness.
Skills	
1. Developing Communication and Collaboration Skills: Enhancing students' communication and collaboration skills through group projects and discussions.	1. Strengthening students' ability to communicate effectively and work collaboratively with teams in a work environment.
2. Enhancing Critical Thinking and Problem-Solving Skills: Developing students' abilities in critical thinking and problem-solving through analyzing technical challenges and finding effective solutions.	2. Enhancing students' capability to propose innovative and effective solutions to complex technical problems.
3. Developing Analysis and Evaluation Skills: Improving students' abilities in critical analysis and evaluation of technologies and information solutions.	3. Empowering students to make sound decisions and choose appropriate technologies to achieve business objectives.
4. Developing Leadership and Management Skills: Enhancing students' leadership and management skills through taking responsibility and making tough decisions.	4. Empowering students to lead technical teams and manage projects effectively and efficiently.
Ethics	

1. Promoting Integrity and Ethics: Enhancing values of integrity and ethics in the context of technology use and information management.	1. Developing students' awareness of social responsibility and applying ethical principles in their personal and professional lives.
2. Promoting Social Interaction and Collaboration: Promoting social values such as cooperation, respect, and positive interaction in the learning environment.	2. Developing collaboration skills and building healthy and positive social relationships among students.
3. Promoting Cultural Awareness and Diversity: Promoting awareness of cultural diversity and respect for different cultures in the technology community.	3. Enhancing students' understanding of cultural diversity and applying values of respect and tolerance in their interactions with others.
4. Promoting Neutrality and Justice: Promoting neutrality and justice in decision-making and dealing with information and technology.	4. Developing students' ability to make decisions based on knowledge, ethical principles, and justice.

9. Teaching and Learning Strategies

1. **Theoretical lessons:** Interactive lectures and lessons that present basic concepts and theoretical knowledge. These lectures can be live in the classroom or via online platforms.
2. **Practical projects:** The program heavily relies on practical projects where students can apply theoretical concepts and skills in real-life projects, including developing software applications, managing technical projects, designing and implementing databases, and more.
3. **Workshop lessons:** Workshops can include hands-on experiments and training on specific tools and techniques—for example, workshops on information security or web application development.
4. **Discussions and active participation:** Students are encouraged to participate in discussions and interactive activities to exchange ideas and opinions on various topics in information technology.
5. **Teamwork:** Encourage teamwork on projects where students collaborate to solve complex technical problems and develop large technical projects.
6. **Self-learning and research:** Encouraging students to develop self-learning and research skills to explore new technical topics and follow developments in the field.
7. **Use of educational technologies:** Technology in teaching and learning, such as online education platforms and interactive tools.
8. **Field visits and practical training:** Students can visit IT institutions and participate in practical training to apply what they have learned in reality.

10. Evaluation methods

1. Daily tests
2. Scientific research.

3. Facilitating scientific discussions and seminars with students is an effective way to gauge the depth of their comprehension of the subject matter.

11. Faculty						
Faculty Members						
Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Professor	Mathematics	Mathematical statistics			1	
Lecturer	Computer science	Image processing			1	
Assistant Professor	Computer science	Multimedia security			1	
Lecturer	Computer science	Information systems			1	
Lecturer	Computer science				1	
Lecturer	Business management	Information systems/quality management			1	
Assistant Lecturer	English language	Linguistics			1	
Assistant Lecturer	Law				1	
Assistant Lecturer	Business management				1	
Assistant Lecturer	Accounting				1	
Assistant Lecturer	Computer science	computer science			6	
Assistant Lecturer	Sports				1	
Assistant Lecturer	Mathematics	Algebraic statistics			1	
Assistant Lecturer	Arabic language	the language			1	
Assistant Lecturer	Arabic language	Language and literature			1	

Lecturer	Computer engineering	Computer and electronic systems engineering			1	
Assistant Lecturer	Computer engineering	Information technology engineering			1	
Assistant Lecturer	Communication Engineering				1	
Assistant Lecturer	Communications technologies				1	
Assistant Lecturer	Geography				1	
Assistant Lecturer	Geography	environment			1	
Assistant Lecturer	Control and systems engineering	Mechatronics			1	

Professional Development

Mentoring new faculty members

- Introduction to the Institution and Department: Provide comprehensive information about the vision and objectives of the educational institution and the academic department, including educational programs, research, and service activities.
- Orientation to Policies and Procedures: Explain the institution's and department's policies and procedures, including academic ethics, research standards, and evaluation procedures.
- Resource and Support Orientation: Provide information about available resources for new faculty members, such as libraries, training centers, and technical support.
- Participation in Professional Development Programs: Encourage participation in professional development programs, such as workshops, seminars, and training courses, to enhance teaching and research skills.
- Encouragement for Communication and Collaboration: Foster communication and collaboration with other faculty members, students, and staff to exchange experiences and build academic and social networks.

- Performance Monitoring and Evaluation: Monitor the progress of new faculty members during training programs, and provide feedback and support to ensure the achievement of goals.

Professional development of faculty members

- Needs Assessment: Initiate the development process by assessing the needs of faculty members through surveys or individual meetings to identify areas requiring improvement.
- Setting Objectives and Measures: Based on the needs assessment, establish specific objectives for academic and professional development, and devise necessary measures and plans to achieve these objectives.
- Implementation of Training Programs: Conduct diverse and tailored training programs according to the needs of faculty members, such as workshops, training courses, and seminars.
- Monitoring and Evaluation of Performance: Monitor the progress of faculty members throughout the training programs, providing regular feedback and necessary support to ensure goal attainment.
- Application of Teaching Strategies: Include the implementation of innovative and effective teaching strategies as part of the development plan, such as active learning, cooperative learning, and continuous assessment.
- Research and Publication Development: Enhance faculty members' research and publication capabilities by supporting them in conducting research and disseminating findings in peer-reviewed journals.
- Participation in Service Activities: Encourage participation in community service activities, such as applied research projects and academic consultancy, to contribute to societal development.
- Continuous Evaluation and Improvement: Conduct regular evaluation of the effectiveness of development programs and utilize the results to improve processes and meet the ongoing needs of faculty members.

12. Acceptance Criterion

According to the instructions specified by the Ministry of Higher Education and Scientific Research through central admission, the admission controls are approved by the university and college, according to the student's desire to apply to the department.

13. The most important sources of information about the program

- Textbooks
- Teaching lectures

14. Program Development Plan

- By the college's scientific conference.
- The department's scientific symposium.
- Discussions for teachers and students.
- Workshops for teachers and students.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
	MCBA121	Principles of Statistics	Basic	•	•		•		•		•	•		•	
	INT127	Advanced Statistics	Basic	•		•		•	•			•			•
	MTU100	Human rights and democracy	Basic		•	•		•		•		•	•		
	INT129	Project management	optional	•		•	•			•	•		•		•
	INT125	Mathematics	Basic	•	•			•	•			•		•	

	INT128	Management information systems	optional	•			•			•		•		•
	INT124	Programming in C++	Basic			•		•		•	•		•	•
	INT126	Object-oriented programming using C++	Basic	•		•	•	•		•		•		•
	MTU101	English 1	Basic		•	•		•	•		•		•	•
	MTU102	Computer principles 1	Basic		•	•		•		•	•		•	•
	MTU103	Computer principles 2	Basic	•			•		•		•	•		•
	MTU104	Arabic	optional	•	•	•			•				•	•

	MTU105	Sports	Optional		•	•		•				•	•	•	•
	MCBA120	Management Principles	Basic				•	•			•	•			
	MCBA122	Accounting principles	Basic	•	•	•	•		•	•			•	•	
	MCBA123	Design Logic	Basic		•	•	•		•	•	•				•
	MTU200	English 2	Basic				•	•	•			•	•	•	•
	MTU201	Arabic	Optional	•	•	•			•	•			•		
	MTU202	Crimes of Baath regime	Basic	•	•	•	•	•				•	•	•	•
	MCBA220	Summer training 1	Basic	•	•			•	•	•	•				•

	INT227	Software statistical packages	Optional	•	•	•				•	•			•	•
	INT224	Numerical Analysis	Basic	•	•			•	•				•	•	•
	INT220	Applications package	Basic	•	•	•		•	•	•	•				•
	INT225	Numerical analysis techniques	Basic	•	•	•		•	•	•	•	•	•	•	•
	INT221	Advanced Mathematics	Basic	•	•	•			•	•		•	•		•
	INT226	Information networks	Basic				•		•	•		•			
	INT222	Data structures	Basic		•	•				•		•		•	

	INT223	Advanced data structures	Basic	•	•	•	•	•	•			•	•	•	•
	INT228	Software engineering	optional	•	•	•				•	•		•	•	•
	MTU300	English 3	Basic	•	•		•	•	•	•	•		•	•	
	MCBA320	Summer training 2	Basic		•		•	•				•			•
	MCBA321	Research Methodology	Basic	•	•		•	•	•	•	•	•	•	•	•
	INT326	Electronic management	Basic	•	•	•	•	•	•	•	•	•	•		•
	INT322	Visual programming	Basic	•	•	•	•				•	•	•	•	•

		Fundamenta ls													
	INT331	Digital forensic evidence	optional		•	•	•		•	•	•	•	•		•
	INT330	Discrete mathematic s	optional		•	•	•		•	•	•	•	•		•
	INT323	Advanced visual programmin g	Basic	•	•		•			•	•		•		
	INT324	Web application programmin g	Basic	•	•		•	•	•		•		•	•	•

	INT325	System analysis	optional		•	•	•				•	•	•	•	
	INT327	Databases	Basic		•	•					•	•	•	•	
	INT328	Advanced databases	Basic		•	•	•	•	•				•	•	•
	INT332	Graphics	optional	•			•		•		•	•	•		
	INT329	Operating Systems	Basic	•			•		•		•	•	•	•	•
	INT333	Advanced Operating Systems	Basic	•	•			•	•	•	•			•	
	INT427	Quantitative methods	Basic	•		•			•	•			•	•	
	INT425	Multimedia	Basic	•		•	•			•	•	•	•	•	
	INT422	Information security	Basic	•	•		•	•	•		•				•

	INT424	Operations Research	Basic			•						•	•	•	•
	INT421	Data mining	Basic			•		•			•	•		•	•
	INT420	Artificial intelligence	Basic	•	•	•		•		•	•		•		
	INT429	Advanced artificial intelligence	Choose	•	•	•				•	•		•	•	•
	INT423	Image processing	Basic	•	•					•	•	•	•	•	•
	INT431	Modeling and simulation	optional	•	•	•	•	•	•		•		•		•
	INT426	Data compression	Basic	•	•				•		•	•	•		

	INT428	research project	Basic			•	•	•					•	•	
	INT430	Decision support systems	optional	•	•	•			•	•			•		•
	MTU400	English 4	Basic		•	•	•	•	•	•	•	•	•	•	•
	MTU401	Professional ethics	Basic	•	•		•	•			•	•		•	

- Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

16.1 Course Description (Bologna System)/ first level/ first semester

MODULE DESCRIPTION FORM

Module Information			
Module Title	<u>Programming</u>		Module Delivery
Module Type	<u>Core</u>	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>P1301</u>		
ECTS Credits	<u>9</u>		
SWL (hr/sem)	<u>225</u>		
Module Level	1		
Administering Department	ITM	College	TCM
Module Leader	Haneen Hamzah Alwen	e-mail	haneen.hamza1@atu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD.
Module Tutor	Mustafa Husham Abbas	e-mail	Mustafa.abbas@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	5/10/2024	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims	1. This course include using C++ as a programming language. 2. To understand the logic behind programming. 3. To develop problem solving skills and understanding of programming principles. 4. This course include algorithm design. 5. To understand how a programmer should prepare his work and think logically. 6. To perform programming project using control statements, functions, and to deal with the data stored in an array or file.
Module Learning Outcomes	1. Use of algorithms (Flowchart specifically). 2. Explain how the program is written using C++ Programming language. 3. Define and use of variables (Data types, Declaration of variables). 4. Use of operators and its precedence (Assignment, Arithmetic operators, Relational and Logical operators, Bitwise Operators, Increment and decrement, Cast operator, and Conditional operator). 5. Making Decisions (use of: if, if-else, and switch statements) and draw of Flowchart of if-else statement. 6. Use of Loops (for, while, do-while), and use of break and continue statements with loops, and draw of Flowchart of loops. 7. Use of Arrays (one and two dimensional). 8. Use of Functions (Built-in function functions (Library functions), and UserDefined functions). 9. Use of arguments passed by value and by reference, and use of Local and global variables. 10. Use of Character sequences and string handling. 11. Handling and processing text files in C++.
Indicative Contents	Indicative content includes the following. - Introduction to computers and programming. Types of programs (Applications and Systems). Programming languages (Machine, Assembly, and High-level language). Introduction to Compilers, Interpreters, object file, and executable file. Introduction to C++ with a simple program implementation. Types of programming errors, Program development life cycle, Algorithms - Flowchart - . Header files, Standard Input/output instructions, Comments in C++. [15 hrs] - Variables, Data Types, Declaration of variables, Constants, Statements. Operators (Assignment, Arithmetic operators, Relational and Logical operators, Bitwise Operators, Increment and decrement, Cast operator, and Conditional operator), Precedence of operators. [5 hrs] -- Making Decisions (if, if-else statements), Flowchart of if-else statement. Making Decisions (switch statement), using break statement with switch statement, Flowchart of switch statement. Loops (for, while, do-while), using break and continue statements with loops, Flowchart of loops. [10 hrs] - -Arrays (One dimensional and Two Dimensional) [5 hrs] -- Functions (Built-in function functions (Library functions), and User-Defined functions), Function prototype (Declaration), Function call, Passing arguments to a function, return statement, Value-Returning vs. Void (Non Value Returning) functions, Function with no argument and no return value, Function with no argument but return value, Function with

	argument but no return value, Function with argument and return value. Arguments passed by value and by reference, Recursion, Local and global variables. [15 hrs]
	-- Character sequences and string handling, ASCII table. [5 hrs]
	- -Handling and processing text files in C++ [5 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 learning and developing their skills in programming and logic thinking, 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 lab experiments involving assignments and project design activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem)	94	Structured SWL (h/w)	
Unstructured SWL (h/sem)	131	Unstructured SWL (h/w)	
Total SWL (h/sem)	225		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

	Material Covered
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Week 1	Introduction (History of computers). Types of programs (Applications and Systems). Programming languages (Machine, Assembly, and High-level language).
Week 2	Introduction to Compilers, Interpreters, object file, and executable file. Types of programming errors, program development life cycle.
Week 3	Algorithms (Flowchart).
Week 4	Variables, Data Types, Declaration of variables, Constants, Statements, and Operators.
Week 5	Making Decisions (if, if-else statements), flowchart of if-else statement.
Week 6	Making Decisions (switch statement), using break statement with switch statement, flowchart of switch statement.
Week 7	Mid-term Exam
Week 8	Loops (while, do-while), using break and continue statements with loops, flowchart of loops.
Week 9	Arrays (One dimensional)
Week 10	Arrays (Two Dimensional)
Week 11	Functions: Built-in function functions (Library functions), and User-Defined functions), Function prototype (Declaration), function call, Passing arguments to a function, return statement, Local and global variables.
Week 12	Functions (Value-Returning) vs. Void (Non Value Returning) functions, function with no argument and no return value, function with no argument but return value, function with argument but no return value, function with argument and return value. Arguments passed by value and by reference.
Week 13	Character sequences and string handling, ASCII table
Week 14	Handling and processing text files in C++
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to C++ with a simple program implementation. Header files, Standard Input/output instructions, Comments in C++.
Week 2	Lab 2: Variables and Operators (Assignment, Arithmetic operators, Relational and Logical operators, Bitwise Operators, Increment and decrement, Cast operator, and Conditional operator), Precedence of operators.
Week 3	Lab 3: Making Decisions (if, if-else).
Week 4	Lab 4: Making Decisions (switch statements).
Week 5	Lab 5: Loops (for)
Week 6	Lab 6: Loops (while, and do-while)
Week 7	Lab 7: Arrays (1D)
Week 8	Lab 8: Arrays (2D)
Week 9	Lab 9: Functions
Week 10	Lab 10: Function types according to whether it take arguments and/or return a value or not.
Week 11	Lab 11: Character sequences and string handling.

Week 12	Lab 12: Text files
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Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	➤ C++ How to Program, 6th Edition 2007 By P. J. Deitel - Deitel & Associates, Inc., H. M. Deitel - Deitel & Associates, Inc.	No
Recommended Texts	➤ Starting Out with Programming Logic and Design (What's New in Computer Science), 5th Edition 2018 By Tony Gaddis	No
Websites	https://www.geeksforgeeks.org/c-plus-plus	

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information				
معلومات المادة الدراسية				
Module Title	Mathematics		Module Delivery	
Module Type	Support		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	M102			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		1
Administering Department	IT	College	TCM	
Module Leader	Huda Qusay Hashim		e-mail	huda.hashim@atu.edu.iq
Module Leader's Acad. Title	Assistant lecturer		Module Leader's Qualification	M.Sc.
Module Tutor	None		e-mail	E-mail
Peer Reviewer Name	None		e-mail	E-mail
Scientific Committee Approval Date	03/10/2024		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. التعرف المفاهيم الأساسية الخاصة بالمصفوفات. 2. كيفية إيجاد المحدد للمصفوفة. 3. التعرف على طرق حل أنظمة المعادلات الخطية. 4. حل المعادلة الخطية باستخدام طريقة حذف Gaussian-Jordan.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. إيجاد حاصل جمع مصفوفتين. 2. القدرة على استخراج منقول المصفوفة. 3. إيجاد حاصل ضرب مصفوفتين. 4. تطبيق العمليات الأولية على المصفوفة. 5. القدرة على حل المعادلة الخطية باستخدام طريقة حذف Gaussian. 6. استخدام طريقة حذف Gaussian-Jordan في حل منظومة المعادلات الخطية. 7. حساب معكوس المصفوفة. 8. حساب محدد المصفوفة. 9. إيجاد معكوس المصفوفة باستخدام المحدد. 10. استخدام قاعدة Cramer في حل المعادلات الخطية.
Indicative Contents الأهداف الإرشادية	1. أنواع المصفوفات. 2. العمليات الجبرية على المصفوفات. 3. طرق حل الأنظمة الخطية. 4. عملية حساب المحدد.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies استراتيجيات التعلم والتعليم	الاستراتيجية الرئيسية التي سيتم اتباعها في تقديم هذه المادة هي مشاركة الطلبة من خلال توجيه بعض الأسئلة التي لها أوليات مطروحة مسبقاً، تكوين حلقات نقاشية بين الطلبة، وفي الوقت نفسه صقل وتوسيع مهارات التفكير النقدي. سيتم تحقيق ذلك من خلال الفصول الدراسية، والدروس التفاعلية.
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Student Workload (SWL)

الحمل الدراسي للطلاب

Structured SWL (h/sem)	48	Structured SWL (h/w)	3
Unstructured SWL (h/sem)	102	Unstructured SWL (h/w)	7
Total SWL (h/sem)	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All

	Online Assignments	1	10% (10)	Continuous	All
	Reports	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	12	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

	Material Covered
Week 1	(المصفوفات) تعريف المصفوفة، أنواع المصفوفات، تساوي المصفوفات.
Week 2	جمع وطرح المصفوفات، خصائص جمع وطرح المصفوفات، ضرب المصفوفات بعدد، خصائص ضرب المصفوفة بعدد.
Week 3	ضرب المصفوفات، خصائص ضرب المصفوفات.
Week 4	منقول المصفوفة، المصفوفة المتماثلة، المصفوفة المتماثلة بالسالب.
Week 5	المعادلات الخطية، منظومة المعادلات الخطية.
Week 6	منظومة المعادلات الخطية المتجانسة، العمليات الأولية على المصفوفات.
Week 7	حل المعادلات الخطية (بطريقة حذف Gaussian).
Week 8	حل منظومة المعادلات الخطية (بطريقة حذف Gaussian-Jordan).
Week 9	معكوس المصفوفة.
Week 10	(محدد المصفوفة): محدد المصفوفة 2×2 ، محدد المصفوفة 3×3 .
Week 11	محدد المصفوفة 4×4 ، خصائص محدد المصفوفة.
Week 12	الاختبار النصفى.
Week 13	إيجاد معكوس المصفوفة باستخدام المحدد.
Week 14	قاعدة Cramer
Week 15	تطبيقات حول قاعدة Cramer

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	- الجبر الخطي، د. جورج السبتي، جامعة البصرة 1998. - الجبر الخطي، يحيى عبد سعيد، د. نزار حمدون شكر، جامعة الموصل. - INTRODUCTION TO LINEAR ALGEBRA, GILBERT STRANG	No

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Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	Computer Fundamentals		Module Delivery	
Module Type	<u>Support</u>		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AP103			
ECTS Credits	<u>3</u>			
SWL (hr/sem)	<u>75</u>			
Module Level	1	Semester of Delivery	1	
Administering Department	ITM	College	TCM	
Module Leader	Asmaa jasim kadhum		e-mail	asmaajasim@atu.edu.iq
Module Leader's Acad. Title	Assistant Lecturer		Module Leader's Qualification	M.En.
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	16/10/2024		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	1. Identify the main elements of a computer (hardware and software). 2. Get a high level competence in creating, renaming, moving, copying and deleting files and folder. 3. Know how to navigate the operating system as well as its desktop environment such as icons and the taskbar. 4. Learn how to use Microsoft Word to write and edit documents. 5. Understand how to enhance texts by way of including images and tables and also apply stylistic elements to the text.
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	6. Know the meaning of the Internet, the events that led to its development and how to use the web and email. 7. Provide techniques for file downloading and uploading in the course of online learning
Module Learning Outcomes	1. Highlight the various hardware and software components existing in the computer and explain their purpose. 2. Ability to distinguish the different forms of memory available in the computers stating their respective roles. 3. Efficiently use the operating system and the desktop layout with its icons, taskbar and start up menu. 4. Demonstrate skills in file management through the use of create, delete, move, copy and renaming folders and files. 5. Change parameters in Control Panel including modification of the sound and appearance settings and the installation and un-installation of devices and programs. 6. Make and revise documents using Word application, carrying out simple tasks. 7. Highlight, change and alter text content of documents employing many different types of formatting such as tabs and tables and their modification. 8. Insert use clip art and pictures facilities in Word documents. 9. Change document margins, add or change headers and footers, and set document ready for printing. 10. Discuss the characteristics of the Internet including what it is, a brief history of the Internet, and the means of accessing it. 11. Use internet applications like web browsers and email account, as well as accessing websites well.
Indicative Contents	Indicative content includes the following. 1. Introduction to Computers ○ Hardware Components ○ Software Components

2. Types of Memory in Computers

3. Operating System and Desktop Environment

- Icons
- Taskbar
- Start Menu

4. File Management

- Creating, renaming, moving, copying, and deleting files and folders

5. Control Panel

- Adjusting the appearance of windows
- Managing sound settings
- Add or Remove Programs and devices

6. Working with Basic Features of Word

- Creating a new document
- Working with documents
- Selecting and working with text in a document
- Using a range of font formatting techniques

7. Creating and Modifying Tabs and Tables

8. Inserting and Working with Clip Art and Pictures

9. Adjusting Margins, Inserting Header and Footer

10. Printing a Document

11. Basics of the Internet

- Definition and History
- Accessing the Internet

12. Web Browsers, Email, Websites

13. Learning Online

- Downloading and Uploading

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Assignments, written exam, Case study, Quizzes, Practical testing and Online testing.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem)	48	Structured SWL (h/w)	
Unstructured SWL (h/sem)	27	Unstructured SWL (h/w)	
Total SWL (h/sem)	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	12	LO # 1-12
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

	Material Covered
Week 1	Introduction to Computer , Hardware Components , Software Components
Week 2	Types of memory in computer
Week 3	Operating System and Desktop Environment including icons , taskbar, start menu
Week 4	File Management: Creating, renaming, moving, copying, and deleting files and folders
Week 5	Control Panel: Adjusting the appearance of windows , managing sound settings
Week 6	Control Panel: Add or Remove Programs and devices
Week 7	work with the basic features of Word , create a new document , work with a document

Week 8	select and work with text in a document , use a range of font formatting techniques
Week 9	create and modify tabs and tables
Week 10	Insert and work with clip art and pictures
Week 11	Adjust the margins , insert header and footer
Week 12	Printing a document
Week 13	Basics of the Internet :Definition , history , Access
Week 14	Web Browser , Email , Websites
Week 15	Learning Online , Downloading and Uploading

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduction to Computer , Hardware Components , Software Components
Week 2	Operating System and Desktop Environment including icons , taskbar, start menu
Week 3	File Management: Creating, renaming, moving, copying, and deleting files and folders
Week 4	Control Panel:Adjusting the appearance of windows , managing sound settings
Week 5	Control Panel: Add or Remove Programs and devices
Week 6	work with the basic features of Word , create a new document , work with a document
Week 7	select and work with text in a document , use a range of font formatting techniques
Week 8	create and modify tabs and tables
Week 9	Insert and work with clip art and pictures
Week 10	Adjust the margins , insert header and footer
Week 11	Printing a document
Week 12	Web Browser , Email , Websites
Week 13	Learning Online , Downloading and Uploading

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	➤ Fundamentals of Computer ➤ Windows 10 الشامل في تعلم	No

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Statistics</u>		Module Delivery	
Module Type	<u>Support</u>		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	S104			
ECTS Credits	<u>6</u>			
SWL (hr/sem)	<u>150</u>			
Module Level	1	Semester of Delivery	1	
Administering Department	ITM	College	TCM	
Module Leader	Mujtaba Zuhair Ali	e-mail	mujtaba.z.ali@atu.edu.iq	
Module Leader's Acad. Title	Asst. Prof.	Module Leader's Qualification	M.Sc.	
Module Tutor	None	e-mail	E-mail	
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	29/09/2023	Version Number	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims	1. To develop problem solving skills and understanding of probability theory. 2. To distinguish aspects of probability terminology. 3. This course deals with the basic concept of Statistics. 4. To understand graphical representation of data measures. 5. To perform Simple Linear Regression.
Module Learning Outcomes	1. Recognize Basic terminology. 2. Describe Discrete Variables, Independent Variables, Descriptive Variables, Quantitative Variables, and Ordinal Descriptive Variables, Tabular Presentation. 3. Discuss Frequency Tables, Frequency Distribution Table, Cumulative, Ascending and Descending, Relative and Cumulative Relative. 4. Explain Graphical Representation, Bar Charts, Pie Charts, Line Graphs. 5. understand Measures of Central Tendency for Grouped and Ungrouped Data, Mean, Median, and Mode. 6. Define Geometric Mean, Harmonic Mean. 7. Identify Histogram, Frequency Polygon. 8. Discuss Frequency Curve, Measures of Dispersion, Mean Deviation. 9. Discuss the Variance and Standard Deviation. 10. Explain Range, Measures of Skewness 11. Describe Kurtosis, Coefficient of Variation. 12. Discuss Correlation, Simple Linear Correlation. 13. Get acquainted with Multiple Correlation. 14. Explain Pearson Correlation 15. Describe Spearman Correlation, Kendall Correlation
Indicative Contents	<u>Part A - Probability</u> This part includes Sample spaces and events. Axioms for probability and their consequences. Conditional probabilities. Bayes' formula. Independent events. Definition of random variable. Discrete random variables. Expectation and variance. Bayes Theorem, Discrete Probability Distributions, The cumulative distribution function. Probability density function. Expectation and variance of continuous random variables.. Independent random variables. Distributions of sums of independent random variables. Expectation and variance of sums of random variables. Covariance and correlation. Conditional expectation. Prediction. [33 hrs] + Revision problem classes in weekly tutorials [11 hrs] <u>Part B - Statistics</u> This part will take in details Graphical Representation - frequency tables and charts, Measures of Central Tendency, and Dispersion. Relationship Modelling, Pearson's Correlation Coefficient Significance of the correlation co-efficient, Simple Linear Regression Chi Square test for association, Chi Square test of goodness of fit [12 hrs] + Revision problem classes in weekly tutorials [4 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	This module will primarily focus on encouraging students to participate in the activities, as well as refining and developing their critical thinking skills. This will be achieved through lectures, tutorials, discussions, and grading activities.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem)	48	Structured SWL (h/w)	
Unstructured SWL (h/sem)	102	Unstructured SWL (h/w)	
Total SWL (h/sem)	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Reports	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-12
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

	Material Covered
Week 1	Introduction to Statistics, Definition of Statistics, Importance of Statistics , Fields of Application ,Nature of Data and Statistical Symbols and Types of Variables
Week 2	Discrete Variables, Independent Variables, Descriptive Variables, Quantitative Variables, and Ordinal Descriptive Variables, Tabular Presentation
Week 3	Frequency Tables, Frequency Distribution Table, Cumulative, Ascending and Descending, Relative and Cumulative Relative
Week 4	Graphical Representation, Bar Charts, Pie Charts, Line Graphs
Week 5	Measures of Central Tendency for Grouped and Ungrouped Data, Mean, Median, and Mode.
Week 6	Geometric Mean, Harmonic Mean
Week 7	Histogram, Frequency Polygon
Week 8	Midterm + Frequency Curve, Measures of Dispersion, Mean Deviation
Week 9	Variance and Standard Deviation
Week 10	Range, Measures of Skewness
Week 11	Kurtosis, Coefficient of Variation
Week 12	Correlation, Simple Linear Correlation

Week 13	Multiple Correlation
Week 14	Pearson Correlation
Week 15	Spearman Correlation, Kendall Correlation
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Practical Exercises on Statistical Symbols and Types of Variables
Week 2	Applied Exercises on Discrete Variables, Independent Variables, Descriptive Variables, Quantitative Variables, and Ordinal Descriptive Variables
Week 3	Practical Examples of Frequency Tables and Frequency Distribution Tables / Cumulative, Ascending and Descending, Relative and Cumulative Relative
Week 4	Practical Data on Graphical Representation / Bar Charts / Pie Charts / Line Graphs
Week 5	Examples and Solutions on Measures of Central Tendency for Grouped and Ungrouped Data / Mean, Median, and Mode with a Practical Application Using SPSS
Week 6	Practical Examples of Geometric Mean and Harmonic Mean
Week 7	Exercises on Histograms and Frequency Polygons with a Practical Application Using SPSS
Week 8	Exercises on Frequency Curves / Measures of Dispersion / Mean Deviation
Week 9	Examples of Variance and Standard Deviation
Week 10	Examples of Range and Measures of Skewness with a Practical Application Using SPSS
Week 11	Kurtosis / Coefficient of Variation
Week 12	Exercises with Real Data on Correlation / Simple Linear Correlation with a Practical Application Using SPSS
Week 13	Example of Pearson Correlation with a Practical Application Using SPSS
Week 14	Exercises on Spearman and Kendall Correlation with a Practical Application Using SPSS

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	➤ Golberg, M.A., An introduction to probability theory and statistical application, plenum press, New York, 1984 ➤ Essential Mathematics and Statistics for Science", Graham Currell, Antony Dowman, Wiley, 2nd edition (June 22, 2009), ISBN-13:978-0470694480.	No

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>English language</u>		Module Delivery	
Module Type	<u>Basic</u>		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>ATUU113</u>			
ECTS Credits	<u>2</u>			
SWL (hr/sem)	<u>50</u>			
Module Level	1	Semester of Delivery	1	
Information Technology Management	ITM	College	TCM	
Module Leader	Muhammed Kadhdm wudaa	e-mail	Muhammed.wudaa.cku@atu.edu.q	
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.	
Module Tutor	None	e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	16/10/2024	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	- To describe the evolution of English language; - To describe the difference between English language and Arabic language. - To explain the grammar of English. - To describe approaches of English language. - To make discussion between students about some matters that related with lessons. - To explain the difference between English language and other languages. - To understanding English language n general.
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Module Learning Outcomes	1. Effective Communication Skills: Students will develop the ability to communicate clearly and effectively in both written and spoken English across various contexts. 2. Grammar and Vocabulary Proficiency: Students will demonstrate a solid understanding of English grammar and expand their vocabulary for accurate and nuanced expression. 3. Reading Comprehension and Analysis: Students will improve their ability to read, comprehend, and analyze diverse texts, ranging from academic to general interest. 4. Writing Skills Development: Students will learn to compose coherent and well-structured essays, reports, and other
Indicative Contents	Indicative content includes the following. Books of English network some of headways. Communication with other in order to know their culture.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing and Online testing.

Student Workload (SWL) الحمل الدراسي للطلاب			
Structured SWL (h/sem)	32	Structured SWL (h/w)	
Unstructured SWL (h/sem)	18	Unstructured SWL (h/w)	
Total SWL (h/sem)	50		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Reports	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

	Material Covered
Week 1	Hello! p6 is/ am/ are” : Iam Ali. You are student. We are students.
Week 2	This...../ that..... those.....these.....
Week 3	Your world p12 is/am/are.....he/she/they.
Week4	Questions: what..... where....when.....why..... there.....
Week5	: am/is/are..... Negative- Personality information questions and short answers.
Week6	Ae your/ is he/is she/ are we/ are they?
Week7	Family and friends: possessive ‘s’
Week8	Have/has: Tom has very big house.....
Week9	It’s my life! Present simple: I/you/he/she/we/they.....
Week10	a/an: a flat/ an hour.
Week 11	o’clock Every day: the time.....it’s nine
Week 12	Present simple: I/you/he/she/we/they..... do/does.
Week 13	Places I like: object pronouns: it/them.
Week 14	This/that: what is this or that?
Week 15	Preparatory week before the final Exam Where I live? there is/ are, any.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمناقشة

	Material Covered
Week 1	Practise: Hello! p6 is/ am/ are” : Iam Ali. You are student. We are students.
Week 2	Make Questions with : what..... where....when.....why..... there.....
Week 3	: am/is/are..... Negative- Personality information questions and short answers.
Week 4	It’s my life! Present simple: I/you/he/she/we/they.....to give some things
Week 5	o’clock Every day: the time.....it’s nine How to say time
Week 6	Places I like: object pronouns: it/them.
Week 7	Family and friends: possessive ‘s’ to know something about them.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	➤ New Headway Academic Skills ➤ New Headway Academic Skills: Activity book	No

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Management</u>		Module Delivery	
Module Type	<u>Elective</u>		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	<u>M105</u>			
ECTS Credits	<u>4</u>			
SWL (hr/sem)	<u>100</u>			
Module Level	1	Semester of Delivery	1	
Administering Department	ITM	College	TCM	
Module Leader	Mohammed Nabeel Hadi	e-mail	mohammed.haboobi@atu.edu.iq	
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD	
Module Tutor	None	e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	16/10/2024	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	1. Introduce the fundamental principles, functions, and practices of management. 2. Develop understanding of key managerial roles in planning, organizing, leading, and controlling. 3. Equip students with skills to make informed decisions in organizational settings. 4. Explore modern challenges in management, including globalization, ethics, and innovation. 5. Prepare students to apply management theories and practices in real-world contexts.
Module Learning Outcomes	Upon successful completion of the module, students will be able to: 1. Understand the core principles and functions of management. 2. Describe and analyze the roles and skills of effective managers. 3. Apply strategic planning and decision-making models. 4. Organize resources and design organizational structures for efficiency. 5. Recognize and implement effective leadership and motivational techniques. 6. Understand control processes to monitor and evaluate organizational performance. 7. Identify and address contemporary issues in management, such as ethics and social responsibility. 8. Assess the impact of globalization on managerial practices. 9. Communicate management insights effectively in both written and verbal forms. 10. Develop solutions to management challenges using case studies and real-world examples.
Indicative Contents	1. Introduction to Management: Concepts, Roles, and Functions. 2. Strategic Planning and Decision-Making. 3. Organizational Structure and Design. 4. Leadership, Motivation, and Team Dynamics. 5. Control Systems, Performance Management, and Ethics in Management.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures on core management theories, principles, and practices. 2. Case studies for analyzing real-world management issues. 3. Group discussions to explore and debate management challenges. 4. Assignments and presentations to apply theoretical knowledge. 5. Projects and exercises to reinforce understanding and practical application.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem)	33	Structured SWL (h/w)	
Unstructured SWL (h/sem)	67	Unstructured SWL (h/w)	
Total SWL (h/sem)	100		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

	Material Covered
Week 1	منظور عام لدراسة الاعمال
Week 2	منظمات الاعمال مفاهيم اساسية
Week 3	الاهداف المنظمة
Week4	تطور الفكر التنظيمي (المدرسة الكلاسيكية)
Week5	تطور الفكر التنظيمي (مدرسة العلاقات الانسانية)
Week6	تطور الفكر التنظيمي (الاتجاهات الحديثة)

Week7	تطور الفكر التنظيمي (الاتجاهات المعاصرة والادارة الاستراتيجية)
Week8	وظائف المدير وادوارها
Week9	التخطيط الاداري
Week10	القرارات الادارية
Week 11	اتخاذ القرار وحل المشكلات
Week 12	بيئة الادارة
Week 13	طبيعة الاثر المتبادل بين المنظمة و بيئة العمل
Week 14	الفاعلية والكفاءة التنظيمية
Week 15	المسؤولية الاجتماعية

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	➤ مبادئ الادارة مع التركيز على إدارة الأعمال/خليل محمد الشماح	No

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information			
معلومات المادة الدراسية			
Module Title	Management Information Systems		Module Delivery
Module Type	Elective		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar
Module Code	MIS106		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	1	Semester of Delivery	
Administering Department	ITM	College	TCM
Module Leader	Mohammed Nabeel Hadi	e-mail	mohammed.haboobi@atu.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	PhD
Module Tutor	None	e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

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

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

Module Aims	1. Provide students with a comprehensive understanding of the role and impact of information systems in organizations. 2. Equip students with the knowledge to analyze and manage information systems to support decision-making, problem-solving, and operational efficiency. 3. Develop critical thinking and technical skills for designing, implementing, and managing information systems aligned with business strategies. 4. Explore emerging trends in information technology and their implications for organizations. 1. Foster awareness of ethical, social, and security issues associated with information systems.
Module Learning Outcomes	1. Demonstrate an understanding of the fundamental principles and components of management information systems. 2. Analyze the role of MIS in enhancing organizational performance and achieving strategic goals. 3. Evaluate different types of information systems (e.g., ERP, CRM, SCM) and their functions within various business contexts. 4. Design and propose effective information system solutions to address specific business needs or challenges. 5. Identify and critically assess ethical, security, and privacy issues related to information systems. 6. Apply data management, analysis, and visualization techniques to support decision-making. 7. Understand and discuss emerging technologies (e.g., AI, cloud computing, big data) and their impact on information systems.
Indicative Contents	1. Overview of MIS ○ Role, components, and types of information systems. 2. Business Function Systems ○ MIS applications in finance, HR, marketing, and operations. 3. Enterprise Systems ○ ERP, CRM, and SCM systems. 4. Data and Decision Support ○ Databases, data warehouses, business intelligence, and analytics. 5. Systems Development ○ SDLC, agile methodologies, and project management basics. 6. Ethics and Security ○ Privacy, security, and legal issues in MIS. 7. Emerging Technologies ○ Cloud, AI, big data, and IoT trends in MIS.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	• Lectures & Discussions • Core concepts and case study discussions.
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	• Case Studies & Applications • Real-world examples and group analysis projects. • Practical Labs • Hands-on sessions with MIS software tools. • Group Projects • Collaborative projects with presentations and peer feedback. • Guest Lectures • Insights from industry experts on MIS practices and trends. • Assessments • Formative assessments, exams, and project evaluations.
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Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem)	48	Structured SWL (h/w)	3
Unstructured SWL (h/sem)	52	Unstructured SWL (h/w)	4
Total SWL (h/sem)	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Reports	1	10% (10)	Continuous	All
	Seminars	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

	Material Covered
Week 1	الإطار المفاهيمي لنظم وتكنولوجيا المعلومات
Week 2	مدخل الى نظم المعلومات
Week 3	نظم المعلومات الإدارية
Week4	منظمات الاعمال والبيئة ونظم المعلومات
Week5	الدور الاستراتيجي لنظم المعلومات الإدارية
Week6	النظم الوظيفية الفرعية للمعلومات
Week7	قواعد البيانات ونظم إدارة قواعد البيانات
Week8	الامن المعلوماتي لأنظمة المعلومات
Week9	أنواع نظم قواعد البيانات
Week10	المكونات المادية والبرمجيات
Week 11	تخطيط نظم المعلومات الإدارية
Week 12	تطوير نظم المعلومات الإدارية
Week 13	الحكومة الالكترونية
Week 14	الاعمال الالكترونية
Week 15	التجارة الالكترونية

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	➤ (Mallach, 2020) Information Systems-What Every Business Student Needs to Know ➤ نظم المعلومات الادارية - دياب عابدين دياب	No

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.

16.2 Course Description (Bologna System)/ first level/ 2nd semester

MODULE DESCRIPTION FORM

Module Information			
معلومات المادة الدراسية			
Module Title	<u>Object Oriented Programming</u>		Module Delivery
Module Type	<u>Core</u>		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	<u>OOP107</u>		
ECTS Credits	<u>9</u>		
SWL (hr/sem)	<u>225</u>		
Module Level	1	Semester of Delivery	
Administering Department	ITM	College	TCM
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	P101	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. Introduce fundamental concepts of object-oriented programming (OOP). 2. Develop problem-solving skills using OOP principles. 3. Enable students to design, implement, and test object-oriented applications. 4. Foster understanding of OOP concepts such as encapsulation, inheritance, and polymorphism. 5. Prepare students to apply OOP techniques in real-world scenarios.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define and explain core OOP concepts, including classes, objects, inheritance, and polymorphism. 2. Implement encapsulation and abstraction in object-oriented programs. 3. Design and develop classes and objects to solve specific programming problems. 4. Apply inheritance to promote code reuse and extend functionality. 5. Demonstrate polymorphism in coding solutions. 6. Use constructors, destructors, and methods effectively within classes. 7. Apply exception handling within OOP applications. 8. Implement file I/O operations in object-oriented programs. 9. Debug and test object-oriented code efficiently. 10. Analyze and apply design patterns in object-oriented software development.
Indicative Contents المحتويات الإرشادية	1. Introduction to Object-Oriented Programming and key OOP principles. 2. Classes, Objects, and Methods. 3. Inheritance and Polymorphism. 4. Abstraction, Encapsulation, and Exception Handling. 5. Basic Introduction to Design Patterns in OOP.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Interactive lectures with real-life examples. 2. Hands-on lab exercises to reinforce learning. 3. Group discussions and peer coding to encourage collaborative learning. 4. Mini-projects for practical application of OOP principles. 5. Regular quizzes and assignments for continuous assessment.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	131	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	

Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	225
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Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	1. Introduction to Object-Oriented Programming 2. Classes and Objects 3. Data Encapsulation and Abstraction 4. Constructors and Destructors 5. Methods and Method Overloading 6. Inheritance 7. Polymorphism 8. Interface and Abstract Classes 9. Exception Handling in OOP 10. File I/O in Object-Oriented Applications 11. Introduction to Design Patterns 12. Basic Design Patterns (Singleton, Factory) 13. Error Handling and Debugging Techniques 14. Review and Case Studies in OOP 15. Final Lecture and Module Review

Week 16	Preparatory week before the final Exam
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Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	1. Basic Class and Object Creation 2. Encapsulation and Getter/Setter Methods 3. Constructors and Destructors in Practice 4. Working with Methods and Overloading 5. Building an Inheritance Hierarchy 6. Polymorphism Examples and Applications 7. Creating and Using Interfaces 8. Error and Exception Handling 9. File Operations with Objects 10. Implementing Basic Design Patterns 11. Advanced Design Patterns Application 12. Error Handling and Debugging Lab 13. OOP Project Development – Part 1 14. OOP Project Development – Part 2 15. Final Lab Practice and Review

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Object-Oriented Programming in C++" by Robert Lafore.	No
Recommended Texts	"Java: The Complete Reference" by Herbert Schildt.	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Logic design</u>	Module Delivery	
Module Type	<u>Support</u>	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>LD108</u>		
ECTS Credits	<u>7</u>		
SWL (hr/sem)	<u>175</u>		
Module Level	1		
Administering Department	ITM	College	TCM
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	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. Introduce fundamental concepts of digital logic design. 7. Develop understanding of Boolean algebra and logic gates. 8. Enable students to design and analyze combinational and sequential circuits. 9. Foster problem-solving skills for digital circuit design. 10. Prepare students for applying digital logic in computing and embedded systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	11. Explain the fundamentals of digital systems and binary numbers. 12. Apply Boolean algebra to simplify and design logic circuits. 13. Identify and use basic logic gates to construct digital circuits. 14. Design and analyze combinational circuits such as adders, multiplexers, and decoders. 15. Develop sequential circuits using flip-flops, counters, and registers. 16. Implement digital designs using Karnaugh maps (K-maps) for simplification. 17. Analyze timing diagrams and understand the behavior of circuits under different conditions. 18. Build basic circuits using software simulation tools. 19. Test and debug logic circuits effectively. 20. Design practical digital solutions for real-world applications.
Indicative Contents المحتويات الإرشادية	1. Introduction to Digital Logic and Number Systems. 2. Boolean Algebra and Logic Gates. 3. Combinational Circuit Design. 4. Sequential Circuit Design. 5. Timing Analysis and Simplification Techniques.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Interactive lectures with visual aids to explain circuit operations. 2. Hands-on lab sessions for circuit design and simulation. 3. Group discussions on design approaches and problem-solving strategies. 4. Use of digital design software tools for circuit analysis. 5. Regular quizzes and assignments to reinforce theoretical concepts.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	112	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	16. Introduction to Digital Systems and Binary Numbers 17. Basic Logic Gates and Truth Tables 18. Boolean Algebra and Simplification Techniques 19. Karnaugh Maps (K-Maps) for Simplification 20. Designing Basic Combinational Circuits 21. Adders and Subtractors 22. Multiplexers and Demultiplexers

	23. Encoders and Decoders 24. Introduction to Sequential Circuits 25. Flip-Flops: SR, D, JK, T Flip-Flops 26. Counters and Registers 27. Designing Synchronous and Asynchronous Circuits 28. Timing Diagrams and Analysis 29. Applications of Digital Logic in Real-World Scenarios 30. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	16. Introduction to Logic Gates Using Simulation Software 17. Basic Boolean Expression Implementation 18. Simplification and Implementation with K-Maps 19. Design and Testing of Simple Combinational Circuits 20. Half-Adder and Full-Adder Design 21. Multiplexer and Demultiplexer Circuits 22. Encoder and Decoder Circuits 23. Building Sequential Circuits: Flip-Flops 24. Designing and Testing Counters 25. Working with Registers 26. Asynchronous vs. Synchronous Circuit Analysis 27. Practical Timing Analysis in Circuits 28. Mini Digital Project Development – Part 1 29. Mini Digital Project Development – Part 2 30. Final Lab Review and Practice

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Digital Design" by M. Morris Mano and Michael D. Ciletti.	No

Recommended Texts	"Fundamentals of Logic Design" by Charles H. Roth and Larry L. Kinney.	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 (فيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Applications Packages</u>			Module Delivery	
Module Type	<u>Support</u>			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>AP109</u>				
ECTS Credits	<u>3</u>				
SWL (hr/sem)	<u>75</u>				
Module Level		1	Semester of Delivery		2
Administering Department		ITM	College	TCM	
Module Leader			e-mail		
Module Leader’s Acad. Title			Module Leader’s Qualification		
Module Tutor			e-mail	@atu.edu.iq	
Peer Reviewer Name			e-mail		

Scientific Committee Approval Date	11/11/2024	Version Number	1.0
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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. Provide students with essential skills in Microsoft Word and Excel. 12. Enable efficient document creation, formatting, and editing in Word. 13. Develop basic and intermediate skills for data organization and analysis in Excel. 14. Teach practical applications of Word and Excel in various professional scenarios. 15. Prepare students to use these tools effectively in technical and managerial roles.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	21. Create, format, and edit professional documents in Microsoft Word. 22. Use Word tools for layout, styles, tables, images, and references. 23. Create and manage Excel spreadsheets for data organization. 24. Apply basic formulas and functions in Excel for calculations. 25. Generate charts and graphs to visually represent data. 26. Utilize Excel's data analysis tools, including sorting and filtering. 27. Implement conditional formatting in Excel to highlight key information. 28. Develop templates and use mail merge in Word for document automation. 29. Apply advanced formatting and design tools for professional documents. 30. Understand best practices for organizing and presenting information in Word and Excel.
Indicative Contents المحتويات الإرشادية	1. Introduction to Microsoft Word: Interface and Basic Document Formatting. 2. Advanced Formatting and Document Design in Word. 3. Introduction to Microsoft Excel: Interface and Basic Spreadsheet Functions. 4. Data Analysis and Visualization in Excel. 5. Document Automation and Efficiency Tools (Mail Merge, Templates, etc.).

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	
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1. Interactive demonstrations of Microsoft Word and Excel tools.
2. Hands-on lab sessions with guided practice and real-world exercises.
3. Small projects and assignments to build proficiency.
4. Group discussions on best practices and professional applications.
5. Regular feedback on lab work to enhance skill development.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	Quizzes	1	10% (10)	Continuous
	Assignments	Lab	1	10% (10)	Continuous
	In class Assignments	Onsite Assignments	1	10% (10)	Continuous
	Report	Projects	1	10% (10)	Continuous
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	31. Introduction to Microsoft Word: Basic Interface and Document Creation 32. Formatting Text and Paragraphs in Word 33. Working with Styles, Headers, and Footers 34. Tables and Lists in Word

	35. Inserting Images, Charts, and Other Media in Word 36. References, Citations, and Table of Contents 37. Introduction to Microsoft Excel: Basic Interface and Spreadsheet Creation 38. Data Entry, Formatting, and Basic Formulas in Excel 39. Working with Functions (SUM, AVERAGE, etc.) 40. Creating Charts and Graphs in Excel 41. Data Sorting, Filtering, and Analysis Tools in Excel 42. Conditional Formatting and Basic Data Validation 43. Advanced Formatting and Templates in Word and Excel 44. Document Automation with Mail Merge in Word 45. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	31. Basic Document Creation and Formatting in Word 32. Applying Styles and Creating Consistent Layouts 33. Creating and Formatting Tables and Lists in Word 34. Inserting and Formatting Images, Charts, and Graphics in Word 35. Working with References, Citations, and Automatic Table of Contents 36. Practice with Professional Document Design Techniques in Word 37. Introduction to Excel Spreadsheet Basics 38. Data Entry, Formatting, and Cell Management in Excel 39. Applying Basic Functions (SUM, AVERAGE, MAX, MIN) 40. Creating and Customizing Charts and Graphs 41. Sorting and Filtering Data for Analysis in Excel 42. Using Conditional Formatting to Highlight Information 43. Developing and Using Templates in Word and Excel 44. Mail Merge Practice for Document Automation 45. Final Lab Review and Practical Applications

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Microsoft Office 365 & Office 2019 Introductory" by Shelley Gaskin, Alicia Vargas, Debra Geoghan, and Carolyn McLellan.	No
Recommended Texts	"Microsoft Excel 2019 Step by Step" by Curtis Frye.	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

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MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	<u>Advanced Statistics</u>		Module Delivery		
Module Type	<u>Support</u>		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	<u>AS110</u>				
ECTS Credits	<u>7</u>				
SWL (hr/sem)	<u>175</u>				
Module Level		1	Semester of Delivery		2
Administering Department		ITM	College	TCM	

Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	S104	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	16. Provide an in-depth understanding of advanced statistical methods. 17. Develop skills in data analysis and interpretation using statistical techniques. 18. Enable students to apply statistical methods in research and decision-making. 19. Introduce SPSS as a tool for data analysis and statistical computation. 20. Prepare students to conduct complex statistical analyses in professional and academic settings.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	31. in advanced statistical concepts and their applications. 32. Conduct hypothesis testing and interpret results. 33. Perform regression analysis, including linear and logistic regression. 34. Analyze variance and covariance using ANOVA and MANOVA. 35. Implement non-parametric statistical tests. 36. Conduct factor analysis and interpret the results. 37. Use SPSS to perform descriptive and inferential statistical analyses. 38. Visualize data in SPSS through graphs and charts. 39. Interpret SPSS output for making data-driven decisions. 40. Apply statistical methods to real-world research problems.
Indicative Contents المحتويات الإرشادية	1. Advanced Hypothesis Testing Techniques. 2. Regression Analysis (Linear, Multiple, and Logistic). 3. Analysis of Variance (ANOVA and MANOVA). 4. Non-Parametric Tests and Their Applications. 5. Factor Analysis and Data Reduction Techniques.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures covering theoretical and practical aspects of advanced statistics. 2. Hands-on SPSS lab sessions to apply statistical methods. 3. Case studies to demonstrate statistical applications in real-life scenarios. 4. Group discussions and collaborative problem-solving activities. 5. Regular assignments and quizzes to reinforce understanding and skills.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	127	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	46. مفاهيم أساسية للاحتتمالات , المتغير العشوائي , انواعه . 47. التوقع الرياضي , خواص التوقع , العزوم , الدالة المولدة للعزوم .

	48. المنوال , الوسيط للمتغيرات المستمرة والمتقطعة . 49. التوزيعات الاحتمالية المتقطعة (توزيع برنولي , توزيع ثنائي الحدين) . 50. توزيع بواسون , التوزيع الهندسي الزائدي , التوزيع المنتظم , . 51. التوزيعات المستمرة (التوزيع المنتظم , التوزيع الطبيعي) . 52. التوزيع الطبيعي القياسي , توزيع كاما وحالاته الخاصة , توزيع بيتا , . 53. التوزيعات الاحتمالية المشتركة (المتقطعة والمستمرة) . 54. Marginal التوزيعات الاحادية . 55. التوزيع الشرطي , معامل الارتباط . 56. التوقع الشرطي . 57. الاستقلالية التصادفية . 58. F توزيع فشر, t توزيع ستودنت . 59. في الاختبارات F و t استخدام توزيع . 60. طريقة الامكان الاعظم لتقدير المقدرات .
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	46. تمارين رياضية عن للاحتمالات , المتغير العشوائي , انواعه . 47. امثلة لحساب التوقع الرياضي , خواص التوقع , العزوم , الدالة المولدة للعزوم . 48. تمارين عن المنوال , الوسيط للمتغيرات المستمرة والمتقطعة . 49. امثلة عن (توزيع برنولي , توزيع ثنائي الحدين) . 50. توزيع بواسون , التوزيع الهندسي الزائدي , التوزيع المنتظم , . 51. تطبيقات عملية للتوزيعات المستمرة (التوزيع المنتظم , التوزيع الطبيعي) . 52. تطبيقات عملية عن, التوزيع الطبيعي القياسي , توزيع كاما وحالاته الخاصة , توزيع بيتا . 53. امثلة عن حساب التوزيعات الاحتمالية المشتركة (المتقطعة والمستمرة) . 54. Marginal تمارين عن التوزيعات الاحادية . 55. حساب التوزيع الشرطي , معامل الارتباط . 56. تطبيقات عن التوقع الشرطي . 57. حساب الاستقلالية التصادفية . 58. F توزيع فشر, t تطبيق عن توزيع ستودنت . 59. في الاختبارات F و t امثلة و تمارين رياضية عن استخدام توزيع . 60. استخدام طريقة الامكان الاعظم لتقدير المقدرات .

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	هرمز ,امير حنا, (1990) , الاحصاء الرياضي , وزارة التعليم العالي والبحث العلمي / جامعة الموصل :-1 .	No
Recommended Texts	"Discovering Statistics Using IBM SPSS Statistics" by Andy Field. Using IBM SPSS Statistics for Research Methods and Social Science Statistics" by William E. Wagner III. رشيد ,ظافر حسين واخرون , 1999 , مقدمة في نظرية الاحتمالات , وزارة التعليم العالي والبحث العلمي / جامعة بغداد 3- Douglas C. Montgomery George C. Runger, 2009 Applied Statistics and Probability for Engineers, Third Edition Arizona State University John Wiley 4- C. E. WEATHERBURN M.A., D.Sc., Hon. L.L.D. AFIRST COURSE IN MATHEMATICAL STATISTICS	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 (فيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Human Rights</u>	Module Delivery
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Module Type	<u>Basic</u>			☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>ATUU111</u>				
ECTS Credits	<u>2</u>				
SWL (hr/sem)	<u>50</u>				
Module Level		1	Semester of Delivery		2
Administering Department		ITM	College	TCM	
Module Leader			e-mail		
Module Leader’s Acad. Title			Module Leader’s Qualification		
Module Tutor			e-mail	@atu.edu.iq	
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		11/11/2024	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	21. Introduce students to the foundational principles and history of human rights. 22. Explore key human rights frameworks, treaties, and international laws. 23. Develop understanding of the role of human rights in contemporary global issues. 24. Examine the mechanisms for protecting and enforcing human rights. 25. Encourage critical thinking on human rights challenges and ethical considerations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	41. Explain the origins and evolution of human rights. 42. Identify major human rights treaties, conventions, and international bodies. 43. Analyze human rights issues from legal, ethical, and social perspectives. 44. Discuss the role of the United Nations and other organizations in promoting human rights. 45. Evaluate case studies on human rights violations and responses. 46. Understand the rights of vulnerable and marginalized groups. 47. Critically assess human rights challenges in different cultural contexts. 48. Describe the legal mechanisms for protecting human rights globally and locally.

	49. Apply human rights principles to contemporary social and political issues. 50. Reflect on ethical issues related to human rights advocacy and intervention.
Indicative Contents المحتويات الإرشادية	1. History and Foundations of Human Rights. 2. International Human Rights Laws and Treaties. 3. Institutions and Mechanisms for Human Rights Protection. 4. Case Studies on Human Rights Violations. 5. Contemporary Human Rights Issues and Ethical Challenges.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures introducing theoretical and practical aspects of human rights. 2. Case studies and analysis of real-world human rights issues. 3. Group discussions and debates on ethical and cultural perspectives. 4. Guest lectures from experts in human rights and international law. 5. Assignments and reflection exercises to deepen understanding.
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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	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	18	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Reports	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All

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

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	61. Introduction to Human Rights and Historical Background 62. Philosophical and Ethical Foundations of Human Rights 63. Universal Declaration of Human Rights and Key Treaties 64. International Human Rights Law and Mechanisms 65. Role of the United Nations in Human Rights Protection 66. Regional Human Rights Bodies (e.g., European, African, Inter-American) 67. Civil and Political Rights 68. Economic, Social, and Cultural Rights 69. Rights of Vulnerable Populations (Women, Children, Minorities) 70. Human Rights Violations: Case Studies and Analysis 71. Human Rights in Conflict and Post-Conflict Settings 72. Human Rights and Globalization 73. Contemporary Challenges: Climate Change, Migration, and Technology 74. Ethics of Human Rights Advocacy and Intervention 75. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"International Human Rights: Law, Policy, and Process" by Henry J. Steiner, Philip Alston, and Ryan Goodman.	No
Recommended Texts	"Human Rights: A Very Short Introduction" by Andrew Clapham.	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Arabic Language 1</u>		Module Delivery	
Module Type	<u>Basic</u>		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>ATUU112</u>			
ECTS Credits	<u>2</u>			
SWL (hr/sem)	<u>50</u>			
Module Level	1	Semester of Delivery		
Administering Department	ITM	College	TCM	
Module Leader			e-mail	
Module Leader's Acad. Title			Module Leader's Qualification	
Module Tutor			e-mail	@atu.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	11/11/2024		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	26. Strengthen understanding of Modern Standard Arabic grammar among native speakers. 27. Identify and correct common grammatical errors in spoken and written Arabic. 28. Enhance accuracy in sentence structure, verb conjugations, and punctuation. 29. Develop skills in formal Arabic writing and expression. 30. Promote linguistic precision and clarity in both academic and professional contexts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	51. Identify and correct common grammatical errors made by native speakers. 52. Apply accurate verb conjugations in various tenses and contexts. 53. Distinguish between spoken dialects and Modern Standard Arabic rules. 54. Correctly use grammatical structures such as case endings, dual forms, and plurals. 55. Apply proper usage of nominal and verbal sentences. 56. Recognize and avoid common errors in punctuation and sentence construction. 57. Write coherent paragraphs in formal Arabic. 58. Use correct agreement in gender and number for nouns, adjectives, and verbs. 59. Employ proper syntax for effective and clear communication. 60. Enhance formal writing style, including sentence flow and word choice.
Indicative Contents المحتويات الإرشادية	1. Common Grammatical Mistakes in Modern Standard Arabic. 2. Proper Usage of Case Endings (الإعراب) and Sentence Structure. 3. Verb Conjugation and Agreement Rules. 4. Use of Dual Forms, Broken Plurals, and Regular Plurals. 5. Punctuation, Syntax, and Effective Writing Techniques.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Interactive lectures with examples of common errors and corrections. 2. Writing exercises focused on sentence structure and grammar accuracy. 3. Group discussions and peer reviews for identifying mistakes.
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4. Practice with formal writing tasks relevant to academic or professional contexts.
5. Quizzes and assignments to reinforce understanding of grammar rules.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

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

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Reports	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	مقدمة عن الأخطاء اللغوية. 76 التاء المربوطة والطويلة والتاء المفتوحة. 77 قواعد كتابة الالف الممدودة والمقصورة. 78 الحروف الشمسية والقمرية. 79 الضاد والطاء. 80

	81. كتابة الهمزة 82. علامات الترقيم 83. الاسم والفعل والتفريق بينهما 84. المفاعيل 85. العدد 86. تطبيقات الأخطاء اللغوية الشائعة 87. النون والتتوين - معاني حروف الجر 88. الجوانب الشكلية للخطاب الإداري 89. لغة الخطاب الإداري 90. نماذج من المراسلات الإدارية
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	دروس في اللغة والنحو والاملاء لموظفي الدولة : اسماعيل حمود عطوان وآخرون مطبعة وزارة التربية رقم (3) بغداد، ط 2، 1984م	No
Recommended Texts	اللغة العربية العامة لأقسام غير الاختصاص : عبد القادر حسن أمين وآخرون، وزارة التعليم العالي والبحث العلمي، ط 2، 2000م	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.

16.3 Course Description (Bologna System)/ 2nd level/ first semester

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Crimes of Baath Regime</u>		Module Delivery	
Module Type	<u>Basic</u>		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>ATUU211</u>			
ECTS Credits	<u>2</u>			
SWL (hr/sem)	<u>50</u>			
Module Level	2	Semester of Delivery		
Administering Department	ITM	College	TCM	
Module Leader			e-mail	
Module Leader's Acad. Title			Module Leader's Qualification	
Module Tutor			e-mail	@atu.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	11/11/2024		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	31. Examine the historical and political background of the Iraqi Baath regime. 32. Analyze the key human rights abuses and atrocities committed under the regime. 33. Understand the impact of these crimes on Iraqi society and neighboring countries. 34. Explore mechanisms of justice, accountability, and historical memory. 35. Promote critical thinking about totalitarian regimes and their societal impacts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	61. Explain the historical rise and consolidation of the Baath regime in Iraq. 62. Identify major crimes and human rights abuses committed by the regime. 63. Analyze the socio-political motivations behind these crimes. 64. Understand the impact of the regime's actions on various ethnic and religious groups. 65. Discuss international responses to the Baath regime's human rights abuses. 66. Explore the role of documentation and eyewitness accounts in understanding historical crimes. 67. Examine the long-term effects of the Baath regime's policies on Iraqi society. 68. Understand transitional justice efforts and post-regime accountability. 69. Reflect on the importance of historical memory in preventing future atrocities. 70. Critically engage with primary and secondary sources on this historical period.
Indicative Contents المحتويات الإرشادية	1. Historical Background of the Iraqi Baath Regime. 2. Key Human Rights Violations and Atrocities (e.g., mass killings, torture, forced displacements). 3. Impact on Ethnic and Religious Groups (e.g., Kurds, Shia, Marsh Arabs). 4. International Reactions and Accountability Efforts. 5. Legacy of the Baath Regime and Lessons for Transitional Justice.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures with historical context and analysis of key events and policies. 2. Case studies on specific crimes and impacted groups. 3. Group discussions and critical reflections on sources and eyewitness accounts.
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4. Use of multimedia resources, including documentaries and survivor testimonies.
5. Assignments to encourage research and analysis of primary sources.

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

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Reports	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	91. مفهوم الجرائم. 92. جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام 2005. 93. الجرائم الدولية. 94. جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا عام 2005. 95. الجرائم النفسية والاجتماعية وأثارها، وأبرز انتهاكات النظام البعثي في العراق.

	96. عسكرة المجتمع.
	97. موقف النظام البعثي من الدين.
	98. صور انتهاكات حقوق الانسان وجرائم السلطة.
	99. الجرائم البيئية لنظام البعث في العراق.
	100. التلوث الحربي والإشعاعي وانفجار الالغام.
	101. تدمير المدن والقرى (سياسة الأرض المحروقة).
	102. تجفيف الأهوار.
	103. تجريف بساتين النخيل والأشجار والمزروعات
	104. جرائم المقابر الجماعية.
	105. التصنيف الزمني لمقابر الإبادة الجماعية في العراق للمدة ١٩٦٣م - ٢٠٠٣م.
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	جرائم نظام البعث - المقرر الدراسي من اعداد وزارة التعليم العالي	No
Recommended Texts	State of Repression: Iraq Under Saddam Hussein by Lisa Blaydes	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 (فيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Computer Networks</u>		Module Delivery	
Module Type	<u>Core</u>		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>CN201</u>			
ECTS Credits	<u>8</u>			
SWL (hr/sem)	<u>200</u>			
Module Level	2	Semester of Delivery		
Administering Department	ITM	College	TCM	
Module Leader		e-mail		
Module Leader's Acad. Title		Module Leader's Qualification		
Module Tutor		e-mail	@atu.edu.iq	
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	11/11/2024	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	36. Introduce fundamental concepts and architecture of computer networks. 37. Develop understanding of network protocols, models, and services. 38. Equip students with knowledge of network design, configuration, and troubleshooting. 39. Explore data transmission techniques, error detection, and correction.
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	40. Prepare students to implement basic networking solutions for small to medium networks.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	71. Explain the basic concepts, terminologies, and architectures of computer networks. 72. Describe the OSI and TCP/IP models and their respective layers. 73. Configure and troubleshoot network components (routers, switches, etc.). 74. Analyze data transmission methods, including error detection and correction techniques. 75. Understand IP addressing and subnetting for efficient network design. 76. Describe and implement basic network security practices. 77. Differentiate between wired and wireless networks and understand their protocols. 78. Analyze data packets using network analysis tools. 79. Configure small-scale networks and implement standard protocols. 80. Apply network design principles to meet specific organizational requirements.
Indicative Contents المحتويات الإرشادية	1. Introduction to Computer Networks and Networking Models. 2. OSI and TCP/IP Models. 3. Data Transmission, Error Detection, and Correction. 4. IP Addressing, Subnetting, and Network Configuration. 5. Basic Network Security and Troubleshooting.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Interactive lectures introducing network theories and concepts. 2. Lab sessions for hands-on experience with network configuration and analysis. 3. Case studies to apply concepts in real-world networking scenarios. 4. Group discussions on network design and security practices. 5. Quizzes and assignments to assess understanding of core concepts.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

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

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	3hr	10% (10)	7	LO #1 - #7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	106. Introduction to Computer Networks and Network Topologies
	107. Overview of the OSI and TCP/IP Models
	108. Physical Layer: Transmission Media and Signal Encoding
	109. Data Link Layer: Framing, Error Detection, and MAC Protocols
	110. Network Layer: IP Addressing and Routing Basics
	111. Subnetting and Network Address Translation (NAT)
	112. Transport Layer: TCP and UDP Protocols
	113. Application Layer Protocols (HTTP, FTP, SMTP, DNS)
	114. Wired and Wireless Networks: Protocols and Standards
	115. Network Security Fundamentals: Firewalls, Encryption
	116. Network Troubleshooting and Diagnostics Tools
	117. Introduction to VLANs and Network Segmentation
	118. Advanced Topics in Network Security (VPNs, Access Control)
	119. Case Study on Network Design and Implementation
	120. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	61. Introduction to Networking Hardware and Software Tools 62. Network Topology Design Using Simulation Tools 63. IP Addressing and Subnetting Exercises 64. Basic Router and Switch Configuration 65. Configuring Network Address Translation (NAT) 66. TCP/UDP Protocol Analysis Using Wireshark 67. Setting Up and Configuring DHCP and DNS 68. Wired and Wireless Network Setup and Comparison 69. Firewall Configuration and Basic Network Security 70. Troubleshooting Network Issues Using Ping, Traceroute 71. VLAN Configuration and Segmentation in Networks 72. Network Packet Analysis and Troubleshooting 73. Virtual Private Network (VPN) Configuration Basics 74. Final Project: Network Design and Configuration 75. Lab Review and Practical Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Computer Networking: A Top-Down Approach" by James F. Kurose and Keith W. Ross.	No
Recommended Texts	"Data Communications and Networking" by Behrouz A. Forouzan.	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Data Structure</u>	Module Delivery	
Module Type	<u>Core</u>	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>DS202</u>		
ECTS Credits	<u>8</u>		
SWL (hr/sem)	<u>200</u>		
Module Level	2		
Administering Department	ITM	College	TCM
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	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	41. Introduce fundamental data structures and their applications in problem-solving. 42. Develop skills to implement, analyze, and optimize data structures. 43. Equip students with techniques for efficient data management and manipulation. 44. Enable students to choose appropriate data structures for various scenarios. 45. Prepare students to apply data structures in software development.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	81. Describe and implement basic data structures such as arrays, stacks, queues, and linked lists. 82. Analyze the efficiency of data structures in terms of time and space complexity. 83. Apply trees and graph data structures for complex data organization. 84. Utilize hashing techniques for efficient data retrieval. 85. Implement sorting and searching algorithms with different data structures. 86. Optimize data manipulation using recursive techniques. 87. Use dynamic data structures effectively for flexible data management. 88. Design algorithms using appropriate data structures. 89. Debug and troubleshoot data structure implementations. 90. Apply data structures to solve real-world computing problems.
Indicative Contents المحتويات الإرشادية	1. Introduction to Data Structures and Complexity Analysis. 2. Linear Data Structures: Arrays, Stacks, Queues, and Linked Lists. 3. Non-linear Data Structures: Trees (Binary Trees, BST, AVL) and Graphs. 4. Hashing and Hash Tables. 5. Sorting and Searching Algorithms.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures introducing theoretical concepts and applications of data structures. 2. Lab sessions to implement and test data structures. 3. Assignments and projects to solve real-life problems using data structures. 4. Group discussions on algorithmic efficiency and optimization techniques.
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5. Quizzes and coding exercises for continuous assessment.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	121	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	3hr	10% (10)	7	LO #1 - #7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	121. Introduction to Data Structures and Complexity Analysis
	122. Arrays and Array-Based Operations
	123. Stacks: Concepts, Applications, and Implementation
	124. Queues: Variants, Applications, and Implementation
	125. Linked Lists: Single, Double, and Circular Linked Lists
	126. Recursion and Recursive Data Structures
	127. Binary Trees: Traversals, Operations, and Applications

	128. Binary Search Trees (BST) and Balanced Trees (AVL) 129. Introduction to Graphs and Graph Traversals (BFS, DFS) 130. Hashing and Hash Table Implementation 131. Sorting Algorithms (Selection, Insertion, Merge, Quick) 132. Searching Algorithms (Binary Search, Linear Search) 133. Heap Data Structure and Priority Queues 134. Review of Algorithm Optimization Techniques 135. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	76. Introduction to Coding Environment and Basic Array Operations 77. Implementation of Stack Using Arrays/Linked Lists 78. Queue Implementation and Variants 79. Linked List Operations and Applications 80. Recursion Practice and Applications 81. Binary Tree Creation and Traversal 82. Binary Search Tree (BST) Implementation 83. Balanced Tree (AVL) Implementation 84. Graph Representation and Traversal Techniques 85. Hash Table Design and Collision Handling 86. Implementing Sorting Algorithms 87. Implementing Searching Algorithms 88. Heap and Priority Queue Implementation 89. Final Project: Data Structure Application 90. Lab Review and Practical Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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Required Texts	"Data Structures and Algorithm Analysis in C++" by Mark Allen Weiss.	No
Recommended Texts	"Data Structures and Algorithms Made Easy" by Narasimha Karumanchi.	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 (فيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Accounting Principles</u>			Module Delivery	
Module Type	<u>Support</u>			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>AP203</u>				
ECTS Credits	<u>6</u>				
SWL (hr/sem)	<u>150</u>				
Module Level		2	Semester of Delivery		3
Administering Department		ITM	College	TCM	
Module Leader			e-mail		
Module Leader’s Acad. Title			Module Leader’s Qualification		

Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	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	46. Introduce fundamental accounting concepts and principles. 47. Develop skills in recording, classifying, and summarizing financial transactions. 48. Enable students to prepare and interpret basic financial statements. 49. Familiarize students with essential bookkeeping and accounting practices. 50. Prepare students to apply accounting principles in personal and professional contexts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	91. Explain basic accounting principles and the accounting cycle. 92. Record financial transactions using double-entry bookkeeping. 93. Prepare and interpret financial statements, including the balance sheet, income statement, and cash flow statement. 94. Apply concepts of accruals, deferrals, and adjusting entries. 95. Understand the role of accounting in decision-making processes. 96. Use accounting software to manage financial records. 97. Analyze financial statements for profitability, liquidity, and solvency. 98. Recognize and correct common accounting errors. 99. Calculate key financial ratios. 100. Develop ethical awareness in financial reporting.
Indicative Contents المحتويات الإرشادية	1. Introduction to Accounting and the Accounting Cycle. 2. Double-Entry Bookkeeping and Journal Entries. 3. Preparation of Financial Statements. 4. Adjusting Entries, Accruals, and Deferrals. 5. Basics of Financial Statement Analysis.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures covering theoretical accounting principles and real-world applications. 2. Lab sessions for hands-on experience with accounting software. 3. Case studies and practical exercises to reinforce concepts. 4. Group discussions on financial statement analysis and ethical considerations. 5. Quizzes and assignments for continuous assessment and practice.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Reports	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	136. Introduction to Accounting and Financial Reporting

	137. The Accounting Equation and Basic Concepts
	138. Double-Entry System and Journal Entries
	139. General Ledger and Trial Balance
	140. Adjusting Entries: Accruals and Deferrals
	141. Financial Statements Overview
	142. Preparing an Income Statement
	143. Preparing a Balance Sheet
	144. Preparing a Cash Flow Statement
	145. Closing Entries and the Post-Closing Trial Balance
	146. Introduction to Financial Ratios and Analysis
	147. Ethics in Accounting and Financial Reporting
	148. Using Accounting Software for Basic Transactions
	149. Case Study: Financial Statement Preparation and Analysis
	150. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	91. Introduction to Accounting Software Interface 92. Recording Journal Entries in Software 93. Posting to the General Ledger 94. Preparing a Trial Balance 95. Adjusting Entries and Managing Accruals in Software 96. Generating an Income Statement 97. Preparing a Balance Sheet in Accounting Software 98. Cash Flow Statement Preparation 99. Closing Entries and Financial Statement Review 100. Introduction to Financial Ratios Using Software Tools 101. Analyzing Financial Statements 102. Case Study Implementation in Software 103. Practical Applications of Ethics in Accounting Software 104. Final Project: Complete Accounting Cycle in Software

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Accounting Principles" by Jerry J. Weygandt, Paul D. Kimmel, and Donald E. Kieso.	No
Recommended Texts	"Financial Accounting: Tools for Business Decision Making" by Paul D. Kimmel, Jerry J. Weygandt, and Donald E. Kieso.	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Arabic language 2</u>	Module Delivery
Module Type	<u>Basic</u>	☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical
Module Code	<u>AR204</u>	
ECTS Credits	<u>2</u>	

SWL (hr/sem)	50	☐ Seminar	
Module Level	2	Semester of Delivery	3
Administering Department	ITM	College	TCM
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	ATUU112	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	51. Strengthen understanding of Modern Standard Arabic grammar among native speakers. 52. Identify and correct common grammatical errors in spoken and written Arabic. 53. Enhance accuracy in sentence structure, verb conjugations, and punctuation. 54. Develop skills in formal Arabic writing and expression. 55. Promote linguistic precision and clarity in both academic and professional contexts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	101. Identify and correct common grammatical errors made by native speakers. 102. Apply accurate verb conjugations in various tenses and contexts. 103. Distinguish between spoken dialects and Modern Standard Arabic rules. 104. Correctly use grammatical structures such as case endings, dual forms, and plurals. 105. Apply proper usage of nominal and verbal sentences. 106. Recognize and avoid common errors in punctuation and sentence construction. 107. Write coherent paragraphs in formal Arabic. 108. Use correct agreement in gender and number for nouns, adjectives, and verbs. 109. Employ proper syntax for effective and clear communication. 110. Enhance formal writing style, including sentence flow and word choice.
Indicative Contents المحتويات الإرشادية	1. Common Grammatical Mistakes in Modern Standard Arabic. 2. Proper Usage of Case Endings (الإعراب) and Sentence Structure.

	3. Verb Conjugation and Agreement Rules. 4. Use of Dual Forms, Broken Plurals, and Regular Plurals. 5. Punctuation, Syntax, and Effective Writing Techniques.
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Interactive lectures with examples of common errors and corrections. 2. Writing exercises focused on sentence structure and grammar accuracy. 3. Group discussions and peer reviews for identifying mistakes. 4. Practice with formal writing tasks relevant to academic or professional contexts. 5. Quizzes and assignments to reinforce understanding of grammar rules.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

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

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Seminars	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	151. مفهوم الأخطاء اللغوية الشائعة وقواعد كتابة التاء المربوطة والتاء المفتوحة. 152. إن وأن 153. -الألف الممدودة و المقصورة . 2-الحروف الشمسية والقمرية 1 154. الفرق بين الضاد والطاء وكيفية كتابتها 155. كتابة الهمزة (الوصل والقطع والمتوسطة والمتطرفة) 156. الاسم والفعل وعلامتهما 157. علامات الترتيب 158. المفاعيل (المفعول به والمفعول المطلق والمفعول فيه والمفعول لأجله) 159. (. كيفية كتابة العدد والمعدود 160. معاني حروف الجر 2-قاعدة الالف الفارقة 3-قاعدة النون والتنوين-1 161. العطف وحروفه 162. الاستفهام 163. الجوانب الشكلية للخطاب الإداري 164. لغة الخطاب الإداري 165. مراجعة
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	دروس في اللغة والنحو والاملاء لموظفي الدولة : اسماعيل حمود عطوان واخرون مطبعة وزارة التربية رقم (3) بغداد ، ط 2 ، 1984م	No
Recommended Texts	اللغة العربية العامة لأقسام غير الاختصاص : عبد القادر حسن امين واخرون ،وزارة التعليم العالي والبحث العلمي ، ط 2 ، 2000م.	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Decision Support Systems</u>	Module Delivery	
Module Type	<u>Support</u>	☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>DSS205</u>		
ECTS Credits	<u>4</u>		
SWL (hr/sem)	<u>100</u>		
Module Level	2		
Administering Department	ITM	College	TCM
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	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	56. Introduce the fundamental concepts and components of Decision Support Systems (DSS). 57. Develop skills to use DSS tools and software for data-driven decision-making. 58. Equip students with techniques for analyzing and modeling complex business problems. 59. Enable students to design and implement basic decision support applications. 60. Prepare students to leverage DSS in organizational and management contexts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	111. Describe the components and functions of Decision Support Systems. 112. Apply decision-making models and frameworks to analyze business problems. 113. Use DSS tools and software to collect, process, and analyze data. 114. Develop simple DSS applications to aid decision-making. 115. Understand the role of data visualization in DSS. 116. Integrate statistical and analytical methods for effective decision support. 117. Implement what-if analysis and sensitivity analysis in decision scenarios. 118. Demonstrate proficiency in Excel, databases, or specialized DSS software. 119. Apply DSS concepts to solve real-world organizational problems. 120. Critically evaluate the effectiveness of DSS solutions in different contexts.
Indicative Contents المحتويات الإرشادية	1. Introduction to Decision Support Systems and Components. 2. Decision-Making Models and Frameworks. 3. Data Collection, Processing, and Analysis for DSS. 4. What-If Analysis, Sensitivity Analysis, and Simulation. 5. Building and Implementing Basic DSS Applications.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Interactive lectures covering DSS concepts, applications, and case studies. 2. Lab sessions using DSS software and tools for hands-on experience. 3. Case studies to apply DSS in real-world business scenarios. 4. Group discussions to explore different decision-making approaches.
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5. Assignments and quizzes to reinforce understanding and skills.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	166. Introduction to Decision Support Systems
	167. Components and Architecture of DSS
	168. Decision-Making Processes and Models
	169. Data Collection and Processing for DSS
	170. Introduction to Data Warehousing and Databases in DSS
	171. Introduction to DSS Software Tools (e.g., Excel, Power BI)

	172.	Data Analysis Techniques for DSS
	173.	What-If Analysis and Scenario Planning
	174.	Sensitivity Analysis in Decision-Making
	175.	Model-Driven DSS and Optimization Techniques
	176.	Data Visualization and Reporting in DSS
	177.	Building a Simple DSS Application
	178.	Case Study on DSS Application in Business
	179.	Review of Advanced DSS Topics and Trends
	180.	Final Lecture and Module Review
Week 16	Preparatory week before the final Exam	

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered	
Weeks	106.	Introduction to DSS Tools: Excel and Power BI Basics
	107.	Data Collection and Database Management in DSS
	108.	Implementing Basic Decision Models in Excel
	109.	What-If Analysis Using Excel Tools
	110.	Sensitivity Analysis with Excel and Other DSS Tools
	111.	Using Data Visualization Tools (Charts, Graphs)
	112.	Building Interactive Dashboards in Power BI
	113.	Creating and Managing Data Reports
	114.	Introduction to Optimization Tools in DSS
	115.	Model-Driven Analysis with Simple Simulations
	116.	Case Study: Data-Driven Decision Support in Excel
	117.	Developing a Basic DSS Application in Power BI
	118.	Project-Based Lab: Real-World DSS Scenario – Part 1
	119.	Project-Based Lab: Real-World DSS Scenario – Part 2
	120.	Lab Review and Practical Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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Required Texts	"Decision Support and Business Intelligence Systems" by Efraim Turban, Ramesh Sharda, and Dursun Delen.	No
Recommended Texts	"Decision Support Systems: Concepts and Resources for Managers" by Daniel Power.	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 (فيد 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.

16.4 Course Description (Bologna System)/ 2nd level/ 2nd semester

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>English Language 2</u>			Module Delivery	
Module Type	Basic			☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>EL206</u>				
ECTS Credits	<u>2</u>				
SWL (hr/sem)	<u>50</u>				
Module Level		2	Semester of Delivery		4
Administering Department		ITM	College	TCM	

Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	ATUU113	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	61. Build upon foundational English skills to reach an intermediate proficiency level. 62. Expand vocabulary and grammatical structures for effective communication. 63. Enhance reading comprehension and paragraph writing skills. 64. Improve listening and speaking abilities in both formal and informal settings. 65. Foster critical thinking through analysis of texts and discussions.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	121. Understand and use intermediate-level English vocabulary and expressions. 122. Apply more complex grammatical structures, including various tenses and sentence forms. 123. Engage in structured conversations on familiar topics with increased fluency. 124. Write organized paragraphs with clear main ideas and supporting details. 125. Read and comprehend short articles, stories, and dialogues. 126. Listen to and understand spoken English in everyday contexts. 127. Use correct pronunciation and intonation in spoken English. 128. Identify and use transition words to improve cohesion in writing. 129. Understand cultural nuances and expressions in English-speaking contexts. 130. Develop confidence in presenting ideas and opinions in English.
Indicative Contents المحتويات الإرشادية	1. Intermediate Grammar: Tenses, Modals, and Conditionals. 2. Vocabulary Expansion for Everyday Situations. 3. Reading and Listening Comprehension Skills. 4. Paragraph Writing: Organization and Cohesion. 5. Conversational Skills and Pronunciation Practice.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Interactive lectures with real-life scenarios and examples. 2. Pair and group activities for speaking and listening practice. 3. Regular reading and writing exercises from the Headway textbook. 4. Use of multimedia resources to reinforce language skills. 5. Quizzes, assignments, and group discussions for active learning.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

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

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Online Assignments	1	10% (10)	Continuous	All
	Seminars	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	181. Review of Basic Grammar and Vocabulary

	182. Past Simple and Past Continuous Tenses
	183. Talking About Future Plans and Predictions
	184. Modals for Ability, Permission, and Advice
	185. Comparatives and Superlatives
	186. Writing Structured Paragraphs
	187. Reading Comprehension Practice
	188. Listening Practice: Everyday Conversations
	189. Conditional Sentences (Type 1 and Type 2)
	190. Expressing Opinions and Agreeing/Disagreeing
	191. Phrasal Verbs and Idiomatic Expressions
	192. Describing Experiences and Narrating Events
	193. Using Connectors for Cohesion in Writing
	194. Pronunciation and Intonation Practice
	195. Final Review and Presentation Practice
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Headway: Intermediate Student's Book" by Liz and John Soars.	No
Recommended Texts	"Headway: Intermediate Workbook" by Liz and John Soars.	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Operating Systems</u>		Module Delivery	
Module Type	<u>Core</u>		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>OS207</u>			
ECTS Credits	<u>4</u>			
SWL (hr/sem)	<u>100</u>			
Module Level	2	Semester of Delivery		
Administering Department	ITM	College	TCM	
Module Leader		e-mail		
Module Leader's Acad. Title		Module Leader's Qualification		
Module Tutor		e-mail	@atu.edu.iq	
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	11/11/2024	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	66. Introduce fundamental concepts, functions, and components of operating systems. 67. Develop understanding of process management, memory management, and file systems. 68. Provide practical skills for managing and configuring operating systems. 69. Enable students to understand and apply concepts of concurrency, scheduling, and synchronization. 70. Prepare students to troubleshoot and solve common operating system issues.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	131. Describe the role and functions of an operating system. 132. Understand process management, including scheduling, creation, and termination. 133. Explain memory management techniques and apply concepts like paging and segmentation. 134. Demonstrate file system organization and management. 135. Understand and apply principles of concurrency and synchronization. 136. Configure and manage basic OS settings in Windows, Linux, or similar systems. 137. Use command-line tools for system administration and file management. 138. Troubleshoot basic operating system issues. 139. Analyze security practices and access control mechanisms in operating systems. 140. Apply OS concepts to real-world scenarios, including performance optimization.
Indicative Contents المحتويات الإرشادية	1. Overview of Operating Systems and Their Functions. 2. Process Management and Scheduling. 3. Memory Management Techniques. 4. File Systems and Storage Management. 5. Concurrency, Synchronization, and Security in Operating Systems.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Interactive lectures covering theoretical concepts and practical applications. 2. Lab sessions for hands-on experience with operating system commands and configurations. 3. Case studies to demonstrate the role of OS in real-world scenarios.
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4. Group discussions on current trends and challenges in operating systems.
5. Quizzes and assignments to reinforce understanding and practical skills.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered	
15 weeks	196.	Introduction to Operating Systems and OS Architecture
	197.	Types of Operating Systems and Key Concepts
	198.	Process Management: Creation, Termination, and Scheduling
	199.	CPU Scheduling Algorithms
	200.	Memory Management: Concepts and Techniques

	201. Virtual Memory and Paging
	202. File Systems and File Management
	203. I/O Systems and Device Management
	204. Concurrency: Threads and Multi-threading
	205. Synchronization Techniques and Deadlock Prevention
	206. Security and Protection Mechanisms in OS
	207. Introduction to Distributed Operating Systems
	208. Overview of OS Performance Optimization
	209. Review of Emerging Trends in Operating Systems
	210. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	121. Introduction to OS Lab Environment and Basic Commands 122. File and Directory Management in Linux and Windows 123. Process Monitoring and Management Using Command Line Tools 124. Implementing CPU Scheduling Algorithms 125. Memory Allocation and Virtual Memory Simulation 126. Exploring File Systems and Disk Management Commands 127. Hands-On with Multi-Threading and Concurrency 128. Working with Synchronization Mechanisms (e.g., Semaphores) 129. Device Management and I/O Configuration 130. Setting Permissions and Access Controls 131. Basic Security Configurations and Firewall Settings 132. Performance Monitoring Tools and Techniques 133. Project: Configuring and Optimizing a Virtual OS 134. Lab Review and Troubleshooting Techniques 135. Final Lab Practical and Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Operating System Concepts" by Abraham Silberschatz, Peter B. Galvin, and Greg Gagne.	No
Recommended Texts	"Modern Operating Systems" by Andrew S. Tanenbaum.	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 (فيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Software Engineering</u>			Module Delivery	
Module Type	Core			☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	SE208				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level		2	Semester of Delivery		4
Administering Department		ITM	College	TCM	
Module Leader			e-mail		
Module Leader’s Acad. Title			Module Leader’s Qualification		

Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	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	71. Introduce fundamental principles and methodologies of software engineering. 72. Equip students with skills for designing, developing, and testing software systems. 73. Foster understanding of the software development lifecycle (SDLC) and project management. 74. Develop competency in using tools and techniques for software analysis and design. 75. Prepare students to work collaboratively on software development projects.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	141.Explain core concepts of software engineering and the SDLC. 142.Analyze requirements and create specifications for software projects. 143.Design software using methodologies like UML and object-oriented design. 144.Implement best practices in software development, including version control. 145.Apply testing techniques to ensure software quality and reliability. 146.Use project management tools to plan and monitor software projects. 147.Document software development processes and outcomes effectively. 148.Demonstrate teamwork and collaboration in software projects. 149.Apply agile and iterative development practices in projects. 150.Reflect on ethical issues and professional practices in software engineering.
Indicative Contents المحتويات الإرشادية	1. Overview of Software Engineering and the SDLC. 2. Requirements Analysis and Specification. 3. Software Design and Modeling (e.g., UML). 4. Software Development and Coding Standards. 5. Software Testing, Quality Assurance, and Maintenance.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures covering theoretical foundations and methodologies of software engineering. 2. Lab sessions for hands-on experience with software tools, coding, and testing. 3. Case studies to illustrate real-world software engineering practices. 4. Group discussions on collaborative software development and project management. 5. Assignments, quizzes, and project work to reinforce theoretical and practical knowledge.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	211. Introduction to Software Engineering and the SDLC 212. Software Development Models (Waterfall, Agile, etc.) 213. Requirements Gathering and Analysis 214. Creating Requirements Specifications 215. Introduction to Software Design and Modeling Techniques 216. Unified Modeling Language (UML) Diagrams 217. Object-Oriented Design Principles 218. Coding Standards and Best Practices 219. Version Control Systems (e.g., Git) 220. Software Testing Fundamentals 221. Quality Assurance and Software Maintenance 222. Project Management in Software Engineering 223. Ethics and Professional Practices in Software Development 224. Project Presentations and Case Studies 225. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	136. Introduction to Lab Tools and Software Engineering Environment 137. Requirements Analysis and Creating Use Case Diagrams 138. Developing Functional and Non-Functional Requirements 139. Creating UML Diagrams: Class Diagrams 140. Sequence and Activity Diagrams in UML 141. Object-Oriented Design and Implementation in Code 142. Using Version Control (Git Basics and Repository Management) 143. Coding Standards and Refactoring Practice 144. Introduction to Software Testing Tools and Techniques 145. Unit Testing and Test Case Design 146. Bug Tracking and Software Maintenance Practices 147. Agile Practices: Sprint Planning and Retrospectives

	148.	Project Development (Group Project)
	149.	Final Project Completion and Review
	150.	Lab Review and Practical Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Software Engineering: A Practitioner's Approach" by Roger S. Pressman and Bruce R. Maxim.	No
Recommended Texts	"Fundamentals of Software Engineering" by Carlo Ghezzi, Mehdi Jazayeri, and Dino Mandrioli.	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 (فيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Digital Marketing</u>	Module Delivery
Module Type	<u>Support</u>	☒ Theory

Module Code	<u>DM209</u>	☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
ECTS Credits	<u>4</u>		
SWL (hr/sem)	<u>100</u>		
Module Level	2	Semester of Delivery	4
Administering Department	ITM	College	TCM
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	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	76. Introduce core concepts and strategies of digital marketing. 77. Develop skills in using digital tools and platforms for marketing. 78. Equip students with techniques for effective online content creation and optimization. 79. Enable students to analyze digital marketing data and measure campaign success. 80. Prepare students to design, implement, and manage digital marketing campaigns.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	151.Explain the principles and strategies of digital marketing. 152.Utilize social media, search engines, and email marketing for audience engagement. 153.Conduct SEO and content marketing to enhance online visibility. 154.Analyze website traffic and campaign performance using tools like Google Analytics. 155.Develop and manage paid advertising campaigns (PPC) on platforms like Google Ads. 156.Create effective content for social media, blogs, and websites. 157.Implement email marketing strategies to build and engage customer lists. 158.Use digital marketing tools to optimize and automate marketing activities. 159.Evaluate digital marketing metrics and make data-driven decisions. 160.Reflect on ethical and privacy considerations in digital marketing.

Indicative Contents المحتويات الإرشادية	1. Overview of Digital Marketing and Key Channels. 2. Social Media Marketing Strategies. 3. Search Engine Optimization (SEO) and Content Marketing. 4. Paid Advertising (PPC) and Display Ads. 5. Analytics, Performance Measurement, and Reporting.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Interactive lectures covering digital marketing theories, strategies, and case studies. 2. Lab sessions for hands-on practice with digital marketing tools and platforms. 3. Group discussions and collaborative projects for campaign planning and analysis. 4. Assignments and real-life case studies to apply digital marketing techniques. 5. Regular quizzes and exercises to reinforce knowledge and practical skills.

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

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Seminars	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All

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

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	226. Introduction to Digital Marketing and Key Concepts 227. Developing a Digital Marketing Strategy 228. Social Media Marketing Basics and Platform Overview 229. Creating Content for Social Media and Blogs 230. Search Engine Optimization (SEO) Fundamentals 231. Advanced SEO Techniques and Keyword Research 232. Content Marketing and Blogging for Engagement 233. Introduction to Paid Advertising (PPC) 234. Google Ads: Setup and Optimization 235. Email Marketing and List Management 236. Data Analytics and Google Analytics Basics 237. Analyzing Digital Marketing Metrics 238. Introduction to Marketing Automation Tools 239. Digital Marketing Ethics and Privacy Considerations 240. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	151. Introduction to Digital Marketing Tools and Software 152. Creating Social Media Profiles and Initial Content Posting 153. Planning and Scheduling Social Media Content Using Tools 154. SEO: Keyword Research and On-Page Optimization Practice 155. Blog Post Creation and SEO Optimization 156. Analyzing and Improving Website Performance (SEO Tools) 157. Setting Up a Google Ads Account and Campaign

158.	Creating and Managing Google Ads Campaigns
159.	Email Marketing: Designing and Sending Campaigns
160.	Introduction to Google Analytics: Setting Up and Navigating
161.	Analyzing Traffic Sources and User Behavior in Google Analytics
162.	Using Metrics to Adjust Digital Marketing Strategy
163.	Exploring Automation Platforms (e.g., Hootsuite, HubSpot)
164.	Final Project: Developing a Digital Marketing Campaign
165.	Lab Review and Practical Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Digital Marketing Strategy" by Simon Kingsnorth.	No
Recommended Texts	"Social Media Marketing Workbook: How to Use Social Media for Business" by Jason McDonald.	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Discrete Mathematics</u>			Module Delivery	
Module Type	Support			☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	DM210				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level		2	Semester of Delivery		4
Administering Department		ITM	College	TCM	
Module Leader			e-mail		
Module Leader’s Acad. Title			Module Leader’s Qualification		
Module Tutor			e-mail	@atu.edu.iq	
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		11/11/2024	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	81. Introduce fundamental concepts of discrete mathematics and its applications in computer science. 82. Develop skills in mathematical reasoning, proof techniques, and problem-solving. 83. Equip students with knowledge of discrete structures such as sets, relations, functions, and graphs. 84. Enable students to apply combinatorial and algorithmic techniques in computing problems.
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	85. Prepare students to use discrete mathematical tools in software development, algorithms, and data structures.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	161. Understand and apply basic concepts of set theory, logic, and functions. 162. Solve problems using combinatorial techniques and principles of counting. 163. Analyze and construct mathematical proofs, including proofs by induction. 164. Describe and apply properties of relations and functions. 165. Understand and analyze graph theory concepts, including trees and connectivity. 166. Use algorithms for traversing, sorting, and searching in graphs. 167. Apply Boolean algebra in logic circuits and digital design. 168. Implement discrete structures and algorithms in a programming environment. 169. Model real-world problems using discrete mathematics concepts. 170. Demonstrate problem-solving skills in mathematical and computing contexts.
Indicative Contents المحتويات الإرشادية	1. Logic, Set Theory, and Proof Techniques. 2. Functions, Relations, and Counting Principles. 3. Combinatorics and Recurrence Relations. 4. Graph Theory and Algorithms. 5. Boolean Algebra and Applications.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures covering theoretical foundations and applications of discrete mathematics. 2. Lab sessions for hands-on experience with discrete structures and algorithms. 3. Problem-solving sessions to reinforce understanding and critical thinking. 4. Group discussions and exercises on practical applications in computer science. 5. Assignments and quizzes to assess understanding and skills.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	241. Introduction to Discrete Mathematics and Applications 242. Fundamentals of Logic and Propositional Calculus 243. Set Theory and Basic Operations 244. Proof Techniques: Direct, Indirect, and Contradiction 245. Mathematical Induction and Strong Induction 246. Functions, Relations, and Their Properties 247. Counting Principles: Permutations and Combinations 248. Advanced Combinatorial Techniques and Recurrence Relations 249. Introduction to Graph Theory 250. Graph Traversal Algorithms (DFS, BFS) 251. Trees: Properties, Types, and Applications 252. Boolean Algebra and Digital Logic Circuits 253. Introduction to Discrete Probability 254. Applications of Discrete Mathematics in Computer Science 255. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	166. Introduction to Lab Tools and Problem-Solving Software

167.	Logic Gates and Basic Boolean Operations
168.	Set Operations and Applications in Coding Environments
169.	Implementing Proofs by Induction in Algorithms
170.	Working with Functions and Relations in Code
171.	Counting Techniques and Simple Combinatorial Problems
172.	Advanced Combinatorics in Programming
173.	Graph Representation and Traversal Algorithms (DFS, BFS)
174.	Tree Structures and Their Implementation
175.	Applications of Graphs: Shortest Path Algorithms
176.	Designing Digital Circuits with Boolean Expressions
177.	Solving Recurrence Relations Programmatically
178.	Discrete Probability in Simulations
179.	Project Lab: Application of Discrete Math Concepts in a Real-World Problem
180.	Lab Review and Practical Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Discrete Mathematics and Its Applications" by Kenneth H. Rosen.	No
Recommended Texts	"Discrete Mathematics" by Richard Johnsonbaugh.	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Accounting Information Systems</u>		Module Delivery	
Module Type	<u>Elective</u>		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	<u>AIS212</u>			
ECTS Credits	<u>4</u>			
SWL (hr/sem)	<u>100</u>			
Module Level	2	Semester of Delivery		
Administering Department	ITM	College	TCM	
Module Leader			e-mail	
Module Leader's Acad. Title			Module Leader's Qualification	
Module Tutor			e-mail	@atu.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	11/11/2024		Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	AP203	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	86. Introduce key concepts and functions of Accounting Information Systems (AIS). 87. Develop skills to analyze, design, and use AIS for effective financial data management. 88. Equip students with practical experience in accounting software and data processing. 89. Enable students to assess and enhance internal controls and security in AIS. 90. Prepare students to utilize AIS for strategic decision-making in organizational contexts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	171. Describe the components, processes, and functions of an AIS. 172. Understand data flows and system documentation in an AIS environment. 173. Utilize accounting software to manage and analyze financial information. 174. Evaluate and implement internal controls for data security and integrity. 175. Design and assess AIS to meet specific business needs. 176. Apply AIS for transaction processing, reporting, and financial decision-making. 177. Identify potential risks and ethical considerations in AIS. 178. Generate financial reports and analyses using AIS. 179. Understand the role of AIS in supporting auditing processes. 180. Use AIS to optimize business processes and ensure compliance with regulations.
Indicative Contents المحتويات الإرشادية	1. Overview of Accounting Information Systems and Data Flow. 2. System Documentation and Transaction Processing. 3. Internal Controls, Security, and Risk Management. 4. Use of Accounting Software and Data Management. 5. AIS in Reporting, Auditing, and Decision-Making.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures covering the theory, design, and function of AIS in organizations. 2. Lab sessions for hands-on experience with AIS software and tools. 3. Case studies to demonstrate AIS applications in real-world scenarios. 4. Group discussions on internal controls and ethical considerations.
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5. Assignments, quizzes, and project work for practical understanding and skill development.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	256. Introduction to Accounting Information Systems 257. AIS Components and Business Processes 258. System Documentation Techniques (e.g., Flowcharts) 259. Data Flow Diagrams and Transaction Cycles 260. Using Accounting Software: Introduction 261. Transaction Processing in AIS

	262.	Internal Controls and Risk Assessment in AIS
	263.	Security Measures and Data Integrity
	264.	Revenue and Expenditure Cycle Management
	265.	AIS and Financial Reporting
	266.	Role of AIS in Auditing
	267.	Ethics, Fraud Detection, and Prevention in AIS
	268.	Decision-Making with AIS and Data Analytics
	269.	Case Study: Implementing and Managing an AIS
	270.	Final Lecture and Module Review
Week 16	Preparatory week before the final Exam	

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered	
Weeks	181.	Introduction to Accounting Software (e.g., QuickBooks, SAP)
	182.	Setting Up Accounts and Ledgers in Software
	183.	Transaction Entry and Processing in AIS
	184.	Creating System Documentation and Flowcharts
	185.	Data Entry and Revenue Cycle Processing
	186.	Expenditure Cycle Processing and Controls
	187.	Configuring Internal Controls in Accounting Software
	188.	Data Security Settings and Access Controls
	189.	Generating Financial Reports and Statements
	190.	Analyzing Financial Data in AIS
	191.	Auditing Tools and Techniques within AIS
	192.	Fraud Detection Using AIS Features
	193.	Data Analytics for Financial Decision-Making
	194.	Project Lab: Designing and Managing an AIS
	195.	Lab Review and Practical Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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Required Texts	• "Accounting Information Systems" by Marshall B. Romney and Paul J. Steinbart.	No
Recommended Texts	• "Core Concepts of Accounting Information Systems" by Mark G. Simkin, James L. Worrell, and Arline A. Savage.	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

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MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Project Management</u>			Module Delivery	
Module Type	<u>Elective</u>			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>PM213</u>				
ECTS Credits	<u>4</u>				
SWL (hr/sem)	<u>100</u>				
Module Level		2	Semester of Delivery		4
Administering Department		ITM	College	TCM	
Module Leader			e-mail		
Module Leader’s Acad. Title			Module Leader’s Qualification		

Module Tutor		e-mail	@atu.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	11/11/2024	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	91. Introduce the fundamental principles, methodologies, and processes of project management. 92. Develop skills in planning, executing, monitoring, and closing projects using MS Project. 93. Equip students with knowledge of project scheduling, budgeting, and resource allocation. 94. Enable students to identify and mitigate project risks while ensuring quality standards. 95. Prepare students to use MS Project for creating, managing, and tracking project progress in real-world applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	181. Understand the key phases and processes of project management. 182. Define project scope, objectives, and deliverables. 183. Create and manage project schedules, tasks, and milestones using MS Project. 184. Allocate resources, set budgets, and manage costs in project plans. 185. Monitor and control project progress, applying risk management techniques. 186. Use MS Project to track, analyze, and report on project performance. 187. Apply quality management principles to meet project goals. 188. Close projects successfully, documenting lessons learned and project outcomes. 189. Communicate effectively within project teams and with stakeholders. 190. Develop a complete project management plan using MS Project as a final project.
Indicative Contents المحتويات الإرشادية	1. Introduction to Project Management and MS Project. 2. Project Scope, Objectives, and Task Scheduling. 3. Resource Allocation, Cost Management, and Budgeting. 4. Risk Management, Quality Control, and Stakeholder Communication. 5. Project Tracking, Performance Reporting, and Closing.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Lectures covering project management principles, techniques, and tools. 2. Lab sessions for hands-on experience with MS Project, from setup to execution and closing. 3. Group discussions and exercises on project planning, risk management, and control. 4. Case studies and real-world examples to demonstrate project management in practice. 5. Assignments and projects to reinforce theoretical understanding and practical skills.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All
	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	271. Introduction to Project Management Concepts and MS Project Interface 272. Defining Project Scope, Objectives, and Deliverables 273. Creating a Work Breakdown Structure (WBS) in MS Project 274. Task Scheduling, Dependencies, and Milestones 275. Using Gantt Charts and Calendar Views in MS Project 276. Resource Allocation and Managing Resource Constraints 277. Cost Estimation and Budgeting Techniques 278. Risk Identification, Analysis, and Mitigation 279. Quality Management and Control Techniques 280. Monitoring Project Progress with MS Project Tools 281. Generating and Interpreting Project Performance Reports 282. Stakeholder Communication and Reporting 283. Change Management in Project Plans 284. Project Closure: Documenting Lessons Learned and Final Reports 285. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	196. Introduction to MS Project: Interface and Basic Setup 197. Setting Up Project Scope and Tasks in MS Project 198. Creating a Work Breakdown Structure (WBS) in MS Project 199. Scheduling Tasks and Assigning Dependencies 200. Using Gantt Charts and Adjusting Project Timelines 201. Resource Allocation and Adjusting Resource Levels 202. Setting Up Budgets and Cost Management in MS Project 203. Implementing Risk Management Strategies in Project Plans 204. Setting Quality Control Measures and Monitoring Progress 205. Tracking Project Performance: Earned Value Analysis

	206.	Generating Project Reports and Customizing Views
	207.	Stakeholder Reporting and Project Communication
	208.	Managing Project Changes and Re-Baselining
	209.	Final Project Lab: Creating a Complete Project Plan in MS Project
	210.	Lab Review and Practical Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Project Management: A Systems Approach to Planning, Scheduling, and Controlling" by Harold Kerzner.	No
Recommended Texts	"Project Management: The Managerial Process" by Erik W. Larson and Clifford F. Gray.	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

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MODULE DESCRIPTION FORM

Module Information

معلومات المادة الدراسية

Module Title	<u>Data Structure</u>			Module Delivery	
Module Type	<u>Core</u>			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	<u>AG211</u>				
ECTS Credits	<u>8</u>				
SWL (hr/sem)	<u>200</u>				
Module Level		2	Semester of Delivery		4
Administering Department		ITM	College	TCM	
Module Leader			e-mail		
Module Leader’s Acad. Title			Module Leader’s Qualification		
Module Tutor			e-mail	@atu.edu.iq	
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date		11/11/2025	Version Number		1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	96. Introduce fundamental algorithmic techniques and their mathematical foundations. 97. Develop students' ability to design efficient algorithms for solving computational problems. 98. Provide skills to analyze algorithm performance using time and space complexity. 99. Familiarize students with classical algorithms and problem-solving strategies. 100.Enable practical implementation and testing of algorithms using programming tools.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	191.Understand and explain core algorithmic concepts and efficiency metrics. 192.Analyze algorithm complexity using Big O, Omega, and Theta notation. 193.Design algorithms using divide and conquer, greedy, and dynamic programming techniques. 194.Apply graph algorithms such as BFS, DFS, shortest paths, and minimum spanning trees.

	195. Implement sorting and searching algorithms. 196. Solve recursive and iterative algorithm problems. 197. Apply hashing, backtracking, and string matching algorithms. 198. Identify algorithmic limitations and select appropriate approaches for various problem types. 199. Use a programming language (e.g., Python, Java, or C++) to implement algorithms. 200. Develop small projects involving real-world algorithmic problem-solving.
Indicative Contents المحتويات الإرشادية	6. Algorithm design paradigms: brute-force, divide & conquer, greedy, dynamic programming. 7. Complexity analysis and asymptotic notation. 8. Sorting, searching, and selection algorithms. 9. Graph algorithms and traversal techniques. 10. Recursion, backtracking, and string algorithms.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	6. Lectures covering algorithmic theory, models, and use cases. 7. Lab sessions with coding exercises and algorithm implementation. 8. Problem-solving assignments to reinforce learning. 9. Group discussions and whiteboard analysis for deeper understanding. 10. Mini-projects and quizzes to apply techniques to practical problems.
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

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

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	Continuous	All
	Lab	1	10% (10)	Continuous	All

	Onsite Assignments	1	10% (10)	Continuous	All
	Projects	1	10% (10)	Continuous	All
Summative assessment	Midterm Exam	3hr	10% (10)	7	LO #1 - #7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
15 weeks	286. Introduction to Algorithms and Complexity Analysis 287. Asymptotic Notation and Mathematical Foundations 288. Brute Force and Divide and Conquer Techniques 289. Sorting Algorithms: Merge Sort, Quick Sort, Heap Sort 290. Searching and Selection Algorithms 291. Greedy Algorithms and Applications 292. Dynamic Programming: Principles and Problems 293. Backtracking and Recursion Techniques 294. Graph Algorithms I: BFS, DFS 295. Graph Algorithms II: Dijkstra, Bellman-Ford, Floyd-Warshall 296. Minimum Spanning Tree: Kruskal and Prim 297. Hashing Techniques and Hash Tables 298. String Matching and Pattern Searching Algorithms 299. Advanced Topics: NP-Completeness and Approximation 300. Final Lecture and Module Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Weeks	211. Lab Introduction and Setup (Language + IDE) 212. Writing and Testing Simple Algorithms 213. Implementing Sorting Algorithms 214. Searching and Selection Practices

	215.	Divide and Conquer Lab Exercises
	216.	Greedy Algorithm Implementation
	217.	Dynamic Programming Problem Sets
	218.	Recursive Algorithms and Backtracking
	219.	Graph Traversals (BFS, DFS)
	220.	Shortest Path Algorithms (Dijkstra, Bellman-Ford)
	221.	Minimum Spanning Tree Implementation
	222.	Hash Table Creation and Use
	223.	String Matching and Pattern Search
	224.	Mini-Project or Complex Problem Set
	225.	Lab Review and Performance Assessment

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Introduction to Algorithms" by Cormen, Leiserson, Rivest, and Stein (CLRS).	No
Recommended Texts	"Algorithm Design" by Jon Kleinberg and Éva Tardos.	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.

16.5 Course Description (Courses System)/ 3th level/ first semester

1. Course Name					
Databases					
2. Course Code					
INT327					
3. Semester / Year					
First / Second Semester 2023–2024					
4. The history of preparation of this description					
11/2/2024					
5. Available Attendance Forms					
In Class					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (four hours weekly)					
4 units					
7. Course administrator' s name (if more than one name)					
Name: Ali Hussein Abdulkhaleq Email: alialkaaby@atu.edu.iq					
8. Course Objectives					
Course Objectives		• ☐ Understand the fundamental concepts of databases and their role in managing data. • ☐ Learn database design, development, and management using SQL. • ☐ Explore different database models, including relational, NoSQL, and distributed databases. • ☐ Develop skills to analyze, query, and optimize databases for real–world applications.			
9. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
10. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	4 hours	1. ☐ Understand the importance and applications of databases in modern systems.	1. ☐ Introduction to Databases: Types, Applications, and Roles 2. ☐ Database Models: Hierarchical, Network, Relational, and NoSQL	Lecture style Case study method Lab	Daily tests

		2. ? Differentiate between database models and their use cases. 3. ? Apply relational model concepts to organize and structure data. 4. ? Design efficient databases using ER diagrams and normalization techniques. 5. ? Write basic SQL queries for data manipulation and retrieval. 6. ? Use advanced SQL techniques for complex queries. 7. ? Create and manage stored procedures and triggers. 8. ? Understand NoSQL database types and their specific use cases. 9. ? Implement database security measures to protect sensitive data. 10. ? Manage transactions and handle	3. ? Relational Model: Tables, Keys, and Relationships 4. ? Database Design Principles: Normalization and Entity-Relationship (ER) Diagrams 5. ? Structured Query Language (SQL): Basics and Syntax 6. ? SQL Queries: SELECT, INSERT, UPDATE, and DELETE 7. ? Advanced SQL: Joins, Subqueries, and Aggregations 8. ? Stored Procedures and Triggers 9. ? NoSQL Databases: Types (Document, Column, Graph, Key-Value) and Applications 10. ? Database Security: Permissions, Encryption, and Access Control 11. ? Transactions and Concurrency: ACID Properties and Locking Mechanisms 12. ? Database Performance Optimization: Indexing, Query Tuning, and Caching 13. ? Distributed Databases: Concepts, CAP Theorem, and Replication		
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		concurrency in databases. 11. ☐ Optimize database performance for faster and efficient operations. 12. ☐ Understand distributed database concepts and their implementation. 13. ☐ Plan and execute effective backup and recovery strategies. 14. ☐ Apply knowledge to design and develop a comprehensive database project.	14. ☐ Backup and Recovery: Strategies and Tools 15. ☐ Capstone Project: Database Design and Implementation for a Real-World Application		
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11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc

Participation and discussion within the lecture 10 marks

Practical assignment 10 marks

First month exam 15 points

Second month exam 15 points

Final Exam - Practical Side 10 marks

Final Exam – Theoretical 40 Points

Total 100 degrees

12. Learning and Teaching Resources

Required textbooks (methodology, if any)	• "Database System Concepts" by Abraham Silberschatz, Henry F. Korth, and S. Sudarshan
Main references (sources)	• "SQL in 10 Minutes, Sams Teach Yourself" by Ben Forta

Recommended books and references (scientific journals, reports...)	"NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence" by Pramod J. Sadalage and Martin Fowler
Electronic References, Websites	https://www.learndb.com/

13. Course Name					
Operating systems					
14. Course Code					
INT329					
15. Semester / Year					
First / Second Semester 2023–2024					
16. The history of preparation of this description					
11/2/2024					
17. Available Attendance Forms					
In Class					
18. Number of Credit Hours (Total) / Number of Units (Total)					
45 hours (three hours weekly) 3 units					
19. Course administrator' s name (if more than one name)					
Name: Ammar wisam abdulzhras Email: Dr.ammar@atu.edu.iq					
20. Course Objectives					
Course Objectives		□ Understand the fundamental concepts and principles of operating systems. □ Explore process management, memory management, file systems, and I/O systems. □ Develop practical skills to analyze and implement operating system components. □ Learn about advanced topics such as virtualization, distributed systems, and security.			
21. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
22. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	15. □ Understand the purpose and	1. □ Introduction to Operating	Lecture style	Daily tests

		evolution of operating systems. 16. ? Differentiate between kernel and shell and use system calls. 17. ? Explain process lifecycle and manage processes effectively. 18. ? Understand multithreading and its challenges in concurrent systems. 19. ? Apply CPU scheduling algorithms to optimize performance. 20. ? Implement process synchronization techniques to avoid race conditions. 21. ? Manage and recover from deadlocks in system operations. 22. ? Understand memory management techniques, including virtual memory. 23. ? Analyze file system structures and directory	Systems: Purpose, Types, and Evolution 2. ? Operating System Architecture: Kernel, Shell, and System Calls 3. ? Process Management: Process States, Scheduling, and Interprocess Communication 4. ? Threads and Multithreading: Concepts, Models, and Multithreading Challenges 5. ? CPU Scheduling Algorithms: FCFS, SJF, Round Robin, and Priority Scheduling 6. ? Process Synchronization: Critical Sections, Semaphores, and Monitors 7. ? Deadlock: Prevention, Avoidance, Detection, and Recovery 8. ? Memory Management: Paging, Segmentation, and Virtual Memory 9. ? File Systems: Structure,	Case study method Lab	
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		implementation s. 24. ? Explore I/O system design and optimize device management. 25. ? Apply disk scheduling algorithms and understand RAID configurations. 26. ? Learn virtualization concepts and implement virtual environments. 27. ? Understand the principles of distributed operating systems. 28. ? Apply security principles to protect operating systems from threats. 29. ? Analyze real-world operating systems through case studies.	Allocation Methods, and Directory Implementation 10. ? I/O Systems: Device Management, Buffering, and Caching 11. ? Disk Management: Scheduling Algorithms, RAID, and Disk Failures 12. ? Virtualization: Virtual Machines and Containers 13. ? Distributed Operating Systems: Concepts, Communication, and Resource Sharing 14. ? Security and Protection: Authentication, Encryption, and Access Control 15. ? Case Studies and Final Assessment: Linux, Windows, and Modern Operating Systems		
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23. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc

Participation and discussion within the lecture 10 marks

Practical assignment 10 marks

First month exam 15 points

Second month exam 15 points

Final Exam - Practical Side 10 marks

Final Exam – Theoretical 40 Points

Total 100 degrees

24. Learning and Teaching Resources

Required textbooks (methodology, if any)	• "Operating System Concepts" by Abraham Silberschatz, Peter B. Galvin, and Greg Gagne
Main references (sources)	• "Modern Operating Systems" by Andrew S. Tanenbaum and Herbert Bos
Recommended books and references (scientific journals, reports...)	• "Understanding the Linux Kernel" by Daniel P. Bovet and Marco Cesati
Electronic References, Websites	• https://www.edx.org/learn/operating-systems

25. Course Name

Systems analysis

26. Course Code

INT325

27. Semester / Year

First / Second Semester 2023–2024

28. The history of preparation of this description

11/2/2024

29. Available Attendance Forms

In Class

30. Number of Credit Hours (Total) / Number of Units (Total)

45 hours (three hours weekly)

3 units

31. Course administrator' s name (if more than one name)

Name: Aymen Saad Abd Alameer Email: aymen.abdalameer@atu.edu.iq

32. Course Objectives

Course Objectives	• □ Understand the fundamental principles of systems analysis and its role in information systems development. • □ Develop skills to gather, document, and analyze system requirements. • □ Learn to use structured and object–oriented approaches for system modeling. • □ Explore tools, techniques, and methodologies for effective systems analysis.
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33. Teaching and Learning Strategies

Strategy	The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.
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34. Course Structure

The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	30. Understand the role of systems analysis in systems development. 31. Describe the phases of the SDLC and their significance. 32. Identify and analyze business needs and stakeholders. 33. Use various techniques for gathering system requirements. 34. Document functional and non-functional requirements effectively. 35. Create and analyze Data Flow Diagrams (DFDs). 36. Develop and interpret Entity-Relationship Diagrams (ERDs). 37. Apply object-oriented analysis to create use case	1. Introduction to Systems Analysis: Definition, Importance, and Overview 2. The Systems Development Life Cycle (SDLC): Phases and Applications 3. Identifying Business Needs: Stakeholders, Problems, and Goals 4. Requirements Gathering: Techniques (Interviews, Surveys, Observation, etc.) 5. Requirements Documentation: Functional and Non-Functional Requirements 6. Data Flow Diagrams (DFDs): Levels and Symbols 7. Entity-Relationship Diagrams (ERDs): Creating and Interpreting Models 8. Object-Oriented Analysis: Use Case Diagrams and Scenarios 9. Process Modeling: Tools and Techniques for Workflow Analysis 10. Data Modeling: Logical and Physical Models	Lecture style Case study method Lab	Daily tests

		diagrams and scenarios. 38. ? Model processes using structured techniques and tools. 39. ? Develop logical and physical data models. 40. ? Understand system design principles and their practical application. 41. ? Use UML diagrams for system modeling. 42. ? Build and evaluate prototypes of system components. 43. ? Validate systems to ensure alignment with requirements. 44. ? Demonstrate mastery by producing a comprehensive system analysis report.	11. ? System Design Principles: Scalability, Usability, and Maintainability 12. ? Introduction to UML: Class Diagrams, Sequence Diagrams, and Activity Diagrams 13. ? Systems Prototyping: Building and Testing Models 14. ? Evaluating and Validating Systems: Ensuring Accuracy and Alignment with Business Goals 15. ? Capstone Project: Developing a Complete System Analysis Report		
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35. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc

Participation and discussion within the lecture 10 marks

Practical assignment 10 marks

First month exam 15 points

Second month exam 15 points

Final Exam - Practical Side 10 marks

Final Exam – Theoretical 40 Points Total 100 degrees	
36. Learning and Teaching Resources	
Required textbooks (methodology, if any)	• "Systems Analysis and Design" by Kenneth E. Kendall and Julie E. Kendall
Main references (sources)	• "Modern Systems Analysis and Design" by Jeffrey A. Hoffer, Joey F. George, and Joseph S. Valacich
Recommended books and references (scientific journals, reports...)	• "Object-Oriented Systems Analysis and Design" by Simon Bennett, Steve McRobb, and Ray Farmer
Electronic References, Websites	• https://www.lucidchart.com/

37. Course Name	
Visual programming Fundamentals	
38. Course Code	
INT322	
39. Semester / Year	
First / Second Semester 2023–2024	
40. The history of preparation of this description	
11/2/2024	
41. Available Attendance Forms	
In Class	
42. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours (four hours weekly) 4 units	
43. Course administrator' s name (if more than one name)	
Name: Mustafa Saleh Mahdi Email: mustafaalkhaffaf@atu.edu.iq	
44. Course Objectives	
Course Objectives	• □ Introduce the fundamentals of visual programming and its applications. • □ Learn to create programs using visual programming environments like Scratch or Blockly. • □ Develop problem-solving skills through block-based coding and interactive design. • □ Understand the principles of event-driven programming and graphical interfaces.
45. Teaching and Learning Strategies	

Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
46. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	4 hours	45. ☐ Understand the basics of visual programming and its advantages. 46. ☐ Navigate and use the Scratch interface effectively. 47. ☐ Implement event-driven programming using blocks. 48. ☐ Animate sprites and use motion in programs. 49. ☐ Use loops to perform repetitive tasks efficiently. 50. ☐ Apply conditional logic to create decision-based programs. 51. ☐ Work with variables for dynamic data handling. 52. ☐ Add sound effects and control them in programs. 53. ☐ Combine different	1. Introduction to Visual Programming: Concepts and Tools (Scratch, Blockly, etc.) 2. Getting Started with Scratch: Interface, Sprites, and Blocks 3. Understanding Events: Event Handlers and Triggers 4. Motion and Animation: Moving Sprites and Creating Animations 5. Using Loops: Repeat and Forever Blocks for Iterative Tasks 6. Conditional Logic: If-Else Statements and Decision-Making 7. Variables and Data Storage: Creating and Using Variables 8. Working with Sounds: Adding and Controlling Sound Effects 9. Creating Interactive Stories: Combining Events, Animations, and Sounds 10. Introduction to Functions: Creating Custom Blocks for Modular Programming 11. Handling Multiple Sprites: Communication Between Sprites 12. Debugging in Visual Programming: Identifying and Fixing Errors	Lecture style Case study method Lab	Daily tests

		elements to create interactive stories. 54. ☐ Use custom blocks to modularize and simplify programs. 55. ☐ Manage interactions and communication between multiple sprites. 56. ☐ Debug visual programs to ensure functionality. 57. ☐ Design and develop a simple interactive game. 58. ☐ Apply learned concepts to design an original project. 59. ☐ Present and explain the working of a self-created program or game.	13. Introduction to Game Design: Creating a Simple Game in Scratch 14. Project Work: Designing an Interactive Program or Game 15. Final Review and Presentation: Showcase of Created Projects		
47. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc Participation and discussion within the lecture 10 marks Practical assignment 10 marks First month exam 15 points Second month exam 15 points Final Exam - Practical Side 10 marks Final Exam – Theoretical 40 Points Total 100 degrees					
48. Learning and Teaching Resources					

Required textbooks (methodology, if any)	"Scratch Programming Playground: Learn to Program by Making Cool Games" by Al Sweigart
Main references (sources)	"Creative Coding in Scratch" by Derek Breen
Recommended books and references (scientific journals, reports...)	"Learn to Program with Scratch: A Visual Introduction to Programming with Games, Art, Science, and Math" by Majed Marji
Electronic References, Websites	https://scratch.mit.edu/

49. Course Name					
Web Application Programming					
50. Course Code					
INT324					
51. Semester / Year					
First / Second Semester 2023–2024					
52. The history of preparation of this description					
11/2/2024					
53. Available Attendance Forms					
In Class					
54. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (4 hours weekly) 4 units					
55. Course administrator' s name (if more than one name)					
Name: Enas Hakim Mohsen Email: Enass.mohsen.cku@atu.edu.iq					
56. Course Objectives					
Course Objectives		□ Understand the core principles of web application programming and architecture. □ Learn to design, develop, and deploy dynamic web applications. □ Gain proficiency in client–side and server–side programming. □ Explore database integration and security best practices for web applications.			
57. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
58. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

15 weeks	4 hours	60. Understand the architecture and tools used in web application development. 61. Create structured and styled web pages using HTML and CSS. 62. Write dynamic and interactive scripts using JavaScript. 63. Build modular client-side applications using a framework like React.js or Vue.js. 64. Set up a basic server and handle requests using Node.js. 65. Connect web applications to relational or NoSQL databases. 66. Design and implement RESTful APIs for web applications. 67. Implement secure user authentication and session management. 68. Use asynchronous	1. Introduction to Web Application Development: Architecture, Tools, and Technologies 2. HTML and CSS Basics: Structure and Styling Web Pages 3. JavaScript Fundamentals: Variables, Functions, and DOM Manipulation 4. Client-Side Frameworks: Introduction to React.js or Vue.js 5. Introduction to Backend Development: Understanding Servers and APIs 6. Node.js Basics: Setting Up a Server and Handling Requests 7. Database Integration: Connecting Applications with MySQL or MongoDB 8. RESTful API Design: Building and Consuming APIs 9. Session Management and Authentication:	Lecture style Case study method Lab	Daily tests
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		programming for efficient web application development. 69. ☐ Enable seamless communication between the frontend and backend. 70. ☐ Identify and address common security vulnerabilities in web applications. 71. ☐ Deploy and host web applications on cloud platforms. 72. ☐ Optimize web application performance for better user experience. 73. ☐ Develop a full-stack web application as part of a capstone project. 74. ☐ Present and explain the design and functionality of the completed project.	Cookies, JWT, and OAuth 10. ☐ Advanced JavaScript: Asynchronous Programming and Promises 11. ☐ Frontend-Backend Communication: AJAX and Fetch API 12. ☐ Security in Web Applications: Preventing SQL Injection, XSS, and CSRF 13. ☐ Introduction to Deployment: Hosting Applications Using Platforms like Heroku or AWS 14. ☐ Performance Optimization: Caching, Compression, and Load Testing 15. ☐ Capstone Project: Developing and Presenting a Complete Web Application		
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59. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc

Participation and discussion within the lecture 10 marks

Practical assignment 10 marks

First month exam 15 points

Second month exam 15 points
 Final Exam - Practical Side 10 marks
 Final Exam – Theoretical 40 Points
 Total 100 degrees

60. Learning and Teaching Resources

Required textbooks (methodology, if any)	• "Eloquent JavaScript" by Marijn Haverbeke
Main references (sources)	• "Node.js Design Patterns" by Mario Casciaro and Luciano Mammino
Recommended books and references (scientific journals, reports...)	• "Web Development with Node and Express" by Ethan Brown
Electronic References, Websites	• https://developer.mozilla.org/en-US/

16.6 Course Description (Courses System)/ 3th level/ 2nd semester

61. Course Name

Advanced databases

62. Course Code

INT328

63. Semester / Year

First / Second Semester 2023–2024

64. The history of preparation of this description

11/2/2024

65. Available Attendance Forms

In Class

66. Number of Credit Hours (Total) / Number of Units (Total)

75 hours (five hours weekly)
 5 units

67. Course administrator' s name (if more than one name)

Name: Ali Hussein Abdulkhaleq Email: alialkaaby@atu.edu.iq

68. Course Objectives

Course Objectives	• □ Understand advanced database concepts, models, and architectures. • □ Explore performance optimization techniques for large-scale databases. • □ Learn advanced query processing, transaction management, and distributed database systems.
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		Develop expertise in emerging database technologies, including NoSQL, cloud databases, and big data systems.			
69. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
70. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	5 hours	75. Understand the role and scope of advanced database systems. 76. Implement and use advanced indexing techniques for query acceleration. 77. Optimize complex queries using advanced query optimization methods. 78. Manage concurrent transactions using modern concurrency control techniques. 79. Understand distributed database systems and their architectures.	1. Introduction to Advanced Databases: Overview and Importance 2. Database Indexing: B-Trees, Hash Indexing, and Bitmap Indexes 3. Query Optimization: Cost Estimation and Query Plans 4. Concurrency Control: Locking, Timestamping, and Multiversion Concurrency Control 5. Distributed Databases: Concepts, Architecture, and CAP Theorem 6. Replication and Partitioning in Distributed Databases 7. Parallel Databases: Query Processing and Performance Analysis 8. NoSQL Databases: Document, Key-Value, Column-Family, and Graph Databases 9. Time-Series and Spatial Databases	Lecture style Case study method Lab	Daily tests

		80. ? Configure replication and partitioning strategies for scalability. 81. ? Analyze parallel database systems for high-performance query execution. 82. ? Explore and apply NoSQL database models for specific use cases. 83. ? Work with time-series and spatial data in specialized databases. 84. ? Manage large-scale data using big data frameworks like Hadoop and Spark. 85. ? Implement robust database security measures to safeguard data. 86. ? Design data warehouses and perform multidimensional analysis with OLAP. 87. ? Leverage cloud database platforms for scalable and	10. ? Big Data Management: Hadoop, Spark, and MapReduce 11. ? Database Security: Threats, Encryption, and Access Control 12. ? Data Warehousing and OLAP: ETL Processes, Star and Snowflake Schemas 13. ? Cloud Databases: Infrastructure, Scaling, and Performance Considerations 14. ? Emerging Trends in Databases: Blockchain, GraphQL, and AI-Driven Databases 15. ? Capstone Project: Design and Implementation of an Advanced Database System		
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		efficient data management.			
		88. ☐ Explore emerging technologies and trends in advanced database systems.			
		89. ☐ Demonstrate proficiency through a real-world advanced database project.			

71. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc
Participation and discussion within the lecture 10 marks
Practical assignment 10 marks
First month exam 15 points
Second month exam 15 points
Final Exam - Practical Side 10 marks
Final Exam – Theoretical 40 Points
Total 100 degrees

72. Learning and Teaching Resources

Required textbooks (methodology, if any)	• "Database System Concepts" by Abraham Silberschatz, Henry F. Korth, and S. Sudarshan
Main references (sources)	• "NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence" by Pramod J. Sadalage and Martin Fowler
Recommended books and references (scientific journals, reports...)	• "Designing Data-Intensive Applications" by Martin Kleppmann
Electronic References, Websites	• https://www.learndb.com/

73. Course Name

Advanced operating systems

74. Course Code

INT333

75. Semester / Year

First / Second Semester 2023–2024					
76. The history of preparation of this description					
11/2/2024					
77. Available Attendance Forms					
In Class					
78. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours (four hours weekly)					
4 units					
79. Course administrator' s name (if more than one name)					
Name: Ammar wisam abdulzhraa Email: Dr.ammar@atu.edu.iq					
80. Course Objectives					
Course Objectives		☐ Explore the architecture, principles, and algorithms of advanced operating systems. ☐ Understand concepts related to distributed systems, virtualization, and real–time operating systems. ☐ Develop skills in designing, analyzing, and implementing advanced operating system functionalities. ☐ Examine contemporary challenges in operating systems, including scalability, security, and fault tolerance.			
81. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
82. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	4 hours	90. ☐ Differentiate between traditional and advanced operating systems. 91. ☐ Apply advanced scheduling and synchronization techniques for process management. 92. ☐ Understand the architecture	1. ☐ Introduction to Advanced Operating Systems: Overview and Comparison with Traditional OS 2. ☐ Process and Thread Management: Advanced Scheduling and Synchronization Techniques 3. ☐ Distributed Systems: Concepts, Models, and Challenges	Lecture style Case study method Lab	Daily tests

		and challenges of distributed systems. 93. Implement distributed consensus protocols like Paxos and Raft. 94. Use interprocess communication techniques in distributed systems. 95. Analyze distributed file system architectures and their applications. 96. Understand virtualization technologies and implement hypervisor functionalities. 97. Work with containerization tools like Docker and Kubernetes. 98. Explore advanced memory management techniques in modern systems. 99. Enhance system security using advanced operating system protections.	4. Distributed Consensus Algorithms: Paxos and Raft Protocols 5. Interprocess Communication in Distributed Systems: RPC, Message Queues, and Shared Memory 6. Distributed File Systems: NFS, HDFS, and Google File System 7. Virtualization and Hypervisors: Types, Techniques, and Performance Optimization 8. Containerization: Concepts, Docker, and Kubernetes 9. Memory Management in Advanced Systems: NUMA, Paging, and Memory Virtualization 10. Security in Operating Systems: Kernel Hardening, Sandboxing, and Secure Boot 11. Fault Tolerance and Recovery: Checkpointing and Replication Techniques 12. Real-Time Operating Systems (RTOS): Scheduling and Resource Management 13. Cloud Operating Systems: Resource Allocation and Scalability in Cloud Environments	
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		100. ? Develop fault-tolerant systems using checkpointing and replication. 101. ? Understand the architecture and principles of real-time operating systems. 102. ? Explore resource allocation and scalability in cloud operating systems. 103. ? Examine emerging technologies and their implications for operating systems. 104. ? Demonstrate practical knowledge through the design and implementation of an advanced OS feature.	14. ? Emerging Trends in Operating Systems: IoT, Edge Computing, and AI Integration 15. ? Capstone Project: Implementing Features for an Advanced Operating System		
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83. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc

Participation and discussion within the lecture 10 marks

Practical assignment 10 marks

First month exam 15 points

Second month exam 15 points

Final Exam - Practical Side 10 marks

Final Exam – Theoretical 40 Points

Total 100 degrees

84. Learning and Teaching Resources	
Required textbooks (methodology, if any)	• "Distributed Systems: Principles and Paradigms" by Andrew S. Tanenbaum and Maarten Van Steen
Main references (sources)	• "Modern Operating Systems" by Andrew S. Tanenbaum and Herbert Bos
Recommended books and references (scientific journals, reports...)	• "Operating Systems: Principles and Practice" by Thomas Anderson and Michael Dahlin
Electronic References, Websites	• https://www.edx.org/learn/operating-systems

85. Course Name	
Advanced Visual Programming	
86. Course Code	
INT323	
87. Semester / Year	
First / Second Semester 2023–2024	
88. The history of preparation of this description	
11/2/2024	
89. Available Attendance Forms	
In Class	
90. Number of Credit Hours (Total) / Number of Units (Total)	
75 hours (5 hours weekly) 5 units	
91. Course administrator' s name (if more than one name)	
Name: Mustafa Saleh Mahdi Email: Mustafa Saleh Mahdi	
92. Course Objectives	
Course Objectives	• □ Gain in–depth knowledge of advanced concepts in Visual Basic programming. • □ Develop skills to design and implement graphical user interfaces (GUIs) for desktop applications. • □ Explore advanced techniques for database integration, file handling, and error management. • □ Apply knowledge to build efficient, user–friendly, and maintainable applications.
93. Teaching and Learning Strategies	
Strategy	The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.

94. Course Structure

The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	5 hours	105. ☐ Understand advanced features of Visual Basic and their applications. 106. ☐ Apply object-oriented principles in designing applications. 107. ☐ Use advanced controls and customize application interfaces. 108. ☐ Handle complex events and manage multiple event handlers. 109. ☐ Implement robust error-handling mechanisms in applications. 110. ☐ Manage files and directories programmatically. 111. ☐ Connect and interact with databases using Visual Basic.	2. Introduction to Advanced Visual Programming: Overview of Visual Basic and Advanced Features 3. Object-Oriented Programming in Visual Basic: Classes, Objects, and Inheritance 4. Advanced Controls: Custom Controls, Toolbars, and Menus 5. Event-Driven Programming: Handling Multiple Events and Delegates 6. Error Handling: Try-Catch Blocks, Logging, and Debugging Techniques 7. File Handling: Reading, Writing, and Managing Files 8. Working with Databases: Connecting to Databases Using ADO.NET 9. SQL Integration: Executing Queries and Managing Records in VB 10. Multi-Threading in VB: Concepts and Implementation 11. Graphics and Multimedia: Drawing, Images, and Integrating Audio/Video 12. Dynamic Form Design: Creating and Managing Forms at Runtime 13. Working with APIs: Using External Libraries and Windows API in VB	Lecture style Case study method Lab	Daily tests

		112. ? Execute SQL queries and manipulate database records within VB. 113. ? Implement multi-threading to enhance application performance. 114. ? Integrate graphics and multimedia into applications. 115. ? Design dynamic forms and manage runtime interface changes. 116. ? Work with external libraries and APIs to extend application functionality. 117. ? Package and deploy Visual Basic applications effectively. 118. ? Develop complex, user-friendly applications for real-world scenarios. 119. ? Demonstrate proficiency by creating and presenting a	14. Deployment and Distribution: Packaging Applications for Deployment 15. Advanced Application Development: Building Real-World Applications 16. Capstone Project: Designing and Presenting a Complete Application 17.		
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		comprehensive project.			
95. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc Participation and discussion within the lecture 10 marks Practical assignment 10 marks First month exam 15 points Second month exam 15 points Final Exam - Practical Side 10 marks Final Exam – Theoretical 40 Points Total 100 degrees					
96. Learning and Teaching Resources					
Required textbooks (methodology, if any)		"Programming in Visual Basic 2019" by Julia Case Bradley and Anita Millspaugh			
Main references (sources)		"Mastering Visual Basic .NET" by Evangelos Petroutsos			
Recommended books and references (scientific journals, reports...)		"Beginning Visual Basic" by Bryan Newsome			
Electronic References, Websites		https://learn.microsoft.com/en-us/dotnet/visual-basic/			

97. Course Name	
Digital Forensics	
98. Course Code	
INT331	
99. Semester / Year	
First / Second Semester 2023–2024	
100. The history of preparation of this description	
11/2/2024	
101. Available Attendance Forms	
In Class	
102. Number of Credit Hours (Total) / Number of Units (Total)	
45 hours (three hours weekly) 3 units	
103. Course administrator' s name (if more than one name)	
Name: Sabreen Jasim Bani Email: sabreen.bani@atu.edu.iq	
104. Course Objectives	
Course Objectives	□ Understand the principles and methodologies of digital forensics.

		• □ Learn to collect, analyze, and preserve digital evidence from various sources. • □ Explore tools and techniques used in digital forensics investigations. • □ Apply forensic skills to solve real–world IT security incidents while adhering to legal and ethical standards.			
105. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
106. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	1. □ Define digital forensics and its role in cybersecurity. 2. □ Understand the nature of cybercrime and its impact on IT systems. 3. □ Identify and classify types of digital evidence. 4. □ Apply forensic processes for systematic investigations. 5. □ Understand file systems and how they relate to forensic investigations. 6. □ Use data recovery techniques to retrieve inaccessible information.	1. □ Introduction to Digital Forensics: Importance, Objectives, and Challenges 2. □ Understanding Cybercrime: Types, Motives, and Case Studies 3. □ Digital Evidence: Types, Characteristics, and Admissibility 4. □ Forensic Process: Identification, Collection, Preservation, and Analysis 5. □ File Systems and Storage Media: FAT, NTFS, and Other Formats 6. □ Data Recovery Techniques: Recovering Deleted, Encrypted, and Corrupted Data 7. □ Network Forensics: Monitoring, Capturing,	Lecture style Case study method Lab	Daily tests

		7. ? Monitor and analyze network activity for forensic purposes. 8. ? Extract and analyze data from mobile devices securely. 9. ? Investigate internet activity, emails, and social media for forensic evidence. 10. ? Identify and analyze malicious software in digital systems. 11. ? Conduct forensic investigations in cloud environments. 12. ? Use professional forensic tools for investigations. 13. ? Understand legal and ethical considerations in handling digital evidence. 14. ? Prepare and present structured forensic reports. 15. ? Demonstrate proficiency in digital forensics through a	and Analyzing Network Traffic 8. ? Mobile Device Forensics: Data Extraction from iOS and Android Devices 9. ? Email and Internet Forensics: Analyzing Browsing History, Emails, and Social Media 10. ? Malware Analysis: Identifying and Investigating Malicious Software 11. ? Cloud Forensics: Challenges and Techniques for Cloud-Based Investigations 12. ? Forensic Tools: Hands-On with Tools Like EnCase, FTK, and Autopsy 13. ? Legal and Ethical Issues in Digital Forensics: Laws, Privacy, and Chain of Custody 14. ? Reporting and Presenting Forensic Findings: Structuring Reports and Evidence Presentation 15. ? Capstone Project: Conducting a Comprehensive Digital Forensics Investigation		
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		capstone investigation project.			
107. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc Participation and discussion within the lecture 10 marks Practical assignment 10 marks First month exam 15 points Second month exam 15 points Final Exam - Practical Side 10 marks Final Exam – Theoretical 40 Points Total 100 degrees					
108. Learning and Teaching Resources					
Required textbooks (methodology, if any)		"Digital Forensics and Incident Response: Incident Response Techniques and Procedures" by Gerard Johansen			
Main references (sources)		"Guide to Computer Forensics and Investigations" by Bill Nelson, Amelia Phillips, and Christopher Steuart			
Recommended books and references (scientific journals, reports...)		"Practical Forensic Imaging" by Bruce Nikkel			
Electronic References, Websites		https://www.cybrary.it/			

109.	Course Name
	English 3
110.	Course Code
	MTU300
111.	Semester / Year
	First / Second Semester 2023–2024
112.	The history of preparation of this description
	11/2/2024
113.	Available Attendance Forms
	In Class
114.	Number of Credit Hours (Total) / Number of Units (Total)
	30 hours (2 hours weekly) 2 units
115.	Course administrator' s name (if more than one name)
	Name: Muhamed Kadhim Wudaa Email: muhamed.wudaa.cku@atu.edu.iq
116.	Course Objectives

Course Objectives	• ☐ Improve intermediate-level English skills in reading, writing, listening, and speaking. • ☐ Enhance vocabulary and grammar knowledge for more complex communication. • ☐ Develop confidence in using English in academic, social, and professional contexts. • ☐ Deepen understanding of English culture and practical language use.
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117. Teaching and Learning Strategies

Strategy	The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.
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118. Course Structure

The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	2 hours	16. ☐ Use past tenses to talk about personal experiences and stories. 17. ☐ Expand vocabulary related to travel and describe travel plans. 18. ☐ Discuss work preferences and articulate career ambitions using appropriate future tenses. 19. ☐ Express opinions about media and entertainment topics. 20. ☐ Use modal verbs to give advice and talk about lifestyle choices.	1. ☐ Unit 1: Life Stories: Talking About Past Experiences (Review of Past Tenses) 2. ☐ Unit 2: Travel and Adventure: Vocabulary Related to Travel and Places 3. ☐ Unit 3: Work and Careers: Expressing Preferences and Future Plans 4. ☐ Unit 4: Media and Entertainment: Discussing Preferences and Opinions 5. ☐ Unit 5: Health and Lifestyle: Giving Advice and Talking About Habits 6. ☐ Unit 6: Relationships: Talking About People and Social Situations	Lecture style Case study method Lab	Daily tests

		21. ? Describe social situations and relationships fluently. 22. ? Discuss technological advancements and their impacts on society. 23. ? Talk about environmental issues and propose solutions. 24. ? Share personal cultural experiences and discuss traditions. 25. ? Reflect on educational experiences and future learning objectives. 26. ? Sequence events logically when narrating past or future occurrences. 27. ? Engage in conversations about money and financial habits. 28. ? Write structured formal and informal texts with clarity. 29. ? Deliver short presentations	7. ? Unit 7: Technology: Discussing Trends and Future Innovations 8. ? Unit 8: Environment: Talking About Problems and Solutions 9. ? Unit 9: Culture: Sharing Experiences and Learning About Traditions 10. ? Unit 10: Education: Describing Learning Experiences and Goals 11. ? Unit 11: Describing Events: Sequencing Past and Future Events 12. ? Unit 12: Shopping and Money: Discussing Spending and Saving Habits 13. ? Unit 13: Writing Skills: Formal and Informal Communication 14. ? Unit 14: Speaking Skills: Giving Presentations and Public Speaking 15. ? Unit 15: Review and Final Assessment: Integrating All Skills		
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		with confidence and coherence. 30. 2 Demonstrate proficiency in integrated English skills through a final assessment.			
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119. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc

Participation and discussion within the lecture 10 marks

Practical assignment 10 marks

First month exam 15 points

Second month exam 15 points

Final Exam - Practical Side 10 marks

Final Exam – Theoretical 40 Points

Total 100 degrees

120. Learning and Teaching Resources

Required textbooks (methodology, if any)	"New Headway Intermediate Student's Book" by Liz and John Soars
Main references (sources)	"English Grammar in Use" by Raymond Murphy (Intermediate Edition)
Recommended books and references (scientific journals, reports...)	"Oxford Word Skills (Intermediate)" by Ruth Gairns and Stuart Redman
Electronic References, Websites	https://hw.online/learn/

121.	Course Name
	Graphs
122.	Course Code
	INT332
123.	Semester / Year
	First / Second Semester 2023–2024
124.	The history of preparation of this description
	11/2/2024
125.	Available Attendance Forms
	In Class
126.	Number of Credit Hours (Total) / Number of Units (Total)
	45 hours (three hours weekly) 3 units

127. Course administrator' s name (if more than one name)					
Name: Asmaa jasim kazim Email: asmaajasim@atu.edu.iq					
128. Course Objectives					
Course Objectives		• ☐ Understand graph theory concepts and their applications in computer science. • ☐ Learn to implement and manipulate graphs programmatically using C++. • ☐ Explore algorithms for graph traversal, shortest path, and connectivity. • ☐ Develop problem-solving skills by applying graph algorithms to real-world problems.			
129. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
130. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	18. Understand basic graph concepts and their significance. 19. Implement graphs using adjacency lists and matrices in C++. 20. Use DFS for solving problems like pathfinding and cycle detection. 21. Use BFS for level-order traversal and shortest path in unweighted graphs. 22. Analyze and find connected components in a graph. 23. Implement and compare shortest path algorithms	1. ☐ Introduction to Graph Theory: Graph Terminology and Representation (Adjacency List and Matrix) 2. ☐ Implementing Graphs in C++: Graph Class, Data Structures, and Input/Output 3. ☐ Depth-First Search (DFS): Implementation and Applications 4. ☐ Breadth-First Search (BFS): Implementation and Applications 5. ☐ Connected Components in Graphs: Detecting and Analyzing Connectivity 6. ☐ Shortest Path Algorithms: Dijkstra's	Lecture style Case study method Lab	Daily tests

		for weighted graphs. 24. Construct minimum spanning trees using Kruskal's and Prim's algorithms. 25. Apply topological sorting for tasks like job scheduling in DAGs. 26. Explore graph coloring algorithms for real-world applications like resource allocation. 27. Solve maximum flow problems using Ford-Fulkerson and Edmonds-Karp algorithms. 28. Verify bipartiteness and apply matching algorithms. 29. Detect cycles in graphs and understand their implications. 30. Explore practical applications of graph theory in real-world scenarios. 31. Optimize graph algorithms using STL and advanced C++ techniques. 32. Demonstrate mastery of graph algorithms through a comprehensive project.	Algorithm and Bellman-Ford Algorithm 7. Minimum Spanning Trees: Kruskal's and Prim's Algorithms 8. Directed Acyclic Graphs (DAGs): Topological Sorting and Applications 9. Graph Coloring: Algorithms and Applications 10. Maximum Flow Algorithms: Ford-Fulkerson and Edmonds-Karp Algorithms 11. Bipartite Graphs: Matching and Algorithms for Verification 12. Graph Algorithms for Cycles: Cycle Detection in Directed and Undirected Graphs 13. Applications of Graphs: Networks, Routing, and Real-World Use Cases 14. Optimizing Graph Algorithms in C++: Using STL and Advanced Data Structures 15. Capstone Project: Solving a Complex Problem Using Graph Algorithms		
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131. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc Participation and discussion within the lecture 10 marks Practical assignment 10 marks First month exam 15 points Second month exam 15 points Final Exam - Practical Side 10 marks Final Exam – Theoretical 40 Points Total 100 degrees					
132. Learning and Teaching Resources					
Required textbooks (methodology, if any)			• "Introduction to Algorithms" by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein		
Main references (sources)			• "Algorithms in C++" by Robert Sedgewick		
Recommended books and references (scientific journals, reports...)			• "Graph Theory with Applications to Engineering and Computer Science" by Narsingh Deo		
Electronic References, Websites			• https://www.w3schools.com/cpp/		

133. Course Name	
Research Methodology	
134. Course Code	
MCBA321	
135. Semester / Year	
First / Second Semester 2023–2024	
136. The history of preparation of this description	
11/2/2024	
137. Available Attendance Forms	
In Class	
138. Number of Credit Hours (Total) / Number of Units (Total)	
45 hours (three hours weekly) 3 units	
139. Course administrator' s name (if more than one name)	
Name: Kifah Taha Khudhair Email: kifah@atu.edu.iq	
140. Course Objectives	
Course Objectives	• □ Understand the principles and processes of scientific research. • □ Develop skills in designing, conducting, and evaluating research studies.

	□ Learn to analyze data, interpret results, and report findings effectively. □ Explore ethical considerations and best practices in scientific research.
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141. Teaching and Learning Strategies

Strategy	The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.
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142. Course Structure

The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	2. □ Understand the fundamentals and significance of scientific research. 3. □ Identify research problems and formulate clear research objectives. 4. □ Conduct a comprehensive literature review. 5. □ Design appropriate research methods based on objectives. 6. □ Develop and test hypotheses effectively. 7. □ Apply suitable sampling methods for data collection. 8. □ Use diverse data collection	1. □ Introduction to Scientific Research: Concepts, Types, and Importance 2. □ Research Problem and Objectives: Identifying and Formulating Research Questions 3. □ Literature Review: Methods for Reviewing and Synthesizing Existing Knowledge 4. □ Research Design: Exploratory, Descriptive, and Experimental Designs 5. □ Hypothesis Development: Formulation and Testing 6. □ Sampling Techniques:	Lecture style Case study method	Daily tests

		techniques for research studies. 9. ? Analyze quantitative data using statistical methods. 10. ? Interpret qualitative data using systematic approaches. 11. ? Utilize research tools and software for analysis. 12. ? Ensure validity and reliability in research findings. 13. ? Adhere to ethical guidelines in conducting research. 14. ? Write structured and coherent research proposals. 15. ? Present research findings effectively through reports and presentations. 16. ? Demonstrate research skills through a final project.	Probability and Non-Probability Sampling 7. ? Data Collection Methods: Surveys, Interviews, Observations, and Experiments 8. ? Quantitative Data Analysis: Descriptive and Inferential Statistics 9. ? Qualitative Data Analysis: Thematic Analysis and Grounded Theory 10. ? Research Tools and Software: SPSS, NVivo, and Other Tools 11. ? Validity and Reliability: Ensuring Quality in Research 12. ? Ethical Considerations in Research: Informed Consent, Plagiarism, and Data Privacy 13. ? Research Proposal Writing: Structure and Components 14. ? Writing and Presenting Research Findings: Reports, Papers, and Presentations 15. ? Capstone Project:		
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			Developing a Research Proposal or Conducting a Mini-Research Study		
143. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc Participation and discussion within the lecture 10 marks Practical assignment 10 marks First month exam 15 points Second month exam 15 points Final Exam - Practical Side 10 marks Final Exam – Theoretical 40 Points Total 100 degrees					
144. Learning and Teaching Resources					
Required textbooks (methodology, if any)			"Research Design: Qualitative, Quantitative, and Mixed Methods Approaches" by John W. Creswell		
Main references (sources)			"The Craft of Research" by Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams		
Recommended books and references (scientific journals, reports...)			"Practical Research: Planning and Design" by Paul D. Leedy and Jeanne Ellis Ormrod		
Electronic References, Websites			https://www.ncrm.ac.uk/		

16.7 Course Description (Courses System)/ 4th level/ first semester

145.	Course Name
	Artificial Intelligence
146.	Course Code
	INT420
147.	Semester / Year
	First / Second Semester 2023–2024
148.	The history of preparation of this description
	11/2/2024
149.	Available Attendance Forms

In Class					
150. Number of Credit Hours (Total) / Number of Units (Total)					
45 hours (three hours weekly)					
3 units					
151. Course administrator' s name (if more than one name)					
Name: Aymen Saad Abd Alameer Email: aymen.abdalameer@atu.edu.iq					
152. Course Objectives					
Course Objectives		• Understand the fundamental concepts, principles, and techniques of artificial intelligence (AI). • Learn to design and implement intelligent systems using AI algorithms and frameworks. • Explore real–world applications of AI in various domains such as natural language processing, robotics, and computer vision. • Analyze the ethical considerations and societal impact of AI technologies.			
153. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
154. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	17. Understand the history, trends, and applications of AI. 18. Differentiate between types of intelligent agents and environments. 19. Solve problems using search strategies and algorithms. 20. Apply heuristic techniques to optimize	1. Introduction to AI: History, Applications, and Modern Trends 2. Intelligent Agents: Types, Architecture, and Environments 3. Problem-Solving and Search: Uninformed and Informed Search Strategies 4. Heuristic Search and Optimization: A* Algorithm, Hill Climbing, and Genetic Algorithms 5. Knowledge Representation: Propositional Logic, Predicate Logic, and Ontologies	Lecture style Case study method Lab	Daily tests

		problem-solving. 21. ? Represent knowledge using logic-based approaches. 22. ? Implement probabilistic reasoning for decision-making under uncertainty. 23. ? Understand and apply basic machine learning techniques. 24. ? Explore neural networks and their role in deep learning. 25. ? Implement NLP techniques for text analysis and language understanding. 26. ? Apply computer vision algorithms for image and video processing. 27. ? Integrate AI in robotic systems for navigation and control. 28. ? Design AI systems for strategic decision-making in games. 29. ? Analyze ethical	6. ? Reasoning under Uncertainty: Bayesian Networks and Probabilistic Reasoning 7. ? Machine Learning Fundamentals: Supervised, Unsupervised, and Reinforcement Learning 8. ? Neural Networks: Basics of Deep Learning and Architectures 9. ? Natural Language Processing (NLP): Text Processing, Tokenization, and Sentiment Analysis 10. ? Computer Vision: Image Processing, Object Recognition, and Convolutional Neural Networks 11. ? AI in Robotics: Path Planning, Perception, and Control Systems 12. ? AI in Games: Game Theory, Minimax Algorithm, and Alpha-Beta Pruning 13. ? Ethics in AI: Bias, Fairness, and Privacy Concerns 14. ? AI Tools and Frameworks: TensorFlow, PyTorch, and Scikit-Learn 15. ? Capstone Project: Designing and Implementing an AI System	
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		challenges and develop responsible AI solutions. 30. ☐ Use AI development frameworks and tools to build applications. 31. ☐ Demonstrate proficiency by completing a comprehensive AI project.			
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155. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc

Participation and discussion within the lecture 10 marks

Practical assignment 10 marks

First month exam 15 points

Second month exam 15 points

Final Exam - Practical Side 10 marks

Final Exam – Theoretical 40 Points

Total 100 degrees

156. Learning and Teaching Resources

Required textbooks (methodology, if any)	• "Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig
Main references (sources)	• "Deep Learning" by Ian Goodfellow, Yoshua Bengio, and Aaron Courville
Recommended books and references (scientific journals, reports...)	• "Machine Learning Yearning" by Andrew Ng
Electronic References, Websites	• https://www.coursera.org/

157. Course Name

Data compression

158. Course Code

INT426

159. Semester / Year

First / Second Semester 2023–2024

160. The history of preparation of this description

11/2/2024

161. Available Attendance Forms

In Class

162. Number of Credit Hours (Total) / Number of Units (Total)

45 hours (three hours weekly)

3 units

163. Course administrator' s name (if more than one name)

Name: Haneen Hamzah Alwen Email: haneen.hamza1@atu.edu.iq

164. Course Objectives

Course Objectives

- ☐ Understand the principles and techniques of data compression.
- ☐ Learn the differences between lossless and lossy compression methods.
- ☐ Explore algorithms and standards for text, image, audio, and video compression.
- ☐ Develop the ability to implement compression algorithms and analyze their performance.

165. Teaching and Learning Strategies

Strategy

The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.

166. Course Structure

The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	32. ☐ Understand the importance and applications of data compression in technology. 33. ☐ Explain key concepts of information theory and their relevance to compression. 34. ☐ Differentiate between lossless and lossy compression techniques. 35. ☐ Implement run-length	1. ☐ Introduction to Data Compression: Concepts, Importance, and Applications 2. ☐ Information Theory Basics: Entropy, Redundancy, and Data Rates 3. ☐ Lossless Compression Fundamentals: Definitions and Techniques 4. ☐ Run-Length Encoding (RLE):	Lecture style Case study method Lab	Daily tests

		encoding and explore its use cases. 36. ? Apply Huffman coding to compress text and data efficiently. 37. ? Explore arithmetic coding and its applications in high-efficiency compression. 38. ? Implement dictionary-based methods like LZW and LZ77. 39. ? Understand and apply image compression algorithms such as JPEG and PNG. 40. ? Analyze audio compression techniques like MP3 and AAC. 41. ? Explore video compression standards and their underlying algorithms. 42. ? Use transform techniques such as DCT and wavelets for data compression. 43. ? Explore adaptive and context-based	Concept and Applications 5. ? Huffman Coding: Theory, Implementation, and Efficiency 6. ? Arithmetic Coding: Techniques and Use Cases 7. ? Dictionary-Based Compression: LZW, LZ77, and Variants 8. ? Image Compression Basics: Lossless and Lossy Techniques (PNG, JPEG) 9. ? Audio Compression: MP3, AAC, and Psychoacoustics Principles 10. ? Video Compression: H.264, H.265, and Motion Estimation Techniques 11. ? Transform-Based Compression: Discrete Cosine Transform (DCT) and Wavelets 12. ? Adaptive Compression Techniques: Context Modeling	
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		compression techniques. 44. ☐ Utilize tools and libraries for data compression. 45. ☐ Evaluate the performance of compression algorithms using relevant metrics. 46. ☐ Develop and present a functional data compression project.	and Predictive Coding 13. ☐ Compression Standards and Tools: Overview of Common Libraries and Software 14. ☐ Performance Metrics: Compression Ratio, Speed, and Quality Analysis 15. ☐ Capstone Project: Implementing and Evaluating a Compression Algorithm		
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167. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc
Participation and discussion within the lecture 10 marks
Practical assignment 10 marks
First month exam 15 points
Second month exam 15 points
Final Exam - Practical Side 10 marks
Final Exam – Theoretical 40 Points
Total 100 degrees

168. Learning and Teaching Resources

Required textbooks (methodology, if any)	• "Introduction to Data Compression" by Khalid Sayood
Main references (sources)	• "Data Compression: The Complete Reference" by David Salomon
Recommended books and references (scientific journals, reports...)	• "Elements of Information Theory" by Thomas M. Cover and Joy A. Thomas
Electronic References, Websites	• https://www.geeksforgeeks.org/

169. Course Name

Decision support systems

170. Course Code

INT430					
171. Semester / Year					
First / Second Semester 2023–2024					
172. The history of preparation of this description					
11/2/2024					
173. Available Attendance Forms					
In Class					
174. Number of Credit Hours (Total) / Number of Units (Total)					
45 hours (three hours weekly)					
3 units					
175. Course administrator' s name (if more than one name)					
Name: Aymen Saad Abd Alameer Email: aymen.abdalameer@atu.edu.iq					
176. Course Objectives					
Course Objectives		☐ Understand the principles and architecture of Decision Support Systems (DSS). ☐ Learn to design, implement, and evaluate DSS to aid organizational decision-making. ☐ Explore data-driven, model-driven, and knowledge-driven DSS methodologies. ☐ Develop skills to use tools and software for building and deploying DSS.			
177. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
178. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	47. ☐ Understand the fundamentals and importance of DSS in decision-making. 48. ☐ Identify and describe the components of a DSS. 49. ☐ Differentiate between various	1. ☐ Introduction to Decision Support Systems: Concepts, Importance, and Applications 2. ☐ Components of DSS: Data Management, Model Management, and User Interface	Lecture style Case study method Lab	Daily tests

		types of DSS and their applications. 50. Explain the role of DSS in structured, semi-structured, and unstructured decisions. 51. Explore data sources and their integration in DSS. 52. Use analytical tools to derive insights from data. 53. Develop and apply models for decision-making scenarios. 54. Integrate BI tools with DSS for enhanced functionality. 55. Understand the role of AI and expert systems in advanced DSS. 56. Explore collaboration tools in group decision support systems. 57. Address ethical and security challenges in DSS development and usage.	3. Types of DSS: Data-Driven, Model-Driven, and Knowledge-Driven Systems 4. Decision-Making Process: Structured, Semi-Structured, and Unstructured Decisions 5. Data Sources for DSS: Databases, Data Warehouses, and Data Lakes 6. Analytical Tools and Techniques: Statistical Analysis and Visualization Tools 7. Modeling in DSS: Optimization, Simulation, and Forecasting Models 8. Business Intelligence (BI) and DSS: Integration and Synergy 9. Artificial Intelligence in DSS: Role of Machine Learning and Expert Systems 10. Group Decision Support Systems (GDSS): Collaboration and Tools	
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		58. ? Evaluate DSS based on usability and performance metrics. 59. ? Analyze real-world DSS applications and their outcomes. 60. ? Build a functional DSS application using popular tools. 61. ? Demonstrate DSS design skills through a comprehensive project.	11. ? Ethics and Security in DSS: Privacy, Bias, and Data Integrity 12. ? Evaluating DSS: Usability, Effectiveness, and Efficiency Metrics 13. ? Case Studies: Successful DSS Implementations in Various Domains 14. ? Developing a DSS Application: Tools like Excel, Power BI, or Tableau 15. ? Capstone Project: Designing and Presenting a DSS for a Real-World Problem		
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179. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc
Participation and discussion within the lecture 10 marks
Practical assignment 10 marks
First month exam 15 points
Second month exam 15 points
Final Exam - Practical Side 10 marks
Final Exam – Theoretical 40 Points
Total 100 degrees

180. Learning and Teaching Resources

Required textbooks (methodology, if any)	"Decision Support and Business Intelligence Systems" by Efraim Turban, Ramesh Sharda, and Dursun Delen
Main references (sources)	"Decision Support Systems for Business Intelligence" by Vicki L. Sauter
Recommended books and references (scientific journals, reports...)	"Decision Support Systems and Intelligent Systems" by Efraim Turban and Jay E. Aronson

181. Course Name					
Image processing					
182. Course Code					
INT423					
183. Semester / Year					
First / Second Semester 2023–2024					
184. The history of preparation of this description					
11/2/2024					
185. Available Attendance Forms					
In Class					
186. Number of Credit Hours (Total) / Number of Units (Total)					
45 hours (three hours weekly)					
3 units					
187. Course administrator' s name (if more than one name)					
Name: Asmaa jasim kazim Email: asmaajasim@atu.edu.iq					
188. Course Objectives					
Course Objectives		• ☐ Understand the fundamentals of digital image processing and its applications. • ☐ Learn to manipulate and analyze images using various algorithms and techniques. • ☐ Explore image enhancement, restoration, and compression methods. • ☐ Develop hands-on skills in image processing using programming tools such as Python or MATLAB.			
189. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
190. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	62. ☐ Understand the basics and importance of digital image processing.	1. Introduction to Image Processing: Overview, Applications, and Tools 2. Digital Image Fundamentals:	Lecture style Case study method Lab	Daily tests

		63. Explain the components of digital images and color representation. 64. Acquire and represent images digitally with appropriate sampling techniques. 65. Enhance image quality using spatial domain techniques. 66. Apply frequency domain methods for image enhancement. 67. Restore degraded images using advanced techniques. 68. Perform geometric transformations on images. 69. Detect edges and segment objects in images effectively. 70. Use morphological operations for image refinement. 71. Extract meaningful	Pixels, Resolution, and Color Models 3. Image Acquisition and Representation: Digital Cameras and Sampling Techniques 4. Image Enhancement in Spatial Domain: Histogram Equalization and Filtering 5. Image Enhancement in Frequency Domain: Fourier Transform and Frequency Filters 6. Image Restoration: Noise Models and Noise Reduction Techniques 7. Geometric Transformations: Scaling, Rotation, and Warping 8. Edge Detection and Segmentation: Sobel, Canny, and Thresholding Techniques 9. Morphological Image Processing: Dilation, Erosion, Opening, and Closing 10. Feature Extraction: Corners, Edges, and Keypoints 11. Image Compression: Lossless and Lossy Compression Techniques 12. Object Recognition and Classification: Pattern Matching		
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		features for image analysis. 72. ☐ Understand and apply image compression methods. 73. ☐ Recognize and classify objects using machine learning algorithms. 74. ☐ Utilize deep learning frameworks for advanced image processing. 75. ☐ Explore real-world applications of image processing. 76. ☐ Create and present a functional image processing project.	and Machine Learning Basics 13. Introduction to Deep Learning for Image Processing: CNNs and Pre-Trained Models 14. Applications of Image Processing: Case Studies in Medicine, Security, and AI 15. Capstone Project: Developing an Image Processing Application		
191. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc Participation and discussion within the lecture 10 marks Practical assignment 10 marks First month exam 15 points Second month exam 15 points Final Exam - Practical Side 10 marks Final Exam – Theoretical 40 Points Total 100 degrees					
192. Learning and Teaching Resources					
Required textbooks (methodology, if any)			"Digital Image Processing" by Rafael C. Gonzalez and Richard E. Woods		
Main references (sources)			"Computer Vision: Algorithms and Applications" by Richard Szeliski		

Recommended books and references (scientific journals, reports...)	• "Programming Computer Vision with Python" by Jan Erik Solem
Electronic References, Websites	• https://opencv.org/

193. Course Name					
Decision support systems					
194. Course Code					
INT430					
195. Semester / Year					
First / Second Semester 2023–2024					
196. The history of preparation of this description					
11/2/2024					
197. Available Attendance Forms					
In Class					
198. Number of Credit Hours (Total) / Number of Units (Total)					
45 hours (three hours weekly) 3 units					
199. Course administrator' s name (if more than one name)					
Name: Aymen Saad Abd Alameer Email: aymen.abdalameer@atu.edu.iq					
200. Course Objectives					
Course Objectives		• ☐ Understand the principles and architecture of Decision Support Systems (DSS). • ☐ Learn to design, implement, and evaluate DSS to aid organizational decision-making. • ☐ Explore data-driven, model-driven, and knowledge-driven DSS methodologies. • ☐ Develop skills to use tools and software for building and deploying DSS.			
201. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
202. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	77. ☐ Understand the fundamentals and importance	16. ☐ Introduction to Decision Support Systems: Concepts,	Lecture style Case study method	Daily tests

		of DSS in decision-making. 78. ☐ Identify and describe the components of a DSS. 79. ☐ Differentiate between various types of DSS and their applications. 80. ☐ Explain the role of DSS in structured, semi-structured, and unstructured decisions. 81. ☐ Explore data sources and their integration in DSS. 82. ☐ Use analytical tools to derive insights from data. 83. ☐ Develop and apply models for decision-making scenarios. 84. ☐ Integrate BI tools with DSS for enhanced functionality. 85. ☐ Understand the role of AI and expert systems in advanced DSS. 86. ☐ Explore collaboration tools in group	Importance, and Applications 17. ☐ Components of DSS: Data Management, Model Management, and User Interface 18. ☐ Types of DSS: Data-Driven, Model-Driven, and Knowledge-Driven Systems 19. ☐ Decision-Making Process: Structured, Semi-Structured, and Unstructured Decisions 20. ☐ Data Sources for DSS: Databases, Data Warehouses, and Data Lakes 21. ☐ Analytical Tools and Techniques: Statistical Analysis and Visualization Tools 22. ☐ Modeling in DSS: Optimization, Simulation, and Forecasting Models 23. ☐ Business Intelligence (BI) and DSS: Integration and Synergy 24. ☐ Artificial Intelligence in DSS: Role of Machine Learning	Lab	
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		decision support systems. 87. ? Address ethical and security challenges in DSS development and usage. 88. ? Evaluate DSS based on usability and performance metrics. 89. ? Analyze real-world DSS applications and their outcomes. 90. ? Build a functional DSS application using popular tools. 91. ? Demonstrate DSS design skills through a comprehensive project.	and Expert Systems 25. ? Group Decision Support Systems (GDSS): Collaboration and Tools 26. ? Ethics and Security in DSS: Privacy, Bias, and Data Integrity 27. ? Evaluating DSS: Usability, Effectiveness, and Efficiency Metrics 28. ? Case Studies: Successful DSS Implementations in Various Domains 29. ? Developing a DSS Application: Tools like Excel, Power BI, or Tableau 30. ? Capstone Project: Designing and Presenting a DSS for a Real-World Problem		
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203. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc

Participation and discussion within the lecture 10 marks

Practical assignment 10 marks

First month exam 15 points

Second month exam 15 points

Final Exam - Practical Side 10 marks

Final Exam – Theoretical 40 Points

Total 100 degrees

204. Learning and Teaching Resources

Required textbooks (methodology, if any)	• "Decision Support and Business Intelligence Systems" by Efraim Turban, Ramesh Sharda, and Dursun Delen
Main references (sources)	• "Decision Support Systems for Business Intelligence" by Vicki L. Sauter
Recommended books and references (scientific journals, reports...)	• "Decision Support Systems and Intelligent Systems" by Efraim Turban and Jay E. Aronson
Electronic References, Websites	• https://www.gartner.com/

16.8 Course Description (Courses System)/ 4th level/ 2nd semester

205.	Course Name
	Data mining
206.	Course Code
	INT421
207.	Semester / Year
	First / Second Semester 2023–2024
208.	The history of preparation of this description
	11/2/2024
209.	Available Attendance Forms
	In Class
210.	Number of Credit Hours (Total) / Number of Units (Total)
	45 hours (three hours weekly) 3 units
211.	Course administrator' s name (if more than one name)
	Name: Haneen Hamzah Alwen Email: haneen.hamza1@atu.edu.iq
212.	Course Objectives
Course Objectives	• □ Understand the principles, techniques, and applications of data mining. • □ Learn to preprocess and explore large datasets for meaningful insights. • □ Develop skills to implement various data mining algorithms for classification, clustering, and association.

		❑ Apply data mining techniques to real-world problems in domains such as business, healthcare, and social media.			
213. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
214. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	92.❑ Understand the role of data mining in extracting valuable insights from data. 93.❑ Describe and apply the steps of the data mining process. 94.❑ Preprocess raw data to make it suitable for mining. 95.❑ Use visualization tools to explore and analyze datasets. 96.❑ Implement basic classification algorithms for supervised learning tasks. 97.❑ Apply advanced classification techniques for complex problems.	1.❑ Introduction to Data Mining: Concepts, Importance, and Applications 2.❑ Data Mining Process: CRISP-DM Framework and Workflow 3.❑ Data Preprocessing: Cleaning, Transformation, and Reduction 4.❑ Exploratory Data Analysis (EDA): Visualizing and Understanding Data 5.❑ Classification Techniques: Decision Trees and Naïve Bayes 6.❑ Advanced Classification: Support Vector Machines (SVMs) and Neural Networks 7.❑ Clustering Techniques: K-Means and	Lecture style Case study method Lab	Daily tests

	98. ? Use clustering methods to identify patterns and group data. 99. ? Generate association rules for discovering relationships in datasets. 100. ? Detect and analyze anomalies in data. 101. ? Extract insights from text data using text mining techniques. 102. ? Mine data from web sources and social media platforms. 103. ? Apply data mining techniques to handle big data effectively. 104. ? Evaluate and validate the performance of data mining models. 105. ? Understand ethical considerations and ensure responsible data mining practices. 106. ? Demonstrate data mining	Hierarchical Clustering 8. ? Association Rule Mining: Apriori Algorithm and Market Basket Analysis 9. ? Anomaly Detection: Outlier Analysis and Applications 10. ? Text Mining: Natural Language Processing (NLP) and Sentiment Analysis 11. ? Web Mining: Crawling, Content Analysis, and Social Media Mining 12. ? Big Data Mining: Tools and Techniques for Mining Large-Scale Data 13. ? Evaluation and Validation: Metrics, Cross-Validation, and Bias-Variance Tradeoff 14. ? Ethics in Data Mining: Privacy, Security, and Responsible Use 15. ? Capstone Project: Solving a Real-World Problem Using Data Mining Techniques	
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		proficiency through a comprehensive project.			
215. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc Participation and discussion within the lecture 10 marks Practical assignment 10 marks First month exam 15 points Second month exam 15 points Final Exam - Practical Side 10 marks Final Exam – Theoretical 40 Points Total 100 degrees					
216. Learning and Teaching Resources					
Required textbooks (methodology, if any)		• "Data Mining: Concepts and Techniques" by Jiawei Han, Micheline Kamber, and Jian Pei			
Main references (sources)		• "Introduction to Data Mining" by Pang-Ning Tan, Michael Steinbach, and Vipin Kumar			
Recommended books and references (scientific journals, reports...)		• "Mining the Social Web" by Matthew A. Russell			
Electronic References, Websites		• https://www.kdnuggets.com/			

217. Course Name	English 4
218. Course Code	MTU400
219. Semester / Year	First / Second Semester 2023–2024
220. The history of preparation of this description	11/2/2024
221. Available Attendance Forms	In Class
222. Number of Credit Hours (Total) / Number of Units (Total)	30 hours (three hours weekly) 2 units
223. Course administrator' s name (if more than one name)	Name: Muhamed Kadhim Wudaa Email: muhamed.wudaa.cku@atu.edu.iq
224. Course Objectives	
Course Objectives	• Enhance upper-intermediate English skills in reading, writing, listening, and speaking.

	• Expand vocabulary and grammatical structures to express complex ideas. • Develop confidence in engaging with academic, social, and professional communication. • Deepen understanding of English through cultural, literary, and practical contexts.				
225. Teaching and Learning Strategies					
Strategy	The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.				
226. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	107. ☐ Discuss achievements and set personal and professional goals. 108. ☐ Describe cultural traditions and compare societal norms. 109. ☐ Use workplace-related vocabulary and phrases for professional contexts. 110. ☐ Engage in discussions about media and technology's role in society. 111. ☐ Express opinions on environmental issues and suggest actionable solutions.	1. ☐ Unit 1: Achievements: Discussing Success and Goals (Review of Tenses) 2. ☐ Unit 2: Society and Culture: Describing Traditions and Customs 3. ☐ Unit 3: The Working World: Vocabulary and Expressions for Workplace Communication 4. ☐ Unit 4: Media and Technology: Discussing Advancements and Their Impacts 5. ☐ Unit 5: The Environment: Expressing Opinions and Proposing Solutions 6. ☐ Unit 6: Personal Development: Talking About Skills, Hobbies, and Learning Goals 7. ☐ Unit 7: Health and Fitness: Discussing Health Issues and Giving Advice	Lecture style Case study method	Daily tests

		112. ☐ Talk about personal development, hobbies, and lifelong learning goals. 113. ☐ Discuss health and fitness topics while providing advice and solutions. 114. ☐ Analyze creative works, including art, literature, and films. 115. ☐ Share travel experiences and plan trips using appropriate vocabulary. 116. ☐ Discuss global challenges with clarity and insight. 117. ☐ Practice effective communication skills in debates and negotiations. 118. ☐ Write structured and coherent reports, articles, and essays. 119. ☐ Deliver confident and impactful oral presentations and speeches.	8. ☐ Unit 8: Art and Literature: Analyzing and Interpreting Creative Works 9. ☐ Unit 9: Travel and Adventure: Describing Experiences and Planning Trips 10. ☐ Unit 10: Global Issues: Discussing Political, Economic, and Social Challenges 11. ☐ Unit 11: Communication Skills: Debating and Negotiating 12. ☐ Unit 12: Writing Skills: Developing Reports, Articles, and Essays 13. ☐ Unit 13: Speaking Skills: Practicing Interviews, Presentations, and Public Speaking 14. ☐ Unit 14: Preparing for the Future: Discussing Dreams, Ambitions, and Career Paths 15. ☐ Unit 15: Review and Final Assessment: Integration of All Skills	
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		120. ? Discuss future aspirations and career ambitions.			
		121. ? Demonstrate mastery of integrated English skills through a final assessment.			

227. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc
Participation and discussion within the lecture 10 marks
Practical assignment 10 marks
First month exam 15 points
Second month exam 15 points
Final Exam - Practical Side 10 marks
Final Exam – Theoretical 40 Points
Total 100 degrees

228. Learning and Teaching Resources

Required textbooks (methodology, if any)	"New Headway Upper-Intermediate Student's Book" by Liz and John Soars
Main references (sources)	"English Grammar in Use" by Raymond Murphy (Upper-Intermediate Edition)
Recommended books and references (scientific journals, reports...)	"English Vocabulary in Use" by Michael McCarthy and Felicity O'Dell (Upper-Intermediate Edition)
Electronic References, Websites	https://hw.online/learn/

229.	Course Name
	Modeling and Simulation
230.	Course Code
	INT431
231.	Semester / Year
	First / Second Semester 2023–2024
232.	The history of preparation of this description
	11/2/2024
233.	Available Attendance Forms

In Class					
234. Number of Credit Hours (Total) / Number of Units (Total)					
45 hours (three hours weekly) 3 units					
235. Course administrator' s name (if more than one name)					
Name: Mujtaba Zuhair Ali Email: mujtaba.z.ali@atu.edu.iq					
236. Course Objectives					
Course Objectives		• ☐ Understand the fundamental concepts and techniques of modeling and simulation. • ☐ Learn to develop mathematical models and implement simulations for real–world systems. • ☐ Explore tools and software used for modeling and simulation. • ☐ Analyze and validate simulation results for decision–making and optimization.			
237. Teaching and Learning Strategies					
Strategy		The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.			
238. Course Structure					
The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	33. Define the role and scope of modeling and simulation in problem-solving. 34. Develop mathematical models for real-world systems. 35. Analyze dynamic systems using feedback loops. 36. Apply probability and statistical methods in simulations. 37. Use Monte Carlo techniques for risk analysis and decision-making. 38. Build discrete event simulation models for	1. ☐ Introduction to Modeling and Simulation: Concepts, Types, and Applications 2. ☐ Mathematical Modeling: Continuous and Discrete Models 3. ☐ System Dynamics: Understanding Feedback Loops and System Behavior 4. ☐ Probability and Statistics in Simulation: Random Variables and Distributions 5. ☐ Monte Carlo Simulation: Techniques and Applications	Lecture style Case study method Lab	Daily tests

		complex processes. 39. Simulate and analyze queuing systems for performance evaluation. 40. Develop agent-based models for systems with interacting entities. 41. Utilize simulation software to model and analyze systems. 42. Apply numerical methods to solve mathematical models. 43. Validate simulation models to ensure accuracy and reliability. 44. Optimize models for improved system performance. 45. Explore advanced simulation techniques and their applications. 46. Analyze real-world problems through simulation case studies. 47. Demonstrate proficiency in modeling and simulation through a comprehensive project. 1.	6. ? Discrete Event Simulation: Modeling Processes and Events 7. ? Queuing Systems: Analysis and Simulation 8. ? Agent-Based Modeling: Concepts and Implementation 9. ? Simulation Software: Introduction to Tools (e.g., MATLAB, Simulink, AnyLogic) 10. ? Numerical Methods in Simulation: Integration, Differentiation, and Root Finding 11. ? Verification and Validation: Ensuring Model Accuracy and Reliability 12. ? Optimization in Simulation: Techniques and Applications 13. ? Advanced Topics: Hybrid Models and Real-Time Simulation 14. ? Applications of Modeling and Simulation: Case Studies in Engineering, Healthcare, and Business 15. ? Capstone Project: Developing and Presenting a Simulation Model	
239. Course Evaluation				

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc
 Participation and discussion within the lecture 10 marks
 Practical assignment 10 marks
 First month exam 15 points
 Second month exam 15 points
 Final Exam - Practical Side 10 marks
 Final Exam – Theoretical 40 Points
 Total 100 degrees

240. Learning and Teaching Resources

Required textbooks (methodology, if any)	• "System Modeling and Simulation: An Introduction" by Frank L. Severance
Main references (sources)	• "Simulation Modeling and Analysis" by Averill M. Law and W. David Kelton
Recommended books and references (scientific journals, reports...)	• "Discrete-Event System Simulation" by Jerry Banks, John S. Carson II, Barry L. Nelson, and David M. Nicol
Electronic References, Websites	• https://www.mathworks.com/

241. Course Name

Multimedia

242. Course Code

INT425

243. Semester / Year

First / Second Semester 2023–2024

244. The history of preparation of this description

11/2/2024

245. Available Attendance Forms

In Class

246. Number of Credit Hours (Total) / Number of Units (Total)

45 hours (three hours weekly)

3 units

247. Course administrator' s name (if more than one name)

Name: Asmaa jasim kazim Email: asmaajasim@atu.edu.iq

248. Course Objectives

Course Objectives	• □ Understand the principles, technologies, and tools used in multimedia systems. • □ Learn to create and manipulate multimedia elements, including text, images, audio, video, and animations.
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	□ Explore multimedia file formats, compression techniques, and delivery methods. □ Develop skills to design and implement multimedia projects for various platforms.
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249. Teaching and Learning Strategies

Strategy	The course follows an active learning strategy that relies on the active participation of students in the lecture, and includes activities such as group discussions, problem-solving exercises and case studies.
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250. Course Structure

The week	Weekly Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
15 weeks	3 hours	2. □ Understand the role and applications of multimedia in technology and communication. 3. □ Apply text design principles in multimedia projects. 4. □ Edit and manipulate digital images for multimedia purposes. 5. □ Record, edit, and integrate audio into multimedia systems. 6. □ Create and compress videos suitable for different platforms. 7. □ Develop basic animations using multimedia tools.	1. □ Introduction to Multimedia: Concepts, Importance, and Applications 2. □ Text in Multimedia: Fonts, Typography, and Text Design 3. □ Digital Image Basics: Formats, Color Models, and Image Editing 4. □ Audio in Multimedia: Formats, Sampling, and Editing Techniques 5. □ Video in Multimedia: Formats, Frame Rates, and Compression 6. □ Animations in Multimedia: Principles, Types, and Tools 7. □ Multimedia Authoring Tools: Overview and	Lecture style Case study method Lab	Daily tests

		8. ? Use multimedia authoring tools to combine various media elements. 9. ? Differentiate between multimedia file formats and their uses. 10. ? Apply compression techniques to optimize multimedia files. 11. ? Understand the workings of multimedia systems and streaming technologies. 12. ? Create interactive multimedia elements for user engagement. 13. ? Implement UX principles to enhance multimedia application usability. 14. ? Analyze real-world multimedia applications and their impact. 15. ? Address ethical and copyright issues in multimedia	Examples (e.g., Adobe Animate, Unity) 8. ? Multimedia File Formats: Differences and Applications 9. ? Compression Techniques: Lossless and Lossy Compression for Media 10. ? Multimedia Systems and Networks: Streaming, Buffering, and Delivery 11. ? Interactive Multimedia: Design and Development of Interactive Elements 12. ? User Experience (UX) in Multimedia: Principles of Effective Design 13. ? Multimedia Applications: Case Studies in Education, Entertainment, and Marketing 14. ? Ethics and Copyright in Multimedia: Legal and Ethical Considerations 15. ? Capstone Project: Designing		
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		content creation. 16. ? Demonstrate multimedia skills through a comprehensive project.	and Presenting a Multimedia Application		
251. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily, oral, monthly, written exams, reports etc Participation and discussion within the lecture 10 marks Practical assignment 10 marks First month exam 15 points Second month exam 15 points Final Exam - Practical Side 10 marks Final Exam – Theoretical 40 Points Total 100 degrees					
252. Learning and Teaching Resources					
Required textbooks (methodology, if any)			• "Multimedia: Making It Work" by Tay Vaughan		
Main references (sources)			• "Fundamentals of Multimedia" by Ze-Nian Li and Mark S. Drew		
Recommended books and references (scientific journals, reports...)			• "Digital Multimedia" by Nigel Chapman and Jenny Chapman		
Electronic References, Websites			• https://www.khanacademy.org/		