

Academic Program Description Form

University Name: AL_Furat AL_Awsat Technical University

Faculty/Institute: Karbala Polytechnic college

Scientific Department: Department of information Technology
Engineering

Academic or Professional Program Name: Information Technology
Engineering.

Final Certificate Name: Diploma

Academic System: Semester

Description Preparation Date: 11/01/2026

File Completion Date: 18/01/2026

Signature:

Head of Department Name:

Prof.Dr.Wathiq Laftah Abd Ali

Signature:

Scientific Associate Name:

Assist.Prof.Dr. Mohammed Fadhil Neamha

Date: 25/01/2026

Date: 25/01/2026

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 25/1/2026

Name and Signature: Assist.Prof. Ali neamah hasan

Fadil M. Dahir

Prof.Dr Fadil M.Dahir

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

2025

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.

Academic Program Description Form

University Name: AL_Furat AL_Awsat Technical University

Faculty/Institute: Karbala Polytechnic college

Scientific Department: Department of information Technology Engineering .

Academic or Professional Program Name: of information Technology

Engineering

Final Certificate Name: Diploma

Academic System: Semester

Description Preparation Date: 10/1/2026

File Completion Date: 27/2/2026

Signature:

Head of Department Name:

Prof.Dr Wathiq Laftah Abd.Ali

Date:

Signature:

Scientific Associate Name:

Asst.Prof.Dr Mohammed Fadel Neamaha

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Name and Signature: Assest.prof Ali neamah hasan

Prof.Dr Fadil M.Dahir

1. Program Vision

Providing society and the labor market with efficient and distinguished personnel capable of keeping pace with rapid scientific and technological developments in the fields of computer technology and information technology

2. Program Mission

Developing and enhancing the scientific and technical knowledge and skills of students and consolidating the values and ethics of the profession and scientific integrity

3. Program Objectives

1. Preparing technical cadres characterized by high efficiency and professionalism.
2. Keeping pace with technological developments in the fields of computers and smart devices and providing them to students with modern methods.
3. Strengthening the student's confidence in the importance of his specialty and his pioneering role in building a promising future for the nation and future generations.
4. Openness to society and state institutions to find effective technical solutions to some of the problems facing the country and its institutions.
5. Preparing and holding courses, seminars and training programs according to the need of the labor market and state institutions for the purpose of improving institutional performance.
6. Conducting original scientific research that addresses national problems.

4. Program Accreditation

The department has not yet been granted programmatic accreditation

5. Other external influences

nothing

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	3	6		
College Requirements	2	10		
Department Requirements	13	60		
Summer Training	1	4		
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	Practical
1 ^{fr} year	ITE121-22-PM	C++ Programming Advacne	2	2
1 ^{fr} year	ITE122-22-PM	Computer Maintenance	2	2
1 ^{fr} year	ITE123-22-PM	Computer Architecture	2	3
1 ^{fr} year	ITE124-22-PM	Internet Techniques	1	2
1 ^{fr} year	ITE125-22-PM	Statistics	2	1
1 ^{fr} year	ATU10	English Language	2	0

8. Expected learning outcomes of the program	
Knowledge	
Ability to apply knowledge at work to enter and analyze computer data.	Possessing extensive knowledge
Skills	
_the ability to design a system component or process to meet sustainable constraints	Possessing extensive knowledge
Ability to work within multidisciplinary teams to analyze and solve problems	Possessing extensive knowledge
Ethics	
Ability to communicate effectively in different ways.	Possessing extensive knowledge
The broad education necessary to understand the impact of computer solutions on society and the surrounding environment	Possessing extensive knowledge

9. Teaching and Learning Strategies
*brainstorming *enhancing student participation and interaction

10. Evaluation methods
Daily and quarterly theoretical and practical tests
11. Faculty

Faculty Members						
Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Professor		*			*	
Assistant Professor		*			*	
Lecturer	*				*	
Assistant Lecturer		*			*	
Assistant Lecturer		*			*	
Assistant Lecturer		*			*	
Assistant Lecturer		*			*	
Assistant Lecturer	*				*	

Professional Development
Mentoring new faculty members
Organizing periodic meetings for faculty members in order to enhance their academic knowledge whether at the level of teaching or scientific research methods of dealing with students and classroom management
Professional development of faculty members
Workshops seminars and training programs are held periodically in order to develop the skills and capabilities of faculty members

12. Acceptance Criterion

The applicant of admission to the computer systems technology department programs is required to have an Iraqi preparatory certificate scientific stream or its equivalent and from the scientific stream only

_student admission is subject to the central admission line by the ministry of higher education and scientific research

13. The most important sources of information about the program

Following up on the latest developments in the corresponding scientific departments in reputable international universities in order to benefit from pioneering experiences and update curricula and methods or research teaching and training

14. Program Development Plan

1. Recognize and nurture students with outstanding potential/achievements
2. Developing and improving summer training
3. Improving teaching and learning skills by placing teaching and technical personnel in advanced courses in international universities
4. Continuous development of the department's infrastructure
5. Encouraging teamwork among students
6. Opening the door for appointments in order to increase the number of department teachers in order to fill the acute shortage
7. Developing the department's laboratories by providing them with the latest computers and accessories as well as devices and equipment for computer networks

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

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
1 ^{fr} year	ITE121-22-PM	C++ Programming Advacne				/	/	/	/	/	/	/	/	/	/
1 ^{fr} year	ITE122-22-PM	Computer Maintenance				/	/	/	/	/	/	/	/	/	/
1 ^{fr} year	ITE123-22-PM	Computer Architecture				/	/	/	/	/	/	/	/	/	/
1 ^{fr} year	ITE124-22-PM	Internet Techniques				/	/	/	/	/	/	/	/	/	/
1 ^{fr} year	ITE125-22-PM	Statistics				/	/	/	/	/	/	/	/	/	/
1 ^{fr} year	ATU10	English Language				/	/	/	/	/	/	/	/	/	/

Course Description Form

Course Description Model: C++ Programming

1. Course Name	
C++ Programming advance	
2. Course Code	
3. Semester / Year	
Semesterly / First	
4. Date of Preparation	
19\10\2026	
5. Attendance Type	
Mandatory (Theoretical and Practical Lectures)	
6. Total Study Hours / Total Units	
60 hours / 4 units	
7. Course Instructor Name (if more than one is mentioned)	
Asst. Lec. Maryam Qays Kadhim Name: Email: maryam.kadhim@atu.edu.iq	
8. Course Objectives	
The objectives of the subject material	To provide theoretical and practical knowledge of network programming. To enable students to develop, implement, manage, and troubleshoot network programming issues in personal and professional contexts.
9. Teaching and Learning Strategies	
Strategy	➤ Theoretical and Practical Lectures: Direct instruction for core concepts. ➤ Problem Identification: Diagnosis of issues through explanation, exercises, and in-class training. ➤ Practical Applications: Practical sessions to help students understand how devices, operating systems, and applications work.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit/Topic Name	Learning Method	Evaluation Method
1	4	Understanding what a programming language is, the history and development of programming languages, and identifying different programming language levels.	• Abstract of programming languages • What's a program language? • The date and development of programming languages • Levels of programming languages	Q&A	Lecture & Discussion
2	4	Familiarity with C++ program contents, understanding and simplifying the basic files included in a program, and knowing the position of C++ within programming language levels.	• Basic essentials for C++ language/ C++ language concepts • What's C++ program contains? • What are the basic files? Simple explanation for basic files, that C++ program include • C++ language: beginning, development, its location within Levels of programming languages	Exercises	Lecture & Discussion
3	4	Identifying language symbols, definition names, keywords, and methods of representing constants and variables.	• Basic element and tools of C++ language • Language symbols • Definitions name • keywords • Constant represents • Variables represent	Exercises	Lecture & Discussion

4	4	Distinguishing between data types (char, integer, real, and Boolean), understanding memory representation methods, and learning how to convert between different data types.	• Data types in C++, and the represent methods in memory • char type • integer type • real type • Boolean (logical) type • Converting between deferent data types	Exercises	Lecture 8 Discussion
5	4	Ability to formulate arithmetic expressions, understanding arithmetic operations and their priorities, and the manner of converting mathematical expressions to C++ code.	• Expressions types in C++ language, how formulate expression: • Arithmetic expression / deferent arithmetic operation and its priorities / conversion manner of arithmetic expression to Arithmetic expression in C++ language / deferent examples	Q&A	Lecture 8 Discussion
6	4	Learning how to assign primary values to constants and variables, using spaces and brackets, and identifying types of comments and special tools.	• Give the primary values of constants and variables • Spaces and brackets • Type of comments • Special tools	Q&A	Lecture 8 Discussion
7	4	Understanding control, conditional, and loop statements, and identifying basic conditional tools.	• Control, conditional, and loop statements • Cond. Statement • Cond. Tools	Exercises	Lecture 8 Discussion

8 - 10	12	Mastery of using Minim tools in programming.	• Minim tools	Exercises	Lecture & Discussion
11	4	Mastering the "If" conditional statement, "If...else" statement, and handling nested conditionals.	• If conditional statement • If...else statement • Nested conditional	Exercises	Lecture & Discussion
12 - 13	8	Understanding and using the "Switch" selection statement and nested conditional statements.	• Switch conditional statement • Nested conditional statement	Q&A	Lecture & Discussion
14 - 15	8	Mastering repetition statements using "for loop" and handling nested for loops.	• Repetition statements for loop, Nested for	Exercises	Lecture & Discussion

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily and oral exams, monthly and written exams, reports, etc.

12. Learning and Teaching Resources

Required Textbooks	C++ Primer Fifth Edition, Stanley B. Lippman, Josée Lajoie, Barbara E. Moo
Main References	Beginning C++23, From Beginner to Pro, Seventh Edition, Ivor Horton, Peter Van Weert
Supporting Books and References	
Electronic References, Internet Sites	

Course Description Form

13. Course Name:	
Computer maintenance	
14. Course Code:	
Nothing	
15. Semester / Year:	
Semester / First Stage	
16. Description Preparation Date:	
2026-02-12	
17. Available Attendance Forms:	
Mandatory attendance	
18. Number of Credit Hours (Total) / Number of Units (Total)	
60 hours	
19. Course administrator's name (mention all, if more than one name)	
Name: Hassan Salah Hassan Name: Ashraf Sabri Waheed Email: hasan.hasan.ikr@atu.edu.iq Email: ashraf.waheed.ikr@atu.edu.iq	
20. Course Objectives	
Course Objectives	1. To introduce students to the fundamental concepts of computer maintenance and its hardware and software components. 2. To enable students to understand how computers work and diagnose common malfunctions. 3. To equip students with practical skills in disassembling, assembling, and maintaining computer components. 4. To train students in installing operating systems and essential programs and troubleshooting software problems. 5. To develop students' ability to use diagnostic and maintenance tools and software effectively. 6. To enhance occupational safety skills when handling electronic devices and equipment. 7. To prepare students to address and resolve technical problems scientifically and systematically.
21. Teaching and Learning Strategies	
Strategy	1. Theoretical lectures explaining the fundamental concepts of computer component and maintenance basics. 2. Hands-on training through disassembling and reassembling computer parts in the lab.

	3. Problem-based learning through presenting real-life malfunctions and requiring analysis and resolution. 4. Simulation learning using virtual programs or environments to experience malfunctions and maintenance procedures. 5. Cooperative learning by dividing students into groups to complete maintenance tasks. 6. Demonstrations by the instructor of the correct maintenance steps in practice. 7. Self-learning by assigning students additional resources and technical explanation. 8. Continuous practical assessment through practical tests in the lab to measure acquired skills.
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22. Course Structure

We ek	Hour s	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	The student should be able to define computer maintenance and its importance.	Introductory overview of the subject	It distinguishes between different types of ready-made applications according to areas of use.	Daily questions and tests
2	4	The student should identify the hardware components of the computer.	Computer hardware components	It explains the role of the operating system in managing computer resources.	Daily questions and tests
3	4	The student should explain the function of the power supply unit.	Power Supply	It distinguishes the function of each component of the user interface.	Daily questions and tests
4	4	The student should be able to define the motherboard and its function.	motherboard	To familiarize oneself with system settings options such as date and time, sound, and screen.	Daily questions and tests
5	4	The student should define the processor and their role.	Processor	To explain the advantages of Word such as text formatting, creating tables and inserting images.	Daily questions and tests
6	4	The student should define the operating system and their role.	Processor	It distinguishes between the different commands and icons for each section.	Daily questions and tests
7	4	The student should be able to distinguish between RAM and ROM memory types and the function of each.	RAM & ROM	He gains the skill of page layout, including margins, orientation, and paper size.	Daily questions and tests
8	4	The student should be able to distinguish between the types of secondary storage units and how they work.	Types of secondary storage and storage mechanisms	It explains the advantages of Excel such as data organization, automatic calculations, and creating charts.	Daily questions and tests

9	4	The student should be able to distinguish between the types of secondary storage units and how they work.	Types of secondary storage and storage mechanisms	It distinguishes between the basic commands and icons for each tab.	Daily questions and tests
1	4	The student should be able to distinguish between the types of secondary storage units and how they work.	Types of secondary storage and storage mechanisms	It explains how to select cells, edit their contents, and enter data.	Daily questions and tests
1	4	The student should be able to define a laser disc drive and its function.	laser disc drive	It explains the advantages of PowerPoint such as adding text, images, animations, and audio.	Daily questions and tests
1	4	The student should explain the steps for assembling the computer and the components of the system case.	Computer assembly and system case components	The student learns about the components of the main screen in PowerPoint and the function of each part.	Daily questions and tests
1	4	The student should explain the steps for assembling the computer and the components of the system case.	Computer assembly and system case components	The student acquires the steps of operating the slide show and navigating between slides.	Daily questions and tests
1	4	The student should be able to identify expansion ports and their functions.	Expansion slots	The student defines the concept of the Internet and its importance in exchanging information.	Daily questions and tests
1	4	The student should be able to identify expansion ports and their functions.	Expansion slots	The student defines a search engine and its function in finding information on the internet.	Daily questions and tests

23. Course Evaluation

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

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
Main references (sources)	
Book: Computer Maintenance	Qusay Abdullah Abdul Zaghoun
Upgrading and Repairing PCs	Scott Mueller
Computer Maintenance and Troubleshooting	Ron Gilster
CompTIA A+ Certification Guide	CompTIA
PC Hardware in a Nutshell	Robert Bruce Thompson
Electronic References, Websites	

Material Description Statistics

1- Course Name: Statistics
2- Course Code:
3- Semester/ My semester / Second semester
4- Date of Description Preparation: 2026 / 5 / 14
5- Available Attendance Modes: Physical attendance /
6- Total Study Hours (Total)/Total Units (Total): 60/
7- Course Coordinator Name (if more than one name, list all): teacher. Khalid hatoom swain
Name: teacher. Khalid hatoom swain Email: khalid.swain@atu.edu.iq
Asst. Prof. Khalid hatoom swain

8- Course Objectives:

Course Learning Objectives:	• To introduce students to fundamental statistical concepts and their importance in data analysis and decision-making within the field of information technology. • To enable students to collect, organize, and present data using various methods and appropriate digital tools. • To develop students' descriptive data analysis skills through measures of central tendency and dispersion. • To enhance students' understanding of probability and probability distribution concepts and connect them to real-world applications in technological work environments. • To qualify students to use statistical inference methods such as confidence intervals and hypothesis testing. • To prepare students to analyze relationships between variables using correlation coefficients and simple regression. • To introduce students to non-parametric statistical tests and their application to qualitative data in technical contexts. • To motivate students to apply statistical concepts in practical projects using real-world data from the field of information technology.
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9- Teaching and Learning Strategies:

Strategy:	1. Explain the subject matter to the students in detail. 2. Engage students in solving mathematical problems. 3. Solve mathematical problems using computers. 4. Discuss and debate related vocabulary. 5. Use brainstorming techniques to engage students and maintain their focus. 6. Create a Telegram group for direct communication with students. 7. To further engage students, the curriculum is divided into units, and a detailed plan is provided for each unit to help students study systematically. 8. Student assessment is conducted through various methods, including brainstorming questions, assignments, and daily and weekly tests.
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10- Course Structure:

Week	Hours	Desired Learning Outcomes	Unit or Topic Name	Learning Method	Assessment Method

Week 1	4	The student's ability to understand the applications of statistics in information technology	Introduction to Statistics • What are Statistics? Importance and applications in IT • Types of data: qualitative vs quantitative • Levels of measurement: nominal, ordinal, interval, ratio	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 2	4	The student's ability to understand the role of statistics in data science and information technology	Data Collection and Presentation • Methods of data collection (surveys, experiments, databases) • Organizing data: frequency distributions and tables Graphical representation: bar charts, histograms, pie charts	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 3	4	The student's ability to understand the applications of statistics in information technology	Descriptive Statistics – Measures of Central Tendency • Mean, median, and mode: calculation and interpretation Choosing the right measure	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions and exercises
Week 4	4	The student's ability to understand the role of statistics in data science and information technology	Descriptive Statistics – Measures of Dispersion • Range, variance, standard deviation, interquartile range • Understanding data spread and variability	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 5	4	The student's ability to understand the applications of statistics in information technology Cognitive and emotional	Data Visualization Techniques • Box plots, stem-and-leaf plots • Scatter plots and correlation basics • Using software/tools for visualization	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz

			(Excel/Google Sheets basics)		
Week 6	4	The student's ability to understand the role of statistics in data science and information technology	Probability Fundamentals • Basic probability concepts and rules • Sample space and events • Simple probability calculations	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 7	4	The student's ability to understand the applications of statistics in information technology	Discrete Probability Distributions • Introduction to random variables • Binomial distribution: concepts and examples • Applications in IT contexts	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 8	4	The student's ability to understand the role of statistics in data science and information technology	Continuous Probability Distributions • Normal distribution: properties and importance • Standard normal distribution and Z-scores • Using normal distribution tables	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 9	4	The student's ability to understand the applications of statistics in information technology	Sampling and Sampling Distributions • Population vs sample • Sampling methods and sample size considerations • Central Limit Theorem (conceptual understanding)	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 10	4	The student's ability to understand the role of statistics in data science and information technology	Estimation and Confidence Intervals • Point estimation • Confidence intervals for population mean (known and unknown variance) Interpretation of confidence levels	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
	4	The student's ability to	Hypothesis Testing – Basics	Lecture, discussion,	

Week 11		understand the applications of statistics in information technology	- Null and alternative hypotheses - Type I and Type II errors P-values and significance levels	collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 12	4	The student's ability to understand the role of statistics in data science and information technology	Hypothesis Testing – Tests on Means - One-sample Z-test and T-test - Two-sample tests for independent samples Applications in IT data analysis	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 13	4	The student's ability to understand the applications of statistics in information technology	Correlation and Regression Analysis - Pearson correlation coefficient - Simple linear regression: model and interpretation Using regression for prediction	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 14	4	The student's ability to understand the role of statistics in data science and information technology	Introduction to Non-Parametric Tests - When to use non-parametric tests - Chi-square test for independence and goodness of fit Examples relevant to IT datasets	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz
Week 15	4	The student's ability to understand the applications of statistics in information technology	Review and Project Presentation Recap of key concepts Discussion on real-world applications in IT	Lecture, discussion, collaborative learning, and applying the lecture to the R program.	Questions, exercises, and daily quiz

11- Course Assessment:

Grade distribution out of 100 according to student assignments such as daily preparation, daily and oral tests, monthly and written exams, reports, etc.

First Semester:

Module Evaluation Statistics

Formative Assessment		Quizzes	Practical: Lap	Attendance, Assignments, and Tests:	Report
	Time / Number	2	1	2	1
	Weight – (Marks)	10%	10%	10%	10%
	Week - Due	5 , 10	Continuous	5 , 10	10
12- Learning and Teaching Resources:					
1) Required textbooks (methodology, if applicable) / Nothing					
2) Main references and sources					
Source title			Author's name		
1) Statistiques descriptives et système R			Azzam Sabri		
2) Guide d'analyse statistique			Professeur Dr Muhammad Subhi Abu Saleh, Dr		
3) Principes des statistiques			Amjad Dhaifallah Nasser		
4) Principes des statistiques			Khashaa Al-Rawi		
5) Statistiques			Taha Hussein Al-Zubaidi		
6) Méthodes statistiques appliquées			Dr Mahmoud Hassan Al-Mashhadani, Amir Hanna Mazhar		
7) Méthodes statistiques descriptives et inférentielle			Dr Hassan Yassin Ta'ma, Iman Hussein Hanoush		
8) Introduction à la théorie des probabilités			Dr Salem Issa Bader, Dr Imad Ghasabi Abayneh		
9) Théorie des probabilités			Jabbar Abdul Mudhi		
10) Fondements des probabilités			Prof. Dr. Khaled Zuhdi Khawaja		
Ouvrages et références recommandés (revues internationales, rapports)					
Références électroniques, sites web			You Tube		

Course Description Form

1. Course Name:

اللغة الانكليزية

2. Course Code:

3. Semester / Year:

السنة الأولى

4. Description Preparation Date:

20/2/2025

5. Available Attendance Forms:

مباشر

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

30 ساعة

7. Course administrator's name (mention all, if more than one name)

الاسم شهد صالح عبد المهدي

Email: shahad1986@atu.edu.iq

8. Course Objectives

Course Objectives - تعلم مهارات اللغة الإنكليزية و دمجها مع أدوات الذكاء الاصطناعي الهندسه البرمجيات و قواعد البيانات -

9. Teaching and Learning Strategies

Strategy

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name
1	2	Emotional and cognitive	Hello
2	2	Emotional and cognitive	Your world
3	2	Emotional and cognitive	Personal information
4	2	Emotional and cognitive	Family and friends

5	2	Emotional and cognitive	It's my life
6	2	Emotional and cognitive	Every day
7	2	Emotional and cognitive	Review
8	2	Emotional and cognitive	Places I like
9	2	Emotional and cognitive	where I live
10	2	Emotional and cognitive	Happy birthday
11	2	Emotional and cognitive	We had a good time
12	2	Emotional and cognitive	We can do it
13	2	Emotional and cognitive	Thank you very much
14	2	Emotional and cognitive	Here and now
15	2	Emotional and cognitive	It's time to go
11. Course Evaluation			
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily or			
12. Learning and Teaching Resources			
Required textbooks (curricular books only)	New headway beginner student book. New headway beginner work book.		
Main references (sources)	New headway beginner student book. New headway beginner work book.		
Recommended books and references (scientific journals, reports...)			
Electronic References, Websites	https://www.google.com/search?q=speak+now+3+student+book+pdf+free+download+FGDsYwgMyCQgFEEUYOxjCAzIJCAYQRRg7GMIDMgkIBxBFGDsYwgPSAQsyMzU2C		

Course Description Form

13.	Course Name:		
		Computer Architecture	
14.	Course Code:		
15.	Semester / Year:		
		Semester	
16.	Description Preparation Date:		
		21/5/2026	
17.	Available Attendance Forms:		
		Attendance (Theoretical and Practical lectures)	
18.	Number of Credit Hours (Total) / Number of Units (Total)		
		75 Hours	
19.	Course administrator's name (mention all, if more than one name)		
	Name: Ammar Jihad Khalaf		
	Email: ammar.jehad@atu.edu.iq		
20.	Course Objectives		
	Course Objectives	This course introduces students to the basic concepts of computer architecture and how computers work internally. Students will learn about computer components such as the CPU, memory, input/output devices, and data representation. The course also explains instruction execution, memory systems, processor performance, and modern computer technologies. By the end of the course, students will understand the fundamental structure and operation of computer systems and be prepared for more advanced computer engineering and programming subjects.	
21.	Teaching and Learning Strategies		
	Strategy	The course will use a combination of teaching and learning methods to help students understand the basic concepts of computer architecture. Lectures and presentations will be used to explain theoretical concepts and computer system components. Practical examples, classroom discussions, and problem-solving activities will help students connect theory with real-world applications. Laboratory exercises and simulation tools will be used to demonstrate how computer hardware and processor operations work. Students will also complete assignments, quizzes, and small projects to improve their analytical and technical skills. Active participation and collaborative learning will be encouraged throughout the course.	

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Students will be able to explain the basic concepts and importance of computer architecture, distinguish between computer organization and architecture, describe the historical development of computer architectures, and understand instruction sets, machine language, and basic assembly language concepts.	Introduction to Computer Architecture • Definition and importance • Organization vs architecture • History of architectures Instruction set, machine language, assembly overview	Lecture Practical lecture Oral discussion	Daily Quiz
2	5	Students will be able to identify the main CPU components and their functions, describe the instruction cycle process, classify different instruction types, and explain the role of registers in processor operations.	CPU Architecture and Organization • CPU components (ALU, registers, control unit) • Instruction cycle (fetch, decode, execute) • Instruction types Register functions	Lecture Practical lecture Oral discussion	Daily Quiz
3	5	Students will be able to compare RISC and CISC architectures, explain different addressing modes, understand instruction formats and encoding methods, and recognize common ISA examples such as x86 and ARM.	Instruction Set Architecture (ISA) • RISC vs CISC • Addressing modes • Instruction formats and encoding ISA examples (x86, ARM)	Lecture Practical lecture Oral discussion	Daily Quiz
4	5	Students will be able to differentiate between hardwired and microprogrammed control units, explain control signals and timing operations, describe microinstruction sequencing, and understand the role of the control unit in CPU operations.	Microprogramming and Control Unit • Hardwired vs microprogrammed control • Control signals and timing • Microinstruction sequencing	Lecture Practical lecture Oral discussion	Daily Quiz

			Control unit role		
5	5	Students will be able to describe different memory types including RAM, ROM, cache, and virtual memory; explain cache mapping techniques, evaluate cache performance, and understand the basics of paging and segmentation.	Memory Hierarchy and Cache • RAM, ROM, Cache, Virtual memory • Cache mapping (direct, associative) • Cache performance Paging and segmentation intro	Lecture Practical lecture Oral discussion	Daily Quiz
6	5	Students will be able to explain the functions of devices and interfaces, compare programmed and interrupt-driven I/O methods, describe DMA operations, and explain I/O controller functions.	Input/Output Systems • I/O devices and interfaces • Programmed vs interrupt-driven I/O DMA and I/O controllers	Lecture Practical lecture Oral discussion	Daily Quiz
7	5	Students will be able to explain the basics of instruction pipelining, identify different types of pipeline hazards, describe superscalar and VLIW concepts, and understand introductory concepts of parallel execution.	Pipeline and Parallelism • Instruction pipelining basics • Pipeline hazards (structural, data, control) • Superscalar, VLIW concepts Intro to parallel execution	Lecture Practical lecture Oral discussion	Daily Quiz
8	5	Students will be able to perform basic arithmetic logic operations, explain the structure and design of ALU, understand shifters and logic units, and describe overflow handling techniques.	Arithmetic Logic Unit (ALU) Design • Basic arithmetic operations • ALU structure and design • Shifters and logic units Overflow handling	Lecture Practical lecture Oral discussion	Daily Quiz
9	5	Students will be able to calculate and analyze performance metrics such as CPI, MIPS, and throughput; understand benchmarking and profiling methods.	Performance Measurement and Enhancement • CPI, MIPS, throughput	Lecture Practical lecture Oral discussion	Daily Quiz

		explain techniques used to improve processor performance.	Benchmarking and profiling Performance improvements (branch prediction, speculative execution)		
10	5	Students will be able to explain the basic concepts of multicore processors, C architectures, low-power design techniques, introductory quantum computing principles.	Special Topics in Modern Architectures - Multicore overview - GPU basics - Low-power design Quantum computing (intro)	Lecture Practical lecture Oral discussion	Daily Quiz
11	5	Students will be able to write simple assembly language programs, understand relationship between ISA and programming, and use basic assembly tools and simulators.	Assembly Language Basics - Simple assembly coding (x86 or ARM) - ISA vs programming impact Tools and simulators	Lecture Practical lecture Oral discussion	Daily Quiz
12	5	Students will be able to explain shared memory concepts in multi-processor systems, identify cache coherence challenges, describe MESI/MOESI protocols, and recognize real-world applications of cache coherence mechanisms.	Cache Coherence in Multicore Systems - Shared memory in multicore CPUs - Cache coherence challenges - MESI/MOESI protocols Real-world applications	Lecture Practical lecture Oral discussion	Daily Quiz
13	5	Students will be able to compare GPU and CPU architectures, explain different processing models and applications, understand FPGA structure and configuration, and identify applications of GPUs and FPGAs in modern computing systems.	Emerging Architectures: GPUs and FPGAs - Architecture of GPUs vs CPUs - Use cases and processing model of GPUs - Introduction to FPGAs: logic	Lecture Practical lecture Oral discussion	Daily Quiz

			blocks, configuration GPU/FPGAs in AI, data centers, embedded systems		
14	5	Students will be able to explain virtualization concepts, compare Type 1 and Type 2 hypervisors, describe CPU virtualization support technologies, and understand the role of virtualization in modern computing environments.	Introduction to Hardware Virtualization • Virtual machines and hypervisors • Type 1 vs Type 2 • CPU support (Intel VT-x, AMD-V) Virtualization in modern computing	Lecture Practical lecture Oral discussion	Daily Quiz
15	5	Students will be able to review and integrate the main concepts of computer architecture, solve practical problems, and demonstrate comprehensive understanding through discussions and examinations.	Review and Final Exam • Comprehensive course review Practice exercises, Q&A	Lecture Practical lecture Oral discussion	Daily Quiz

23. Course Evaluation

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

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	STRUCTURED COMPUTER ORGANIZATION
Main references (sources)	Computer organization and architecture: designing for performance / William Stallings.
Recommended books and references (scientific journals, reports...)	Digital Design and Computer Architecture
Electronic References, Websites	https://www.geeksforgeeks.org/computer-organization-architecture/computer-organization-and-architecture-tutorials/