

**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

2025-2026

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: Babylon Technical Institute

Scientific Department: Technical Electronics Department

Academic or Professional Program Name: Diploma

Final Certificate Name: Diploma in Electronics Technologies

Academic System: Electronics Branch: Annual

Smartphones Branch: Semester

Description Preparation Date: October 26, 2025

File Completion Date:

Signature: 
Head of Department Name:
Dr. Sarah Khammas Joee
Date: 1/02/2026

Signature: 
Scientific Associate Name:
Assistant Professor. Dr. Oras Khudhayer obayes
Date: 1/2/2026

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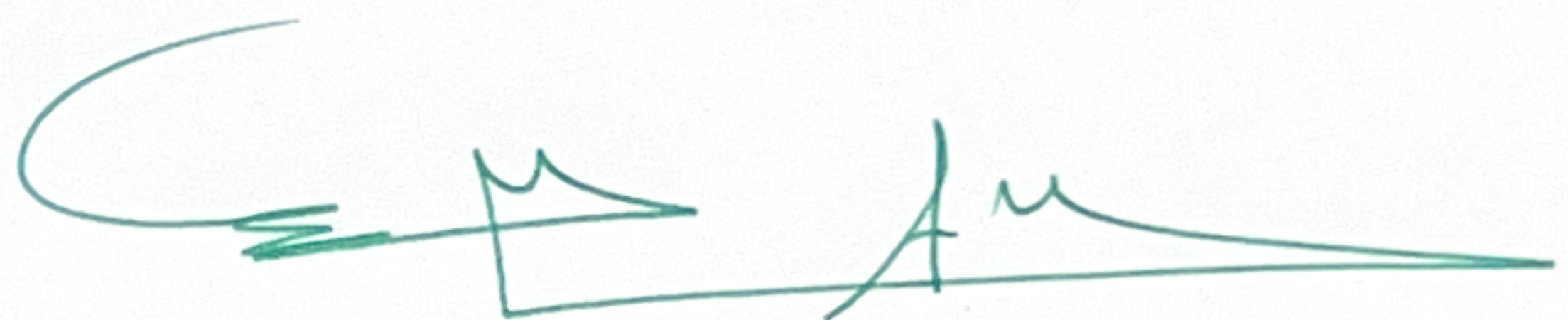
Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Assistant Professor Khansaa Azeez Obayes

Date: 1/2/2026

Signature: 



Approval of the Dean

Asst. Prof. Dr.
Ali Najah Kadhim
Dean of Babylon Technical Institute

1. Scientific Department, Department of Electronic Technologies
2. Name of the academic or vocational program: Electronics branch
3. Date of preparation of the description: October 26, 2025
4. Name of the final certificate: Technical Diploma
5. Academic system: Annual
6. Accreditation program: ABET
7. Other external influences: Private sector companies

1. Program Vision

The academic program aspires to achieve all its paragraphs and work on procession all changes and updates in the field reality and add them to the academic aspect with practical, applicable scientific visions.

2. Program Mission

The academic program provides a necessary summary of the most important characteristics of the program and the learning outcomes that the student is expected to achieve, demonstrating whether he has made the most of the available opportunities. It is accompanied by a description of each course within the program.

3. Program Objectives

The specialization aims to graduated qualified personnel to work in the labor market capable of operating and maintaining electronic circuits, audio and video devices, receiving and transmitting devices, microprocessor circuits, and others.

4. Program Accreditation

Nothing.

5. Other external influences

Nothing.

6. Program Structure / Electronic Department

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	16	13.56%	All courses are core and there are no electives
College Requirements	3	12	10.17%	All courses are core and there are no electives
Department Requirements	13	90	76.27%	All courses are core and there are no electives
Summer Training	-	Without units	-	All courses are core and there are no electives
Other	-	-	-	

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

7. Program Description – Electronic Department

Year/Level	Course Code	Course Name	Credit Hours	
			Theoretical	Practical
Second Year	ETE204-24-YM	Measuring Devices	2	2

Second Year	ETE205-24-YM	Microcomputer	2	2
Second Year	ETE203-24-YM	Electronic Circuits	2	2
Second Year	ATU221	Computer and artificial intelligence	1	2
Second Year	ETE229-24-YM	Control and PLC	1	2
Second Year	ETE208-24-YM	Maintenance of Electronic Devices	2	2
Second Year	ETE117-24-YM	Occupational Safety	1	1
Second Year	ETE206-24-YM	Project	2	2
Second Year	ETE201-24-YM	Communication	2	2
Second Year	ETE202-24-YM	Audio-visual equipment	2	2
Second Year	ATU241	Baath Party crimes	2	-----
First Year	ETE103-24-YM	Electrical Measurements Circuits	2	2
First Year	ETE105-24-YM	Mathematics	2	-----
First Year	ETE104-24-YM	Laboratories (mechanical/electronic)	1	2
First Year	ATU12	Computer and artificial intelligence	2	2
First Year	ATU13	Human Rights	2	-----
First Year	ETE106-24-YM	Engineering and Electrical Drawing	-----	3
First Year	ETE102-24-YM	Digital Circuits	2	2
First Year	ETE101-24-YM	Electronics	2	2
First Year	ATU101	Technical English Language	1	-----

8. Expected learning outcomes of the program

Knowledge

1) Understanding the fundamental principles of electrical and electronic circuits.	1) The student will be able to understand and maintain electronic systems.
2) Understanding the principles of electronic communication systems.	2) The student will be able to understand and maintain communication systems and audio-visual equipment.
3) Familiarity with industrial electronic control technologies and power electronics.	3) The student will be able to design integrated control systems.
4) Knowledge of the basics of occupational safety and technical standards in the field of electronics.	4) The student will be able to design electrical and electronic diagrams in accordance with technical safety requirements.

Skills

1) Building and assembling electronic circuits in the laboratory.	1) The student will be able to operate, maintain, build, and repair electronic circuits and audio-visual equipment.
2) Programming microcontrollers and processors.	2) The student will be able to program and operate electronic devices and circuits.
3) Analyzing electronic circuits and	3) The student will be able to analyze and understand electronic

systems using mathematical laws and models. 4) Designing electronic solutions for real-world engineering problems.	circuits using mathematical models. 4) The student will be able to find solutions to real-world electronic problems.
Ethics	
1) Adherence to engineering ethics. 2) Ability to learn independently and keep pace with technological advancements. 3) Time management skills and the ability to complete projects within deadlines. 4) Respect for quality and safety standards.	1) The graduate will be able to adhere to the ethics of the engineering profession in all their academic and practical activities. 2) They will possess the ability for continuous self-learning and to keep abreast of the latest technological developments in the field of electronics. 3) The graduate will demonstrate high efficiency in time management and in completing engineering projects and tasks within specified timeframes. 4) They will strictly adhere to quality and occupational safety standards in the design, implementation, and operation of electronic systems, thereby achieving a safe working environment and reliable engineering performance.

9. Teaching and Learning Strategies

Lectures, practical training in laboratories and summer field training in the field of work.

10. Evaluation methods

It is evaluated through attendance, daily lectures participation, and its behavior.
As well as through daily, monthly and yearly examinations, discussions and dialogues during the educational process.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant professor	Electrical /Electronics Engineering	Electronics and communications			1	
Lecturer	Electrical /control Engineering	Control			1	
Lecturer	Electrical /Electronics Engineering	Electronics			1	

Lecturer	Electrical Engineering	Power			1	
Assistant Lecturer	Electrical Engineering	Electronics			1	
Assistant Lecturer	Communications Engineering	Electronics and communications			1	
Assistant Lecturer	Electrical /Electronics Engineering	Electronics and communications			1	
Assistant Lecturer	Electrical Engineering	Electronics and communications			1	
Assistant Lecturer	Electrical power Engineering	Electrical power Engineering			1	
Assistant Lecturer	Electronics and communications Engineering	Electronics and communications Engineering			1	
Assistant Lecturer	Arabic language	language			1	
Assistant Lecturer	Arabic language	Teaching Methods			1	
Assistant Lecturer	Mathematics	Self-analysis +dynamic system			1	
Assistant Lecturer	Laser physics	Laser physics			1	
Assistant Lecturer	physics	Materials physics			1	
Assistant Lecturer	physics	Nano technology			1	

Professional Development

Mentoring new faculty members

The guidance mechanism in this field is internal through training courses, workshops, and discussion panels within the department or with other departments within the institution.

Professional development of faculty members

1. Teamwork within the group effectively and actively
2. Manage time effectively and set priorities with the ability to work on regular schedules
3. Leadership and the ability to direct and motivate others
4. Independence at work.

12.Acceptance Criterion

1. Iraqi nationality
2. Possession of an Iraqi preparatory school certificate supported by certification from the General Directorate of Education in the governorate or an equivalent certificate.
3. The student must be born in 1994 onwards.
4. Successful in the medical examination according to the conditions for each study, and the blind student (who meets the conditions for applying for appropriate humanitarian studies) will be submitted through central admission.
5. Devoted to study. It is not permissible to combine work and study (at the same time) in colleges and morning institutes. This includes employees of all government institutions. In order for them to continue studying, they must obtain a study leave from their departments starting in accordance with the instructions in force. It is not permissible to combine two studies either, and in the event of a dispute being proven. He writes to the Ministry to cancel his acceptance (the student employee can postpone his studies according to the instructions in order to fulfill the condition of completing two years of service - satisfactory to be entitled to obtain study leave and in accordance with the instructions for granting study leave).
6. Among my graduates:
 - a. The current academic year.
 - b. The previous academic year of those who are not centrally accepted into any college or institute, and they are accepted according to the minimum limits for the year of their graduation, and if it is proven that the student's acceptance into any college or institute will be returned to his original acceptance and it will be considered a year of failure for him.
7. Non-Iraqi students who hold an Iraqi preparatory certificate and are accepted centrally will be notified in writing to review the Central Admissions Department / Expatriates Division to state their exemption or demands for tuition fees in foreign currency according to the controls in Chapter Seven.

13. The most important sources of information about the program

- 1 - The curriculum determined by the Ministry of Higher Education and Scientific Research.
- 2- Available methodological books.
- 3- Books in the institute's library.

14. Program Development Plan

- 1- Student research.
- 2- Scientific seminars.
- 3- Personal training.
- 4- Scientific discussions.
- 5- Vocational training during the year

Program Skills Outline – Electronic Techniques Department

	Required program Learning outcomes														
				Knowledge				Skills				Ethics			
Year/ Level	Course Code	Course Name	Basic or optional	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First Year	ETE117-24-YM	Occupational safety	Basic				✓	✓				✓			✓
	ETE103-24-YM	Electrical Circuits and Measurements	Basic	✓	✓			✓			✓	✓			✓
	ETE105-24-YM	Mathematics	Basic	✓						✓			✓	✓	
	ETE104-24-YM	Laboratories (mechanical/electronic)	Basic	✓	✓			✓	✓		✓	✓	✓	✓	✓
	ATU12	Computer and artificial intelligence	Optional			✓			✓		✓		✓	✓	
	ATU13	Human Rights and Democracy	Optional									✓			
	ETE106-24-YM	Engineering and Electrical Drawing	Basic	✓				✓			✓			✓	
	ETE102-24-YM	Digital Circuits	Basic	✓	✓	✓		✓		✓		✓			
	ETE101-24-YM	Principles of Electronics	Basic	✓	✓			✓		✓		✓	✓		
	ATU101	Technical English Language	Optional	✓				✓				✓			

Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Second Year	ETE204-24-YM	Measuring Instrumentation	Basic	✓	✓			✓				✓			✓
	ETE205-24-YM	Microcomputer	Basic	✓	✓			✓		✓		✓		✓	
	ETE203-24-YM	Electronic Circuits	Basic	✓	✓	✓		✓		✓	✓	✓			✓
	ATU12	Computer and artificial intelligence	Optional			✓			✓		✓		✓		
	ETE217-24-YM	Control	Basic			✓	✓	✓	✓		✓	✓			✓
	ETE229-24-YM	PLC				✓	✓		✓	✓	✓	✓			✓
	ETE208-24-YM	Maintenance of Electronic Devices	Basic	✓			✓	✓	✓	✓		✓		✓	✓
	ETE202-24-YM	Audiovisual equipment	Basic	✓	✓	✓		✓		✓		✓	✓		
	ETE206-24-YM	Project	Basic	✓				✓	✓	✓	✓	✓	✓	✓	✓
	ETE201-24-YM	Communication	Basic	✓		✓		✓	✓			✓	✓		✓
	ATU241	Ba'ath Party crimes	Optional									✓			

Course Description Form

1. Course Name:					
Electronics					
2. Course Code:					
ETE101-24-YM					
3. Semester / Year:					
Year					
4. Description Preparation Date:					
26-10-2025					
5. Available Attendance Forms:					
Theoretical lecture					
6. Number of Credit Hours (Total) / Number of Units (Total)					
120 hours/ 8 unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Mohammed Jasim Mohamed					
Email: mohammed24241990@gmail.com					
8. Course Objectives					
Course Objectives	At the end of the course The student should be able to know: Electronic components manufactured from semiconductors of various types - composition - properties - uses in electronic circuits - Its applications and analysis of its electronic circuits. an idea about optoelectronics and its components. an idea about integrated circuits and simplified applications of the operational amplifier. The student should be able to: a-Use the basic electronic devices in the laboratory. b- Connecting electronic elements in simple electronic circuits. c-Know the specifications and features of electronic parts. d-Identify the applied circuits for some components and implement them.				
9. Teaching and Learning Strategies					
Strategy	1- Discussing with the students and asking questions about the lecture topic and how to think critically and analytically, and then directing them towards how to solve the problem in a way that suits the topic. 2- Explaining the material in a consistent way that is appropriate for the initial inquiries and discussions of the subject, in addition to using the available means of clarification that help consolidate the lesson, such as using video scenes on websites and realistic examples, in addition to addressing many solved examples. 3. Use feedback and evaluate the student's understanding of the material.				
10. Course Structure					
Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject	Learning	Evaluation

			name	method	method
1 st week	2hr	The student learns Semiconductor theory - atomic structure - energy levels - crystals - conduction in crystals - holes current - how holes move.	Semiconductor theory	Theoretical lecture	oral examination and quiz
2 nd week	2hr	The student learns doping - positive type (P) semiconductor - negative type (N) semiconductor- current of electrons and current of holes bulk resistance.	doping	Theoretical lecture	oral examination and quiz
3 rd week	2hr	The student learns Semiconductor diodes - PN junction -formation of the depletion region - barrier voltage - thermal effects - - minority carrier current - permissive leakage current - breaking voltage - maximum forward current - maximum reverse current.	Semiconductor diodes	Theoretical lecture	oral examination and quiz
4 th week	2hr	The student learns Biased diode - forward bias - reverse bias – characteristic curves in the forward and reverse directions -. The equivalent circuit of a diode.	Diode bias	Theoretical lecture	oral examination and quiz
5 th week	2hr	The student learns The diode as a current rectifier - a half-wave rectifier - the calculation of dc value of the current - the r.m.s value of current - the output frequency.	Half-wave rectification	Theoretical lecture	oral examination and quiz
6 th week	2hr	The student learns Full-wave rectification - using a center-tapped transformer - bridge rectifier - calculating average and effective values of voltages and currents - output frequency - comparison between half-wave and full-wave rectification - comparison between full-wave rectifiers.	Full-wave rectification	Theoretical lecture	oral examination and quiz
7 th week	2hr	The student learns Filters – filtering using capacitor - RC and LC filters - output voltages - ripple - voltage doubler - clipping circuits - positive clipping - negative clipping - combination clipping - peak-to-peak detector - positive and negative clamps.	Filters	Theoretical lecture	oral examination and quiz
8 th week	2hr	The student learns Zener diode - composition - symbol - forward and reverse characteristics - breakdown and breakage voltages - Zener impedance - temperature effects.	Zener diode	Theoretical lecture	oral examination and quiz
9 th week	2hr	The student learns Zener approximations - constant voltage regulation - constant voltage source circuit - variable capacitance diode and its applications.	Zener approximations	Theoretical lecture	oral examination and quiz
10 th week	2hr	The student learns Bipolar transistor - structure - symbol - characteristics - regions - definition of (β_{dc}) and definition of (α_{dc}), the relationship between them - definition of important regions on the characteristic's curves.	Bipolar transistor	Theoretical lecture	oral examination and quiz
11 th week	2hr	The student learns Transistor bias circuits - base bias - emitter bias - collector bias - approximation in the transistor and the equivalent circuit.	Transistor bias	Theoretical lecture	oral examination and quiz
12 th week	2hr	The student learns Transistor characteristics curves – operation regions - definition of I_{ceo} and I_{cbo} -current gain curve - relationship between I_{cbo} and I_c	Transistor characteristics curves	Theoretical lecture	oral examination and quiz

13 th week	2hr	The student learns Transistor bias circuits - base bias - emitter bias	Transistor bias circuits	Theoretical lecture	oral examination and quiz
14 th week	2hr	The student learns Collector bias - self-bias - feed-back bias - voltage divider bias - applied examples.	Transistor bias circuits	Theoretical lecture	oral examination and quiz
15 th week	2hr	The student learns operating points - quiescent point - applied examples	operating points	Theoretical lecture	oral examination and quiz
16 th week	2hr	The student learns Transistor DC equivalent circuit – DC load line	Transistor DC equivalent circuit	Theoretical lecture	oral examination and quiz
17 th week	2hr	The student learns Using the transistor to amplify small signals - the equivalent alternating circuit - current gain - voltage gain - power gain.	Using a transistor to amplify small signals	Theoretical lecture	oral examination and quiz
18 th week	2hr	The student learns Ideal Approximation- Hybrid Parameters-Equivalent circuit using h-parameters.	Hybrid parameters	Theoretical lecture	oral examination and quiz
19 th week	2hr	The student learns Voltage gain - current gain - power gain - input and output resistors - small signal amplifiers - base market - emitter market.	small signal amplifiers	Theoretical lecture	oral examination and quiz
20 th week	2hr	The student learns The use of a transistor in voltage regulation - a series regulator - a parallel regulator - a constant voltage source circuit.	The use of a transistor in voltage regulation	Theoretical lecture	oral examination and quiz
21 st week	2hr	The student learns Field effect transistor - structure – characteristic of MOSFET -	Field effect transistor	Theoretical lecture	oral examination and quiz
22 nd week	2hr	The student learns MOSFET - characteristics curves - Narrow voltage curves V_{gs} , I_{dss} , V_p - Comparison between BJT, JFET - Working theory	Field effect transistor	Theoretical lecture	oral examination and quiz
23 rd week	2hr	The student learns FET bias circuits - constant current source bias – operating point - self-bias - FET equivalent circuit	FET bias circuits	Theoretical lecture	oral examination and quiz
24 th week	2hr	The student learns Using FET in small signal amplification.	Using FET in small signal amplification	Theoretical lecture	oral examination and quiz
25 th week	2hr	The student learns Comparison between the types of FET transistors (JFET - MOSFET) and transistor (BJT).	Comparison between FET and BJT types	Theoretical lecture	oral examination and quiz
26 th week	2hr	The student learns Light-dependent resistor - light-emitting diode - photodiode - phototransistor - seven- segment display - its structure and applications.	optoelectronics and its components	Theoretical lecture	oral examination and quiz
27 th week	2hr	The student learns Silicon rectifiers with current control (thyristors) - construction and types - characteristics - working theory	thyristors	Theoretical lecture	oral examination and quiz
28 th week	2hr	The student learns Triac - Diac - their symbol - characteristics' - theory of operation - comparison between thyristors, Diac and Triac - protection of thyristors from (voltage change, current change).	thyristors	Theoretical lecture	oral examination and quiz

29 th week	2hr	The student learns Integrated circuits - its meaning - its advantages and disadvantages - a comparison between it and discrete components - an idea about its manufacture - operational amplifier 741 - its symbol - its terminals - its uses - applications of operational amplifiers - small signal amplification - summing signals - subtracting signals - examples.	Integrated circuits	Theoretical lecture	oral examination and quiz
30 th week		The student learns Operational amplifier applications: differentiator, comparator, integrator, ... etc	Operational amplifier applications	Theoretical lecture	oral examination and quiz
Practical					
Week	Hours	practical	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Introduction to the use of equipment used in the laboratory	Common emitter amplifier	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns characteristics of diodes in forward bias and drawing of the characteristics curve -	Common collector amplifier	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns characteristics of diodes in reverse bias and drawing of the characteristics curve -	Common source amplifier - common drain amplifier	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Half-wave rectifier.	Measurement of hybrid parameters	practical lecture	oral examination and writing report
5 th week	2hr	The student learns full wave bridge rectifier	Series voltage regulator	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Full wave rectifier using a center tapped transformer	characteristics of field effect transistor FET	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Half-wave rectifier with RC filter and LC filter	Common source amplifier.	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Full wave rectifier with RC filter and LC filter.	Common drain amplifier	practical lecture	oral examination and writing report
9 th week	2hr	The student learns clipping circuits (positive, negative, and compound)	Photodiode characteristics.	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Constant voltage doubled circuits (for three or four times)	Characteristics of phototransistor	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Zener diode - forward and reverse characteristics.	Characteristics of thyristor SCR	practical lecture	oral examination

					and writing report
12 th week	2hr	The student learns The use of a zener diode in regulating constant voltage with a fixed resistive load - The use of a zener diode in regulating voltage with a variable resistive load	Phase angle control using thyristors	practical lecture	oral examination and writing report
13 th week	2hr	The student learns Characteristics of the common-base transistor.	Controlling the illumination of a lamp using a thyristor	practical lecture	oral examination and writing report
14 th week	2hr	The student learns Characteristics of the common-emitter transistor.	Amplifier circuit using integrated circuit	practical lecture	oral examination and writing report
15 th week	2hr	The student learns Common base amplifier (finding voltage gain and current gain)	Use an op amp to add and subtract two signals	practical lecture	oral examination and writing report
16 th week	2hr	The student learns Common emitter amplifier (voltage gain and current gain) and plot the frequency response curve.	Common emitter amplifier	practical lecture	oral examination and writing report
17 th week	2hr	The student learns Common collector amplifier (finding voltage gain and current gain).	Common collector amplifier	practical lecture	oral examination and writing report
18 th week	2hr	The student learns Common source amplifier - common drain amplifier	Common source amplifier - common drain amplifier	practical lecture	oral examination and writing report
19 th week	2hr	The student learns Measurement of hybrid parameters - for the common base configuration.	Measurement of hybrid parameters	practical lecture	oral examination and writing report
20 th week	2hr	The student learns The use of transistors in voltage regulation circuits - series regulator.	Series voltage regulator	practical lecture	oral examination and writing report
21 th week	2hr	The student learns characteristics of field effect transistor FET.	characteristics of field effect transistor FET	practical lecture	oral examination and writing report
22 th week	2hr	The student learns Common source amplifier.	Common source amplifier.	practical lecture	oral examination and writing report
23 th week	2hr	The student learns Common drain amplifier.	Common drain amplifier	practical lecture	oral examination and writing report
24 th week	2hr	The student learns Photodiode characteristics.	Photodiode characteristics.	practical lecture	oral examination and writing report

25 th week	2hr	The student learns Characteristics of phototransistor.	Characteristics of phototransistor	practical lecture	oral examination and writing report
26 th week	2hr	The student learns Characteristics of thyristor SCR	Characteristics of thyristor SCR	practical lecture	oral examination and writing report
27 th week	2hr	The student learns Use of thyristors - their properties - phase angle control	Phase angle control using thyristors	practical lecture	oral examination and writing report
28 th week	2hr	The student learns An applied circuit for using thyristors to control lamp illumination.	Controlling the illumination of a lamp using a thyristor	practical lecture	oral examination and writing report
29 th week	2hr	The student learns Amplifier circuit using integrated circuit.	Amplifier circuit using integrated circuit	practical lecture	oral examination and writing report
30 th week	2hr	The student learns Use an op -amp to summing two signals and amplify the potential difference between the two signals.	Use an op amp to add and subtract two signals	practical lecture	oral examination and writing report

11. Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First semester = 10 marks
- Second semester= 10 marks

2. Practical:

- First semester= 10 marks
- Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- Theoretical=40 marks
- Practical =10 marks

12. Learning and Teaching Resources

Required textbooks (curricular, books, if any)	1- Electronic and audio circuits (written by: Dhia Mahdi and others), Dar Al-Takni - Authority of Technical Institutes - Dar Al-Hekma 1990. 2- Electronic Circuits (Written by: Dhia Mahdi and others) Authority of Technical Institutes 1990. 3- Power Electronics (Written by: Dhia Mahdi and others) Dar Al-Hekma 1990. 4- Industrial Electronics (Written by: Dhia Mahdi and others) Authority of Technical Institutes - Dar Al-Hekma 1985. 5- An Introduction to semiconductors By: (K.I.Gross).
Main references (sources)	Principles of Electronics - Malvino

Recommended books and references (scientific journals, reports...)	All books and Journals which includes the electronic circuits topics.
Electronic References, Websites	All websites and video lectures related to electronic principles.

Course Description Form

1. Course Name:	
Digital Circuits	
2. Course Code:	
ETE102-24-YM	
3. Semester / Year:	
Year	
4. Description Preparation Date:	
26-10-2025	
5. Available Attendance Forms:	
Theoretical lecture	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hours/ 4 unit	
7. Course administrator's name (mention all, if more than one name)	
Name: Mohammed Azher Therib Email: coj.moh6@atu.edu.iq	
8. Course Objectives	
Course Objectives	At the end of the course the student will be able to: Know about logic circuits and their importance in scientific progress, in addition to their connection to other sciences. Student will also be able to design different logic circuits and distinguish between the logic gates. In addition, the student will be able to deal with different logic equations in terms of their application and simplification. Moreover, the student will be able to perform conversion operations between different digital systems.
9-Teaching and Learning Strategies	

Strategy	At the beginning of every theoretical lecture, there is an introduction to the lecture topic. This would include most of the questions that can be asked about the topic and will be answered during the lecture. Students will be taken through a discussion in order to find the pre answers to those questions. This is followed by a detailed explanation of the topic by which many examples and solutions are given. Moreover, the lecture includes different educational videos which would virtually clarify the topic. On the other hand, during the practical lecture, the students are given the lecture as mentioned above, in addition to the practical application, which includes connecting the logic circuits and recording the data obtained from the circuit in order to be compared with the theoretical results, and then writing a detailed report on the experiment and its results.
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10-Course Structure

Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st week	2hr	The student learns A general idea of numerical systems (types and details)	numerical systems	Theoretic al lecture	oral examination and quiz
2nd week	2hr	The student learns Transfers between the numerical systems	numerical systems	Theoretic al lecture	oral examination and quiz
3rd week	2hr	The student learns Logic gates (types, working principle, truth tables, logical symbol)	Logic gates	Theoretic al lecture	oral examination and quiz
4th week	2hr	The student learns How to connect the logic gates to form logic circuits.	Logic gates	Theoretic al lecture	oral examination and quiz
5th week	2hr	The student learns Boolean algebra and the rule of de-Morgan	Boolean algebra	Theoretic al lecture	oral examination and quiz
6th week	2hr	The student learns Simplification of logical equations using Boolean algebra and the laws of De Morgan's laws.	Boolean algebra	Theoretic al lecture	oral examination and quiz
7th week	2hr	The student learns The design of the logical gates using NOR and NAND circuits,	Design of logic gates	Theoretic al lecture	oral examination and quiz
8th week	2hr	The student learns Ways of writing the equation from truth table (POS, SOP).	Boolean algebra	Theoretic al lecture	oral examination and quiz
9th week	2hr	The student learns Karnaugh Map (for two variables, the three variables, the four variables)	Karnaugh Map	Theoretic al lecture	oral examination and quiz
10th week	2hr	The student learns Simplification of logical equations using Karnaugh Map	Karnaugh Map	Theoretic al lecture	oral examination and quiz
11th week	2hr	The student learns Calculations in the binary system (addition, subtraction, subtraction using complements).	Binary system calculations	Theoretic al lecture	oral examination and quiz
12th week	2hr	The student learns Logic circuit applications (half adder, full adder, parallel adder circuits)	Logic circuit applications	Theoretic al lecture	oral examination and quiz
13th week	2hr	The student learns Binary subtractor circuits (half subtractor, full subtractor parallel subtractor) circuit using the adder circuit by method of 1s complements.	Logic circuit applications	Theoretic al lecture	oral examination and quiz

14th week	2hr	The student learns The circuit of digital comparator (one stage and two stages)	Digital comparator	Theoretical lecture	oral examination and quiz
15th week	2hr	The student learns The circuit of decoder size of 2:4 ,3:8 and 4:10	Decoder	Theoretical lecture	oral examination and quiz
16th week	2hr	The student learns circuit of encoder size of 4:2, 8:3 and 10:4	Encoder	Theoretical lecture	oral examination and quiz
17th week	2hr	The student learns Introduction to sequential logic circuits, a general idea of the Flip Flop, flip flop type (S-R).	Sequential logic circuits	Theoretical lecture	oral examination and quiz
18th week	2hr	The student learns The flip flop type J-K and master slave flip flop	Flip Flop	Theoretical lecture	oral examination and quiz
19th week	2hr	The student learns The D- flip flop and T flip flop	Flip Flop	Theoretical lecture	oral examination and quiz
20th week	2hr	The student learns The registers, design of registers, enter the information and output from registers	The registers	Theoretical lecture	oral examination and quiz
21st week	2hr	The student learns The shift register, shift to left, shift to right	The registers	Theoretical lecture	oral examination and quiz
22nd week	2hr	The student learns The counter- asynchronous counter	The counter	Theoretical lecture	oral examination and quiz
23 rd week	2hr	The student learns The synchronous counter- the cycle counter	The counter	Theoretical lecture	oral examination and quiz
24 th week	2hr	The student learns The multiplexer and its applications	The multiplexer	Theoretical lecture	oral examination
25 th week	2hr	The student learns The code convertor – the application of code convertor	The code convertor	Theoretical lecture	oral examination
26 th week	2hr	The student learns Programmable logic array: Concepts of programmable logic array (PLA); Concepts of programmable array logic (PAL)	Programmable logic array	Theoretical lecture	oral examination and quiz
27 th week	2hr	The student learns Buffers, non-inverting buffers, inverting buffers, Tri-state buffers, transmission	Buffers	Theoretical lecture	oral examination
28 th week	2hr	The student learns Introduction to Sequential logic latches and flip flops, Latches-Edge	Sequential logic latches	Theoretical lecture	oral examination
29 th week	2hr	The student learns Flip-flop operating characteristics, Flip-flop applications	Sequential logic latches	Theoretical lecture	oral examination
30 th week	2hr	The student learns Introduction To State Machine Design	State Machine	Theoretical lecture	oral examination

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st week	2hr	The student learns Deriving the truth table of NOT-AND-OR Gates using Switches	Logic gates	practical lecture	oral examination and writing report
2nd week	2hr	The student learns Deriving the truth table of NOT-AND-OR Gates using diodes and transistors	Logic gates	practical lecture	oral examination and writing report
3rd week	2hr	The student learns Deriving the truth table of	Logic gates	practical	oral examination

		NOT-AND-OR Gates using diodes and transistors		lecture	and writing report
4th week	2hr	The student learns NOR-and NANAD Gates using diodes and transistors	Design of logic gates	practical lecture	oral examination and writing report
5th week	2hr	The student learns EX-OR and EX-NOR Gates	Logic gates	practical lecture	oral examination and writing report
6th week	2hr	The student learns Demorgan's first and second law	Boolean algebra	practical lecture	oral examination and writing report
7th week	2hr	The student learns Deriving the basic gates from NAND gate using circuit of NAND gate	Design of logic gates	practical lecture	oral examination and writing report
8th week	2hr	The student learns Deriving the basic gates from NOR gate using circuit of NOR gate	Design of logic gates	practical lecture	oral examination and writing report
9th week	2hr	The student learns Deriving the EX-OR gate from NAND gate and NOR gate	Design of logic gates	practical lecture	oral examination and writing report
10th week	2hr	The student learns Comparator circuit with one rank	Digital comparator	practical lecture	oral examination and writing report
11th week	2hr	The student learns Comparator circuit with two rank	Digital comparator	practical lecture	oral examination and writing report
12th week	2hr	The student learns Comparator circuit with four numbers using IC 7485	Digital comparator	practical lecture	oral examination and writing report
13th week	2hr	The student learns Conversion circuit from Binary to Decimal number	Design of logic gates	practical lecture	oral examination and writing report
14th week	2hr	The student learns Conversion circuit from Decimal to Binary number	Design of logic gates	practical lecture	oral examination and writing report
15th week	2hr	The student learns Half adder circuit using different gates and NAND gate	Half adder	practical lecture	oral examination and writing report
16th week	2hr	The student learns Half Subtractor circuit using different gates and NAND gate	Half Subtractor	practical lecture	oral examination and writing report
17th week	2hr	The student learns Full adder circuit	Full adder	practical lecture	oral examination and writing report
18th week	2hr	The student learns Full subtractor circuit	Full subtractor	practical lecture	oral examination and writing report
19th week	2hr	The student learns Using IC to add two binary numbers with four bit and to subtract two binary numbers with four bit	IC	practical lecture	oral examination and writing report
20th week	2hr	The student learns R-S flipflop using NAND and NOR Gates	Flip flop	practical lecture	oral examination and writing report
21st week	2hr	The student learns R-S-T flip flop	Flip flop	practical lecture	oral examination and writing report
22nd week	2hr	The student learns D-type flip flop using R-S	Flip flop	practical lecture	oral examination and writing

					report
23rd week	2hr	The student learns T-type flip flop using R-S	Flip flop	practical lecture	oral examination and writing report
24th week	2hr	The student learns JK flip flop from RS flip flop	Flip flop	practical lecture	oral examination and writing report
25th week	2hr	The student learns Master-slave flip flop	Flip flop	practical lecture	oral examination and writing report
26th week	2hr	The student learns D and T flip flop from Master – slave	Flip flop	practical lecture	oral examination and writing report
27th week	2hr	The student learns Generation of square waves using R-S flip flop	Flip flop	practical lecture	oral examination and writing report
28th week	2hr	The student learns Ascending Wavy Counter	Counter	practical lecture	oral examination and writing report
29th week	2hr	The student learns Descending Wavy Counter	Counter	practical lecture	oral examination and writing report
30th week	2hr	The student learns Conversion	Conversion	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First semester = 10 marks
- Second semester= 10 marks

2. Practical:

- First semester= 10 marks
- Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- Theoretical=40 marks
- Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Digital electronics and its applications - Malvino
Main references (sources)	Digital electronics and its applications - Malvino
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the logic circuits topics
Electronic References, Websites	https://stackexchange.com/

Course Description Form

1-Course Name:

Electrical circuits and measurements					
2-Course Code:					
ETE103-24-YM					
3-Semester / Year:					
Year					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
4 hours/ 4 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: zahraa hasan hadi					
Email: zahraa.hadi.iba105@atu.edu.iq					
8-Course Objectives					
Course Object	At the end of the course the student will be able to: To define the electric circuits and electrical measurement to the students. To prepare students for studying different calculations of alternating circuits and direct current circuits and different theories of measuring instruments.				
9-Teaching and Learning Strategies					
Strategy	Live questions and answers about previous material Analysing the student's ability to comprehend through homework, carried out at home and stored on the computer Discs to display directly in front of students to see how much they learned from the previous lecture- Showing educational films specific to the subject in order to consolidate the ability to learn, use feedback, and evaluate the extent of the student's understanding of the subject.				
10-Course Structure					
Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Definition voltage, current and resistance • units system • The element effect at resistance.	Definition voltage, current and resistance • units system • The element effect at resistance .	Theoretical lecture	oral examination and quiz
2 nd week	2hr	The student learns connect the resistance as series ,parallel and complex. • Voltage divider rule, the current divider rule. • Ohms , law	connect the resistance as series ,parallel and complex. • Voltage divider rule, the current divider rule. • Ohms	Theoretical lecture	2hr
3 rd week	2hr	The student learns Delta(Δ) - star (Y) Transformation	Delta(Δ) - star (Y) Transformation	Theoretical lecture	2hr
4 th week	2hr	The student learns Kirchoff laws- Kirchoff current voltage laws	Kirchoff laws- Kirchoff current voltage laws	Theoretical lecture	2hr
5 th week	2hr	The student learns Maxwells law with ex.	Maxwells law with ex.	Theoretical lecture	2hr
6 th week	2hr	The student learns Thevinin,s theorem	Thevinin,s theorem	Theoretical lecture	2hr
7 th week	2hr	The student learns Norton's theorem	Norton's theorem	Theoretical lecture	2hr
8 th week	2hr	The student learns Ex.on thevinins and nortons theorms	Ex.on thevinins and nortons theorms	Theoretical lecture	2hr
9 th week	2hr	The student learns Def.of super position theorm-app. Of it inde		Theoretical lecture	2hr

		current			
10 th week	2hr	The student learns Ac quantities-def.of ac current characterstice-gen.of ac current with waveform drawing	Ac quantities-def.of ac current characterstice-gen.of ac current with waveform drawing	Theoretica l lecture	2hr
11 th week	2hr	The student learns Vector of ac quantities-def.of it-phasor representation of its-phase angle-resultant of vector ac add	Vector of ac quantities-def.of it-phasor representation of its-phase angle-resultant of vector ac add	Theoretica l lecture	2hr
12 th week	2hr	The student learns Effects of AC. on electrical components connecting on series	Effects of AC. on electrical components connecting on series	Theoretica l lecture	2hr
13 th week	2hr	The student learns Effect of alternating current on parallel circuits	Effect of alternating current on parallel circuits	Theoretica l lecture	2hr
14 th week	2hr	The student learns Effect of alternating current on parallel circuits	Effect of alternating current on parallel circuits	Theoretica l lecture	2hr
15 th week	2hr	The student learns Using the description (-J operator) to calculate electrical elements	Using the description (-J operator) to calculate electrical elements	Theoretica l lecture	2hr
16 th week	2h	The student learns The student learns Series and parallel resonance cct.	Series and parallel resonance cct.	Theoretica l lecture	2h
17 th week	2h	Application of thevinin Norton and super postion	Application of thevinin Norton and super postion	Theoretica l lecture	2h
18 th week	2h	The student learns Calculation of power ac cct.	Calculation of power ac cct.	Theoretica l lecture	2h
19 th week	2h	The student learns Appearn power power trianle drawing power factor	Appearn power power trianle drawing power factor	Theoretica l lecture	2h
20 th week	2h	The student learns Max powertransfer in ac cct.	Max powertransfer in ac cct	Theoretica l lecture	2h
21 th week	2h	The student learns Networks analysis using nodel analysis	Networks analysis using nodel analysis	Theoretica l lecture	2h
22 th week	2h	The student learns Ex.of Networks analysis using nodel analysis	Ex.of Networks analysis using nodel analysis	Theoretica l lecture	2h
23 th week	2h	The student learns Ac 3ph.cct. generation of 1ph. 2-ph. And 3ph current star delta	Ac 3ph.cct. generation of 1ph. 2-ph. And 3ph current star delta	Theoretica l lecture	2h
24 th week	2h	The student learns Ex. Ac 3ph.cct. generation of 1ph. 2-ph. And 3ph current star delta	Ex. Ac 3ph.cct. generation of 1ph. 2-ph. And 3ph current star delta	Theoretica l lecture	2h
25 th week	2h	The student learns Methods of power measurement for 3ph loads-wattmetr 2wattmeter-3 wattmeter	Methods of power measurement for 3ph loads-wattmetr 2wattmeter-3 wattmeter	Theoretica l lecture	2h
26 th week	2h	The student learns Transient cases cct. Dc transient	Transient cases cct. Dc transient	Theoretica l lecture	2h
27 th week	2h	The student learns Transient ac current sinusoidal Transientcurrent in RI-RC-RLC	Transient ac current sinusoidal Transientcurrent in RI-RC-RLC	Theoretica l lecture	2h
28 th week	2h	The student learns Transient ac current sinusoidal Transientcurrent in RI-RC-RLC	Transient ac current sinusoidal Transientcurrent in RI-RC-RLC	Theoretica l lecture	2h
29 th week	2h	The student learns Transformers	Transformers	Theoretica l lecture	2h
30 th week	2h	The student learns Curves of current in induction cct	Curves of current in induction cct	Theoretica l lecture	2h
Week	2hr	Required Learning Outcomes	Unit or subject name	Learning method	Evaluatio n method
1 st week	2hr	The student learns Definition voltage , current and resistance • units system	Definition voltage , current and resistance • units system • The	practical lecture	oral examinatio

		• The element effect at resistance .	element effect at resistance		n and writing report
2 nd week	2hr	The student learns connect the resistance as series ,parallel and complex. • Voltage divider rule, the current divider rule. • Ohms , law	connect the resistance as series ,parallel and complex. • Voltage divider rule, the current divider rule. • Ohms , law	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns Delta(Δ) - star (Y) Transformation	Delta(Δ) - star (Y) Transformation	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Kirchoff laws- Kirchoff current voltage laws	Kirchoff laws- Kirchoff current voltage laws	practical lecture	oral examination and writing report
5 th week	2hr	The student learns Maxwells law with ex.	Maxwells law with ex.	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Thevinin,s theorem	Thevinin,s theorem	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Norton's theorem	Norton's theorem	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Ex.on thevinins and nortons theorms	Ex.on thevinins and nortons theorms	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Def.of super position theorm-app. Of it indc current	Def.of super position theorm-app. Of it indc current	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Ac quantities-def.of ac current characterstice-gen.of ac current with waveform drawing	Ac quantities-def.of ac current characterstice-gen.of ac current with waveform drawing	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Vector of ac quantities-def.of it-phasor representation of its-phase angle-resultant of vector ac add	Vector of ac quantities-def.of it-phasor representation of its-phase angle-resultant of vector ac add	practical lecture	oral examination and writing report
12 th week	2hr	The student learns Effects of AC. on electrical components connecting on series	Effects of AC. on electrical components connecting on series	practical lecture	oral examination and writing

					report
13 th week	2hr	The student learns Effect of alternating current on parallel circuits	Effect of alternating current on parallel circuits	practical lecture	oral examination and writing report
14 th week	2hr	The student learns Effect of alternating current on parallel circuits	Effect of alternating current on parallel circuits	practical lecture	oral examination and writing report
15 th week	2hr	The student learns Using the description (-J operator) to calculate electrical elements	Using the description (-J operator) to calculate electrical elements	practical lecture	oral examination and writing report
16 th week	2hr	The student learns Series and parallel resonance cct.	Series and parallel resonance cct.	practical lecture	oral examination and writing report
17 th week	2hr	The student learns Application of thevinin The student learns Norton and super postion	Application of thevinin Norton and super postion	practical lecture	oral examination and writing report
18 th week	2hr	The student learns Calculation of power ac cct.	Calculation of power ac cct.	practical lecture	oral examination and writing report
19 th week	2hr	The student learns Appearn power power trianle drawing power factor	Appearn power power trianle drawing power factor	practical lecture	oral examination and writing report
20 th week	2hr	The student learns Max powertransfer in ac cct.	Max powertransfer in ac cct	practical lecture	oral examination and writing report
21 th week	2hr	The student learns Networks analysis using nodel analysis	Networks analysis using nodel analysis	practical lecture	oral examination and writing report
22 th week	2hr	The student learns Ex.of Networks analysis using nodel analysis	Ex.of Networks analysis using nodel analysis	practical lecture	oral examination and writing report
23 th week	2hr	The student learns Ac 3ph.cct. generation of 1ph. 2-ph. And 3ph current star delta	Ac 3ph.cct. generation of 1ph. 2-ph. And 3ph current star delta	practical lecture	oral examination and writing report
24 th week	2hr	The student learns Ex. Ac 3ph.cct. generation of 1ph. 2-ph. And 3ph	Ex. Ac 3ph.cct. generation of 1ph. 2-ph. And 3ph current star delta	practical lecture	oral examination

		current star delta			n and writing report
25 th week	2hr	The student learns Methods of power measurement for 3ph loads-wattmetr 2wattmeter-3 wattmeter	Methods of power measurement for 3ph loads-wattmetr 2wattmeter-3 wattmeter	practical lecture	oral examination and writing report
26 th week	2hr	The student learns Transient cases cct. Dc transient	Transient cases cct. Dc transient	practical lecture	oral examination and writing report
27 th week	2hr	The student learns Transient ac current sinusoidal Transientcurrent in RI-RC-RLC	Transient ac current sinusoidal Transientcurrent in RI-RC-RLC	practical lecture	oral examination and writing report
28 th week	2hr	The student learns Transient ac current sinusoidal Transientcurrent in RI-RC-RLC	Transient ac current sinusoidal Transientcurrent in RI-RC-RLC	practical lecture	oral examination and writing report
29 th week	2hr	The student learns Transformers	Transformers	practical lecture	oral examination and writing report
30 th week	2hr	The student learns Curves of current in induction cct	Curves of current in induction cct	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. Fiest semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Electrical Technology (Edward Hughes).	Basic circuits (A.M.F Brooks) pergaman press. 6); Introduction to Electric circuits (M.Roman witz) John willy. 7); Basic Electrical Engineering (Fitzgerald and Rlgginborthan). McGraw- Hill
Electrical Technology (B.L Theraja).	Electrical Technology (B.L Theraja).
Fundamental Electric circuits (David A . B ell)	Basic circuits (A.M.F Brooks) pergaman press. 6); Introduction to Electric circuits (M.Roman witz) John willy. 7); Basic Electrical

Introductory circuit Analysis by Robert L. Boylestad	Engineering (Fitzgerald and Rlgginborthan). McGraw- Hill Basic circuits (A.M.F Brooks) pergaman press. 6); Introduction to Electric circuits (M.Roman witz) John willy. 7); Basic Electrical Engineering (Fitzgerald and Rlgginborthan). McGraw- Hill
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Course Description Form

1. Course Name:					
Mathematics					
2. Course Code:					
ETE105-24-YM					
3. Semester / Year:					
Year					
4. Description Preparation Date:					
26-10-2025					
5. Available Attendance Forms:					
Theoretical lecture					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60 hours/ 4 unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Eman Jawad Najy Email: eman.naji@atu.edu.iq					
8. Course Objectives					
Course Objectives	At the end of the course the student will be able to: 1. The student understands the laws and mathematical issues 2. To solve simple and complex electrical circuits using mathematics 3. knows the applications of Engineering Mathematics				
9. Teaching and Learning Strategies					
Strategy	1. Discuss the students and ask questions about the topic of the lecture and how to think critically and analytically, and then guide them towards how to solve the problem in a way that suits the topic. 2. Explain the material in a consistent manner commensurate with the initial inquiries and discussions of the topic, in addition to using the available means of explanation that help to consolidate the lesson through solved examples and exercises that provoke brainstorming students. 3. The use of feedback and assessment of the student's comprehension of the material.				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1 st week	2hr	The student learns Types of matrices, operations on matrices	Types of matrices, operations on matrices	Theoretical lecture	Solving exercises + daily exam
2 nd week	2hr	The student learns Solving linear equations using determinants (Cramer's rule)	Solving linear equations using determinants (Cramer's rule)	Theoretical lecture	Solving exercises + daily exam
3 rd week	2hr	The student learns Vectors –vector analysis-scalar and Vector quantities – vector algebra –operations on vectors – phase angle	Vectors –vector analysis-scalar and Vector quantities – vector algebra – operations on vectors – phase angle	Theoretical lecture	Solving exercises + daily exam
4 th week	2hr	The student learns Orthogonal vectors-scalar and directional multiplication-applications.	Orthogonal vectors-scalar and directional multiplication-applications.	Theoretical lecture	Solving exercises + daily exam
5 th week	2hr	The student learns Trigonometric function - trigonometric relations-logarithmic function	Trigonometric function - trigonometric relations-logarithmic function	Theoretical lecture	Solving exercises + daily exam
6 th week	2hr	The student learns Exponential functions Hyperbola functions and their applications	Exponential functions Hyperbola functions and their applications	Theoretical lecture	Solving exercises + daily exam
7 th week	2hr	The student learns Limits – limits of algebraic and trigonometric functions-applications	Limits – limits of algebraic and trigonometric functions-applications	Theoretical lecture	Solving exercises + daily exam
8 th week	2hr	The student learns Differential – derivation by definition – derivation of algebraic functions-chain rule	Differential –derivation by definition – derivation of algebraic functions-chain rule	Theoretical lecture	Solving exercises + daily exam
9 th week	2hr	The student learns Standard implicit function-higher-order derivative	Standard implicit function-higher-order derivative	Theoretical lecture	Solving exercises + daily exam
10 th week	2hr	The student learns Derivation of trigonometric and logarithmic functions	Derivation of trigonometric and logarithmic functions	Theoretical lecture	Solving exercises + daily exam
11 th week	2hr	The student learns The derivative of exponential functions	The derivative of exponential functions	Theoretical lecture	Solving exercises + daily exam
12 th week	2hr	The student learns Applications of the derivation-the equation of tangent and column -, acceleration and velocity	Applications of the derivation-the equation of tangent and column -, acceleration and velocity	Theoretical lecture	Solving exercises + daily exam
13 th week	2hr	The student learns Increasing and decreasing-minor and great endings	Increasing and decreasing-minor and great endings	Theoretical lecture	Solving exercises + daily exam
14 th week	2hr	The student learns General physical and engineering applications	General physical and engineering applications	Theoretical lecture	Solving exercises + daily exam
15 th week	2hr	The student learns Indefinite integration-integration of algebraic-trigonometric functions	Indefinite integration-integration of algebraic-trigonometric functions	Theoretical lecture	Solving exercises + daily exam

16 st week	2hr	The student learns Integration of exponential functions	Integration of exponential functions	practical lecture	Solving exercises + daily exam
17 nd week	2hr	The student learns Definite integration-applications-the space under the curve-between two curves	Definite integration-applications-the space under the curve-between two curves	practical lecture	Solving exercises + daily exam
18 nd week	2hr	The student learns Rotational volumes – the length of the curved arc	Rotational volumes – the length of the curved arc	practical lecture	Solving exercises + daily exam
19 th week	2hr	The student learns Physical and engineering applications	Physical and engineering applications	practical lecture	Solving exercises + daily exam
20,21, 22 th week	2hr	The student learns General methods of integration, including compensation, segmentation, the use of partial, exponential and logarithmic fractions and their applications	General methods of integration, including compensation, segmentation, the use of partial, exponential and logarithmic fractions and their applications	practical lecture	Solving exercises + daily exam
23 th week	2hr	The student learns Numerical methods in integration – the base of the trapezoid	Numerical methods in integration – the base of the trapezoid	practical lecture	Solving exercises + daily exam
24,25 th week	2hr	The student learns Solving discrete, homogeneous and linear differential equations with their various applications	Solving discrete, homogeneous and linear differential equations with their various applications	practical lecture	Solving exercises + daily exam
26 th week	2hr	The student learns Complex numbers addition, subtraction, multiplication and division	Complex numbers addition, subtraction, multiplication and division	practical lecture	Solving exercises + daily exam
27 th week	2hr	The student learns The polar and algebraic formula and the transformation between them and vice versa	The polar and algebraic formula and the transformation between them and vice versa	practical lecture	Solving exercises + daily exam
28 th week	2hr	The student learns Powers and roots - representation of roots	Powers and roots - representation of roots	practical lecture	Solving exercises + daily exam
29 th week	2hr	The student learns Statistical operations – frequency distributions – histogram –frequency curve	Statistical operations – frequency distributions – histogram –frequency curve	practical lecture	Solving exercises + daily exam
30 th week	2hr	The student learns Arithmetic mean-rate-deviation L=Standard-variance-the relationship between the mean and the median	Arithmetic mean-rate-deviation L=Standard-variance-the relationship between the mean and the median	practical lecture	Solving exercises + daily exam

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First semester = 10 marks
- Second semester= 10 marks

2. Practical:

a. First semester= 10 marks b. Second semester= 10 marks 3. daily oral and preparation= 10 Marks 4. Final exam a. Theoretical=40 marks b. Practical =10 marks	
Required textbooks (curricular books, if any)	Applied mathematics-yaequb sibagha
Main references (sources)	Solving electrical circuits-Joseph Methods for solving differential equations-Khaled Ahmed Samara Yahya Abdul said Calculus ((Thomas)) Laplace transformation
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the applied mathematics
Electronic References, Websites	All applied mathematics websites on the internet

Course Description Form

1-Course Name:	
Engineering and electrical drawing	
2-Course Code:	
ETE106-24-YM	
3-Semester / Year:	
Year	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Practical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
90 hours/ 6 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Eman Jawad Najy Email: eman.naji@atu.edu.iq	
8-Course Objectives	
Course Objectives	He knows the advantages of computer drawing . Recognizes the system interface (AUTO CAD), its bars, drawing and adjustment menu. Learns to use the AUTO CAD program for drawing electrical and electronic circuits .
9-Teaching and Learning Strategies	
Strategy	1.Explain the material to students in a way that the student learns how to draw using a computer 2.Students apply various drawings and strengthen their skills in dealing with the required drawing and modification instructions .

3. Assessment of students through paintings and exams

10-Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	3hr	The student learns Advantages of computer drawing and the basic components of the AUTOCAD program	Advantages of computer drawing and the basic components of the AUTOCAD program	practical lecture	Daily exam and boards
2 nd week	3hr	The student learns How to activate and run the AutoCAD Program interface hide tapes activate tapes and icons	activate and run the AutoCAD Program interface hide tapes activate tapes and icons	practical lecture	Daily exam and boards
3 rd week	3hr	The student learns Detailed explanation of the components of the draw bar, Modify, tools bar	Detailed explanation of the components of the draw bar, Modify, tools bar	practical lecture	Daily exam and boards
4 th week	3hr	The student learns Identify the types of drawing lines in the program and how to download the types of lines	Identify the types of drawing lines in the program and how to download the types of lines	practical lecture	Daily exam and boards
5 th week	3hr	The student learns How to draw line, circle, arc, in their different ways	How to draw line, circle, arc, in their different ways	practical lecture	Daily exam and boards
6 th week	3hr	The student learns How to draw polygon, polyline, rectangle, multiline	How to draw polygon, polyline, rectangle, multiline	practical lecture	Daily exam and boards
7 th week	3hr	The student learns Adding dimensions and texts in the AutoCad program	Adding dimensions and texts in the AutoCad program	practical lecture	Daily exam and boards
8 th week	3hr	The student learns Performing engineering operations, drawing a triangle in its three ways, drawing a straight line parallel to a known straight line, and drawing a circle passing the vertices of the Triangle	Performing engineering operations, drawing a triangle	practical lecture	Daily exam and boards
9 th week	3hr	The student learns Divide a straight line into several equal parts draw a pentagonal polygon with radius information	Divide a straight line into several equal parts draw a pentagonal polygon with radius information	practical lecture	Daily exam and boards
10 th week	3hr	The student learns Projectors how to draw projectors how to execute projectors	Projectors how to draw projectors how to execute projectors	practical lecture	Daily exam and boards
11 th week	3hr	The student learns Practical applications to projectors	Practical applications to projectors	practical lecture	Daily exam and boards
12 th week	3hr	The student learns Practical applications to projectors Practical applications to projectors rs	Practical applications to projectors	practical lecture	Daily exam and boards
13 th week	3hr	The student learns Practical applications to projectors	Practical applications to projectors	practical lecture	Daily exam and boards

14 th week	3hr	The student learns Practical applications to projectors	Practical applications to projectors	practical lecture	Daily exam and boards
15 th week	3hr	The student learns How to draw and create three-dimensional drawings in AUTOCAD	How to draw and create three-dimensional drawings in AUTOCAD	practical lecture	Daily exam and boards
16 st week	3hr	The student learns How to draw and create three-dimensional drawings in the AutoCAD program	How to draw and create three-dimensional drawings in the AutoCAD program	practical lecture	Daily exam and boards
17 nd week	3hr	The student learns How to draw and create three-dimensional drawings in the AutoCAD program	How to draw and create three-dimensional drawings in the AutoCAD program	practical lecture	Daily exam and boards
18 rd week	3hr	The student learns How to draw and create three-dimensional drawings in the AutoCAD program	How to draw and create three-dimensional drawings in the AutoCAD program	practical lecture	Daily exam and boards
19 th week	3hr	The student learns How to draw and create three-dimensional drawings in the AutoCAD program	How to draw and create three-dimensional drawings in the AutoCAD program	practical lecture	Daily exam and boards
20 th week	3hr	The student learns Electronic electrical codes overview	Electronic electrical codes overview	practical lecture	Daily exam and boards
21 th week	3hr	The student learns Block , Insert, Block , Attribute	Block , Insert, Block , Attribute	practical lecture	Daily exam and boards
22 th week	3hr	The student learns How to insert electrical and electronic codes to the program interface	How to insert electrical and electronic codes to the program interface	practical lecture	Daily exam and boards
23 th week	3hr	The student learns Connecting electrical and electronic symbols by fonts and practical applications	Connecting electrical and electronic symbols by fonts and practical applications	practical lecture	Daily exam and boards
24 th week	3hr	The student learns Practical applications for drawing electrical circuits	Practical applications for drawing electrical circuits	practical lecture	Daily exam and boards
25 th week	3hr	The student learns Practical applications for drawing electrical circuits	Practical applications for drawing electrical circuits	practical lecture	Daily exam and boards
26 th week	3hr	The student learns Practical applications for drawing electrical circuits	Practical applications for drawing electrical circuits	practical lecture	Daily exam and boards
27 th week	3hr	The student learns Practical applications of electronic circuit drawing	Practical applications of electronic circuit drawing	practical lecture	Daily exam and boards
28 th week	3hr	The student learns Practical applications of electronic circuit drawing	Practical applications of electronic circuit drawing	practical lecture	Daily exam and boards
29 th week	3hr	The student learns Practical applications of electronic circuit drawing	Practical applications of electronic circuit drawing	practical lecture	Daily exam and boards
30 th week	3hr	The student learns Practical applications of electronic circuit drawing	Practical applications of electronic circuit drawing	practical lecture	Daily exam and boards

11. Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

a. First semester = 10 marks

b. Second semester= 10 marks

2. Practical:

a. First semester= 10 marks

b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

a. Theoretical=40 marks

b. Practical =10 marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Engineering and electrical drawing
Main references (sources)	Descriptive geometry
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the Engineering and electrical drawing
Electronic References, Websites	All sites and video lectures that are interested in electrical drawing

Course Description Form

1-Course Name:

Computer and Artificial Intelligence

2-Course Code:

ATU221

3-Semester / Year:

Year

4-Description Preparation Date:

26-10-2025

5-Available Attendance Forms:

Theoretical lecture

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

30 hours/ 4 unit

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

Name: hafidh ali shubat

Email: : h.ali@atu.edu.iq

8-Course Objectives

Course Objectives	At the end of the course the student will be able to:
	1. Teaching the student to be familiar with the basic rules for dealing with and managing a computer.
	2. It helps him in completing projects, printing matters, creating presentations, and designing engineering plans.
	3. The student learns to use the Internet in many fields, including education, scientific research, trade, and marketing through electronic correspondence, web pages, and electronic communication.

9-Teaching and Learning Strategies

Strategy	Live questions and answers about previous material Analysing the student's ability to comprehend through
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	homework, carried out at home and stored on the computer Discs to display directly in front of students to see how much they learned from the previous lecture- Showing educational films specific to the subject in order to consolidate the ability to learn, use feedback, and evaluate the extent of the student's understanding of the subject.
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10-Course Structure

Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	1hr	The student learns Network concept	Network	Theoretical lecture	oral examination and quiz
2 nd week	1hr	The student learns Types of networks and the concept of the Internet	Network	Theoretical lecture	oral examination and quiz
3 rd week	1hr	The student learns Description of the main screen, its components, and how to connect to the global network	Network	Theoretical lecture	oral examination and quiz
4 th week	1hr	The student learns Take advantage of different search engines	Network	Theoretical lecture	oral examination and quiz
5 th week	1hr	The student learns Learn about ways to search for and access information	Network	Theoretical lecture	oral examination and quiz
6 th week	1hr	The student learns Learn about the concept of Excel: its benefits and specifications	Excel	Theoretical lecture	oral examination and quiz
7 th week	1hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	Theoretical lecture	oral examination and quiz
8 th week	1hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	Theoretical lecture	oral examination and quiz
9 th week	1hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	Theoretical lecture	oral examination and quiz
10 th week	1hr	The student learns The concept of the cell, basic data types and how to enter them	Excel	Theoretical lecture	oral examination and quiz
11 th week	1hr	The student learns The concept of the cell, basic data types and how to enter them	Excel	Theoretical lecture	oral examination and quiz
12 th week	1hr	The student learns How to save data Open the saved file.	Excel	Theoretical lecture	oral examination and quiz
13 th week	1hr	The student learns enter data and perform calculations	Excel	Theoretical lecture	oral examination and quiz
14 th week	1hr	The student learns Inserting various arithmetic functions	Excel	Theoretical lecture	oral examination and quiz
15 th week	1hr	The student learns AutoCAD program: getting to know the program environment	AutoCAD	Theoretical lecture	oral examination and quiz
16 th week	1hr	The student learns Preparing the drawing sheet, opening a new file, drawing borders, drawing units, network, jumping, storage	AutoCAD	Theoretical lecture	oral examination and quiz
17 th week	1hr	The student learns Recognizing the different drawing commands, line, point...	AutoCAD	Theoretical lecture	oral examination and quiz
18 th week	1hr	The student learns Recognizing the different drawing commands, line, point...	AutoCAD	Theoretical lecture	oral examination and quiz
19 th week	1hr	The student learns Learn about modification commands	AutoCAD	Theoretical lecture	oral examination and quiz

20 th week	1hr	The student learns Learn about modification commands	AutoCAD	Theoretical lecture	oral examination and quiz
21 th week	1hr	The student learns Add dimensions	AutoCAD	Theoretical lecture	oral examination and quiz
22 th week	1hr	The student learns Add texts and precise drawing sectors	AutoCAD	Theoretical lecture	oral examination and quiz
23 th week	1hr	The student learns Control drawing specifications	AutoCAD	Theoretical lecture	oral examination and quiz
24 th week	1hr	The student learns Introduction to 3D drawing	AutoCAD	Theoretical lecture	oral examination and quiz
25 th week	1hr	The student learns Creating 3D surfaces	AutoCAD	Theoretical lecture	oral examination and quiz
26 th week	1hr	The student learns Create 3D objects	AutoCAD	Theoretical lecture	oral examination and quiz
27 th week	1hr	The student learns Create 3D objects	AutoCAD	Theoretical lecture	oral examination and quiz
28 th week	1hr	The student learns Create 3D objects	AutoCAD	Theoretical lecture	oral examination and quiz
29 th week	1hr	The student learns Create 3D objects	AutoCAD	Theoretical lecture	oral examination and quiz
30 th week	1hr	The student learns Change the interface from 3D to 2D or classic	AutoCAD	Theoretical lecture	oral examination and quiz

Practical

Week	2hr	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Network concept	Network	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns Types of networks and the concept of the Internet	Network	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns Description of the main screen, its components, and how to connect to the global network	Network	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Take advantage of different search engines	Network	practical lecture	oral examination and writing report
5 th week	2hr	The student learns Learn about ways to search for and access information	Network	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Learn about the concept of Excel: its benefits and specifications	Excel	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	practical lecture	oral examination and writing report
10 th week	2hr	The student learns the concept of the cell, basic data types and how to enter them	Excel	practical lecture	oral examination and writing report
11 th week	2hr	The student learns the concept of the cell, basic data types and how to enter them	Excel	practical lecture	oral examination and writing report
12 th week	2hr	The student learns How to save data Open the saved file.	Excel	practical lecture	oral examination and writing report

13 th week	2hr	The student learns enter data and perform calculations	Excel	practical lecture	oral examination and writing report
14 th week	2hr	The student learns Inserting various arithmetic functions	Excel	practical lecture	oral examination and writing report
15 th week	2hr	The student learns AutoCAD program: getting to know the program environment	AutoCAD	practical lecture	oral examination and writing report
16 th week	2hr	The student learns Preparing the drawing sheet, opening a new file, drawing borders, drawing units, network, jumping, storage	AutoCAD	practical lecture	oral examination and writing report
17 th week	2hr	The student learns Recognizing the different drawing commands, line, point...	AutoCAD	practical lecture	oral examination and writing report
18 th week	2hr	The student learns Recognizing the different drawing commands, line, point...	AutoCAD	practical lecture	oral examination and writing report
19 th week	2hr	The student learns Learn about modification commands	AutoCAD	practical lecture	oral examination and writing report
20 th week	2hr	The student learns Learn about modification commands	AutoCAD	practical lecture	oral examination and writing report
21 th week	2hr	The student learns Add dimensions	AutoCAD	practical lecture	oral examination and writing report
22 th week	2hr	The student learns Add texts and precise drawing sectors	AutoCAD	practical lecture	oral examination and writing report
23 th week	2hr	The student learns Control drawing specifications	AutoCAD	practical lecture	oral examination and writing report
24 th week	2hr	The student learns Introduction to 3D drawing	AutoCAD	practical lecture	oral examination and writing report
25 th week	2hr	The student learns Creating 3D surfaces	AutoCAD	practical lecture	oral examination and writing report
26 th week	2hr	The student learns Create 3D objects	AutoCAD	practical lecture	oral examination and writing report
27 th week	2hr	The student learns Create 3D objects	AutoCAD	practical lecture	oral examination and writing report
28 th week	2hr	The student learns Create 3D objects	AutoCAD	practical lecture	oral examination and writing report
29 th week	2hr	The student learns Create 3D objects	AutoCAD	practical lecture	oral examination and writing report
30 th week	2hr	The student learns Change the interface from 3D to 2D or classic	AutoCAD	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First semester = 10 marks
- Second semester= 10 marks

2. Practical:

- First semester= 10 marks
- Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- Theoretical=40 marks
- Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Required textbooks (curricular books, if any)
Main references (sources)	Main references (sources)

Recommended books and references (scientific journals, reports...)	Recommended books and references (scientific journals, reports...)
Electronic References, Websites	Electronic References, Websites

Course Description Form

1-Course Name:					
Technical English Language					
2-Course Code:					
ATU101					
3-Semester / Year:					
Year					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
30 hours/ 2 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: Asmaa Adnan					
Email: asmaa.najm@atu.edu.iq					
8-Course Objectives					
Course Objectives	1. The student should understand the specialty terminology in English 2. Skills objectives for the course. 3. The student learns to speak English and know the terminology				
9-Teaching and Learning Strategies					
Strategy	Speak English fluently				
10-Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-4	1	The student learns Unit -1- Introduction and Review to English language. Introduction to parts of speech. Sentence Patterns.	Introduction to parts of speech	Theoretical lecture	oral examination and quiz
5-6	1	The student learns Unit -2- Reading Comprehension and structure (selected scientific passages general to all specializations)	selected scientific passages general to all specializations	Theoretical lecture	oral examination and quiz
7-8	1	The student learns Scientific Attitude (Simple present)	Simple present	Theoretical lecture	oral examination and quiz
9-10	1	The student learns Mathematics(passive)	Mathematics(passive)	Theoretical lecture	oral examination and quiz

11-12	1	The student learns Scientific Methods (simple past)	Scientific Methods (simple past)	Theoretical lecture	oral examination and quiz
13-14	1	The student learns Test	Test	Theoretical lecture	oral examination and quiz
15-16	1	The student learns Unit -4- Conversation (from daily life Meeting people)	Conversation (from daily life Meeting people)	Theoretical lecture	oral examination and quiz
17-18	1	The student learns Talking about your job	Talking about your job	Theoretical lecture	oral examination and quiz
19-20	1	The student learns Unit -5- The use of library, Dictionary and Internet.	The use of library, Dictionary and Internet.	Theoretical lecture	oral examination and quiz
21-22	1	The student learns Unit -6- Translation Selected topics from internet to be translated	Translation Selected topics from internet to be translated	Theoretical lecture	oral examination and quiz
23-24	1	The student learns Unit -7- Writing Technical Reports	Writing Technical Reports	Theoretical lecture	oral examination and quiz
25-29	1	The student learns Unit -8- Terminology Selected Passages according to specializations	Terminology Selected Passages according to specializations	Theoretical lecture	oral examination and quiz
30	1	The student learns Final Test	Final Test	Theoretical lecture	oral examination and quiz

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Technical language book project
Main references (sources)	Technical language book project
Recommended books and references (scientific journals, reports...)	Technical language book project
Electronic References, Websites	Technical language book project

Course Description Form

1. Course Name: Occupational Safety					
Occupational Safety					
2. Course Code:					
ETE117-24-CM					
3. Semester / Year: Year					
Year					
4. Description Preparation Date:					
26-10-2025					
5. Available Attendance Forms:					
Theoretical lecture					
6. Number of Credit Hours (Total) / Number of Units (Total)					
60hours/ 1 unit					
7. Course administrator's name (mention all, if more than one name)					
Name: Noor Ayed Abdullah Sarkal Al-Khafaji					
Email: noor.serkal.iba14@atu.edu.iq					
8. Course Objectives					
Course Objectives	General: Providing a safe work environment from the causes of accidents or occupational diseases, and a set of rules and regulations within a legislative framework to protect people and property from injury and damage.				
9. Teaching and Learning Strategies					
Strategy	Giving lectures to students while adopting modern teaching methods, such as cooperative learning by having the student read and the other student explain what his colleague read, and active learning by asking questions to the students through brainstorming - making PowerPoint				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	The student learns A historical overview of occupational safety	A historical overview of occupational safety	Lectures	Paintings
2	1	The student learns Definitions of occupational safety	Definitions of occupational safety	Lectures	And a daily exam
3	1	The student learns Occupational safety and health objectives	Occupational safety and health objectives	Lectures	Paintings
4	1	The student learns Fawad application of occupational safety and health	Fawad application of occupational safety and health	Lectures	And a daily exam
5	1	The student learns Work accidents and injuries and their consequences	Work accidents and injuries and their consequences	Lectures	Paintings
6	1	The student learns Accidents resulting from mismanagement	Accidents resulting from mismanagement	Lectures	And a daily exam
7	1	The student learns Accident prevention	Accident prevention	Lectures	Paintings

8	1	The student learns Electrical hazards and ways to prevent them	Electrical hazards and ways to prevent them	Lectures	And a daily exam
9	1	The student learns Effect of electric shock	Effect of electric shock	Lectures	Paintings
10	1	The student learns Causes of electrical accidents	Causes of electrical accidents	Lectures	And a daily exam
11	1	The student learns Ways to prevent electrical accidents	Ways to prevent electrical accidents	Lectures	Paintings
12	1	The student learns First aid for those suffering from electric shock	First aid for those suffering from electric shock	Lectures	And a daily exam
13	1	The student learns Personal protective supplies	Personal protective supplies	Lectures	Paintings
14	1	The student learns Types of personal protective supplies	Types of personal protective supplies	Lectures	And a daily exam
15	1	The student learns PowerPoint presentations	PowerPoint presentations	Lectures	Presentations
16	1	The student learns Prevention supplies and their types	Prevention supplies and their types	Lectures	Daily exam verbal
17	1	The student learns Safety in office work Types of accidents	Safety in office work Types of accidents	Lectures	Tests
18	1	The student learns Loss due to accidents	Loss due to accidents	Lectures	Tests
19	1	The student learns Improving occupational health	Improving occupational health	Lectures	Tests
20	1	The student learns Occupational health and safety programs	Occupational health and safety programs	Lectures	Tests
21	1	The student learns Health program procedures	Health program procedures	Lectures	Tests
22	1	The student learns PowerPoint presentations	PowerPoint presentations	Lectures	Tests
23	1	The student learns exam		Lectures	Presentations
24	1	The student learns Occupational safety procedures	Occupational safety procedures	Lectures	Tests
25	1	The student learns Occupational safety procedures	Occupational safety procedures	Lectures	Tests
26	1	The student learns Benefits of implementing safety programs	Benefits of implementing safety programs	Lectures	Tests
27	1	The student learns Test		Lectures	Tests
28	1	The student learns Benefits of implementing safety and employee health	Benefits of implementing safety and employee health	Lectures	Tests
29	1	The student learns PowerPoint presentations	PowerPoint presentations	Lectures	Tests
30	1	The student learns Test		Lectures	Tests

11. Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Safety lectures
Main references (sources)	A course for public and private universities
Recommended books and references (scientific journals, reports...)	Safety lectures
Electronic References, Websites	A course for public and private universities

Course Description Form

1. Course Name	
Arabic Language 2	
2. Course Code:	
Arabic Language	
3. Semester / Year:	
First and Second Semester / 2025	
4. Date of Syllabus Preparation:	
2025/10/16	
5. Available Attendance Methods	
Theoretical lecture	
6. Total Credit Hours / Total Units	
Total Hours: 30 – Total Units	
7. Course Coordinator (if more than one, list all)	
Name: Noor Aayed Abdullah Email: noor.serkal.iba14@atu.edu.iq	
8.	
1. preserving it from errors. 2. Develop the student's spelling skills. 3. Assist the student in knowing the correct way to write numbers, read them, and write the hamza in its various forms. 4. Review Arabic grammar rules to help the student	Course Objectives: To enable the student to

avoid grammatical mistakes.					
5. Enhance the student's skills in appreciating the beauty of literary expression and imitating elegant texts in writing.					
6. Help the student identify common language mistakes and guide them.					
9-					
Lecture Strategy: It relies on the direct explanation of knowledge and information from the teacher to the student					
10-Course Structure					
Assessment Method	Learning Method	Unit or Topic Name	Expected Learning Outcomes	Hours	week
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Lesson on illustrating the importance of the Arabic language in general for non-specialist students. A Hadith on mastering one’s work. Poem by Al-Sharif Al-Radi mourning his mother.	Knowledge and Application	1	1
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns From Surah Al-Isra, verses 23 to 29.	Knowledge and Application	1	3+2
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns The present tense: its nominative, accusative, and jussive forms.	Knowledge and Application	1	5+4
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Genitive constructions in the Arabic language.	Knowledge and Application	1	7+6
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Accusative constructions	Knowledge and Application	1	9+8
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Arabic language. Common linguistic errors.	Knowledge and Application	1	11+10
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns between daad and thaa.’	Knowledge and Application	1	13+12
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns The difference between taa and haa The difference between the short alif and long alif. The difference	Knowledge and Application	1	14
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns From Surah Yusuf, verses 1 to 7.	Knowledge and Application	1	15

Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns From the Hadith	Knowledge and Application	1	16
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns A poem by Al-Mutanabbi	Knowledge and Application	1	17
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Morphology: declension of nouns.	Knowledge and Application	1	18
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Numbers and their rules.	Knowledge and Application	1	19
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Grammatical	Knowledge and Application	1	21+20
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns dependents	Knowledge and Application	1	23+22
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Common linguistic errors.	Knowledge and Application	1	24
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Rhetoric: Ilm al-Badi' – figurative embellishments.	Knowledge and Application	1	25
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Ilm al-Badi' – verbal embellishments	Knowledge and Application	1	26
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Dictionaries: Al-Maqayis and Al-Sihah	Knowledge and Application	1	27
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns A poem by Mustafa Jamal about Baghdad.	Knowledge and Application	1	29+28
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Common linguistic errors.	Knowledge and Application	1	30

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First semester = 10 marks
- Second semester= 10 marks

2. Practical:

- First semester= 10 marks
- Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- Theoretical=40 marks
- Practical =10 marks

12- Learning and Teaching Resources

Arabic Language Curriculum for Non-Specialist Departments	Required textbooks (if any): None Primary references (sources):
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Dictionary of Common Linguistic and Grammatical Errors / Khidr Abu Al-Aynayn	
	Recommended supporting books and references (scientific journals, reports, etc.): None
https://ketabpedia.com	Electronic references, websites:

Course Description Form

1-Course Name:	
Communication	
2-Course Code:	
ETE201-24-YM	
3-Semester / Year:	
Year	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Theoretical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
4 hours/ 6 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Ruwaida Abdul Ameer Abdul Kreem Email: ruwaida.abdulkareem.iba@atu.edu.iq	
8-Course Objectives	
Course Object	At the end of the course the student will be able to: 1. Identify the basic principles of communications systems, both wired and wireless. 2. Learn about the methods of transferring information in communications systems, their specifications and features, and the types and methods of embedding used 3. Recognizes the various types of radio, television and telephone systems 4. Learns how to connect and operate communications circuits
9-Teaching and Learning Strategies	
Strategy	1-Explaining the study material in a way that suits the students' levels in the class through simple explanations, illustrations, and appropriate examples to convey the idea clearly and distinctly. 2-Use the discussion strategy to discuss the questions raised during the lecture. 3-Use a cooperative learning strategy to solve homework. 4-Use the feedback method during the lecture to determine the extent of the student's understanding of the study material.

5-Using surprise exams to evaluate students' level.

10-Course Structure

Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Filters (BPF)-(HPF)-(LPF) - (BSF)-(RC)	Filters	Theoretical lecture	oral examination and quiz
2 nd week	2hr	The student learns Active filter (BPF)-(HPF)-(LPF) - (BSF).	Active filter	Theoretical lecture	oral examination and quiz
3 rd week	2hr	The student learns Modulation, types, AM modulation, wave analysis.	Modulation	Theoretical lecture	oral examination and quiz
4 th week	2hr	The student learns Spectrum frequency, power distributed, calculate modulation.	Spectrum frequency	Theoretical lecture	oral examination and quiz
5 th week	2hr	The student learns Types of AM with its spectrum.	Types of AM	Theoretical lecture	oral examination and quiz
6 th week	2hr	The student learns Types of modulation used to generate AM.	Types of modulation	Theoretical lecture	oral examination and quiz
7 th week	2hr	The student learns Detector of AM- distortion in demodulation circuits-Envelope (AGC)- Synchronous Detector- Detector.	Detector of AM	Theoretical lecture	oral examination and quiz
8 th week	2hr	The student learns Block diagram for transmitting and receiving AM-sensitivity of receiving device.	Block diagram for transmitting and receiving	Theoretical lecture	oral examination and quiz
9 th week	2hr	The student learns FM modulation-PM modulation mathematic analysis for modulated waves-modulation ratio-frequency deviation.	FM modulation-	Theoretical lecture	oral examination and quiz
10 th week	2hr	The student learns The width of spectrum frequency for FM and PM	width of spectrum frequency	Theoretical lecture	oral examination and quiz
11 th week	2hr	The student learns Types of FM generation- Stereophonic FM - (Stereo)	Types of FM generation	Theoretical lecture	oral examination and quiz
12 th week	2hr	The student learns Some types of Detector of FM	Detector of FM	Theoretical lecture	oral examination and quiz
13 th week	2hr	The student learns Coding -Sampling-Quantization-Coding transform	Coding	Theoretical lecture	oral examination and quiz
14 th week	2hr	The student learns PM-PCM-PPM-PDM and PAM	PM Modulation	Theoretical lecture	oral examination and quiz
15 th week	2hr	The student learns TDM-FDM-Multiplexing	Multiplexing	Theoretical lecture	oral examination and quiz
16 th week	2hr	The student learns PSK-FSK-ASK modulation	Keying Modulation	Theoretical lecture	oral examination and quiz
17 th week	2hr	The student learns Transmission information-signal to noise ratio-noise	Transmission information	Theoretical lecture	oral examination and quiz
18 th week	2hr	The student learns Mobile-FDMA-TDMA-CDMA	Mobile and Technologies	Theoretical lecture	oral examination and quiz
19 th week	2hr	The student learns Teleprinters-telegraph	Teleprinters	Theoretical lecture	oral examination and quiz
20 th week	2hr	The student learns Telex- (Fax-Receiver)-Faximile Transmission	Receiver-Transmission	Theoretical lecture	oral examination and quiz
21 th week	2hr	The student learns Optic fiber-types-properties	Optic fiber	Theoretical lecture	oral examination and quiz

22 th week	2hr	The student learns Types of antenna – fundamentals of antenna-factor of antenna	Types of antenna– fundamentals	Theoretical lecture	oral examination and quiz
23 th week	2hr	The student learns Propagation of radio signal	Propagation of radio signal	Theoretical lecture	oral examination and quiz
24 th week	2hr	The student learns Some types of antenna	types of antenna	Theoretical lecture	oral examination and quiz
25 th week	2hr	The student learns Using of Microwave in communication	Microwave	Theoretical lecture	oral examination and quiz
26 th week	2hr	The student learns Satallite- properties and advances-receiving and transmitting- orbits of satellite- multiple access.	Satallite	Theoretical lecture	
27 th week	2hr	The student learns Microwaves- generations- frequency spectrum	Microwaves- generations	Theoretical lecture	
28 th week	2hr	The student learns Mobile-introduction- principles-technics-wireless	Mobile- introduction-	Theoretical lecture	
29 th week	2hr	The student learns GSM-function-structure	GSM	Theoretical lecture	
30 th week	2hr	The student learns Thuraya device	Thuraya	Theoretical lecture	

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Filters (BPF)-(HPF)-(LPF) - (BSF)-(RC)	Filters	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns Active filter (BPF)-(HPF)-(LPF) - (BSF).	Active filter	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns Modulation, types, AM modulation, wave analysis.	Modulation	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Spectrum frequency, power distributed, calculate modulation.	Spectrum frequency	practical lecture	oral examination and writing report
5 th week	2hr	The student learns Types of AM with its spectrum.	Types of AM	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Types of modulation used to generate AM.	Types of modulation	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Detector of AM- distortion in demodulation circuits-Envelope (AGC)- Synchronous Detector- Detector.	Detector of AM	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Block diagram for transmitting and receiving AM-sensitivity of receiving device.	Block diagram for transmitting and receiving	practical lecture	oral examination and writing report
9 th week	2hr	The student learns FM modulation-PM modulation mathematic analysis for modulated waves-modulation ratio-frequency deviation.	FM modulation-	practical lecture	oral examination and writing report
10 th week	2hr	The student learns The width of spectrum frequency for FM and PM	width of spectrum frequency	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Types of FM generation- Secttree FM –(Stero)	Types of FM generation	practical lecture	oral examination and writing report
12 th week	2hr	The student learns Some types of Detector of FM	Detector of FM	practical lecture	oral examination and writing report
13 th week	2hr	The student learns Coding –Sampling-	Coding	practical	oral examination

		Quantization-Coding transform		lecture	and writing report
14 th week	2hr	The student learns PM-PCM-PPM-PDM and PAM	PM Modulation	practical lecture	oral examination and writing report
15 th week	2hr	The student learns TDM-FDM-Multiplexing	Multiplexing	practical lecture	oral examination and writing report
16 th week	2hr	The student learns PSK-FSK-ASK modulation	Keying Modulation	practical lecture	oral examination and writing report
17 th week	2hr	The student learns Transmission information-signal to noise ratio-noise	Transmission information	practical lecture	oral examination and writing report
18 th week	2hr	The student learns Mobile-FDMA-TDMA-CDMA	Mobile and Technologies	practical lecture	oral examination and writing report
19 th week	2hr	The student learns Teleprinters-telegraph	Teleprinters	practical lecture	oral examination and writing report
20 th week	2hr	The student learns Telex- (Fas-Receiver)-Faximile Transmission	Receiver-Transmission	practical lecture	oral examination and writing report
21 th week	2hr	The student learns Optic fiber-types-properties	Optic fiber	practical lecture	oral examination and writing report
22 th week	2hr	The student learns Types of antenna – fundamentals of antenna-factor of antenna	Types of antenna– fundamentals	practical lecture	oral examination and writing report
23 th week	2hr	The student learns Propagation of radio signal	Propagation of radio signal	practical lecture	oral examination and writing report
24 th week	2hr	The student learns Some types of antenna	types of antenna	practical lecture	oral examination and writing report
25 th week	2hr	The student learns Using of Microwave in communication	Microwave	practical lecture	oral examination and writing report
26 th week	2hr	The student learns Satellite- properties and advances-receiving and transmitting- orbits of satellite- multiple access.	Satellite	practical lecture	oral examination and writing report
27 th week	2hr	The student learns Microwaves- generations-frequency spectrum	Microwaves-generations	practical lecture	oral examination and writing report
28 th week	2hr	The student learns Mobile-introduction-principles-technics-wireless	Mobile-introduction-	practical lecture	oral examination and writing report
29 th week	2hr	The student learns GSM-function-structure	GSM	practical lecture	oral examination and writing report
30 th week	2hr	The student learns Thuraya device	Thuraya	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks

Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)

1-Electronic communication. Dennis- Riddy

	2-Modulation. Conner 3-Principle of Communication Systems Tuab&Segilling. 4- Telecommunication for Technition.
Main references (sources)	1-D. Blake, "Introduction to Communication Systems," 8/16/01. 2-A. B. Carlson and P. B. Crilly, COMMUNICATION SYSTEMS: An Introduction to Signals and Noise in Electrical Communication, 5th ed., McGraw-Hill. 3-"Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020].
Recommended books and references (scientific journals, reports...)	2-Modulation. Conner
Electronic References, Websites	-"Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020]

Course Description Form

1-Course Name:	
Audio-visual equipment	
2-Course Code:	
ETE202-24-YM	
3-Semester / Year:	
Year	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Theoretical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
60 hours/ 8 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Hassan Farhan Rashag Email: Hassan.rashag@atu.edu.iq	
8-Course Objectives	
Course Objectives	At the end of the course the student will be able to: 1. be understands the process of audio 2.the amplification of audio and visual
9-Teaching and Learning Strategies	
Strategy	To discuss the the signal processing of fm And to enhance the practical experience for the student and how reading the wiring

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	4hr	The student learns Introduction how to convert picture to electrical signal	Introduction how to convert picture to electrical signal	Theoretical and practical lecture	Solving exercises + daily exam
2 nd week	4hr	The student learns Types of scanning	Types of scanning	Theoretical and practical lecture	Solving exercises + daily exam
3 rd week	4hr	The student learns Convert the light to electrical signal	Convert the light to electrical signal	Theoretical and practical lecture	Solving exercises + daily exam
4 th week	4hr	The student learns Types of sequence	Types of sequence	Theoretical and practical lecture	Solving exercises + daily exam
5 th week	4hr	The student learns Types of camera tubes	Types of camera tubes	Theoretical and practical lecture	Solving exercises + daily exam
6 th week	4hr	The student learns Types of receivers	Types of receivers	Theoretical and practical lecture	Solving exercises + daily exam
7 th week	4hr	The student learns Tuning frequency	Tuning frequency	Theoretical and practical lecture	Solving exercises + daily exam
8 th week	4hr	The student learns Channel selection	Channel selection	Theoretical and practical lecture	Solving exercises + daily exam
9 th week	4hr	The student learns Intermediate frequency	Intermediate frequency	Theoretical and practical lecture	Solving exercises + daily exam
10 th week	4hr	The student learns Picture detection	Picture detection	Theoretical and practical lecture	Solving exercises + daily exam
11 th week	4hr	The student learns Picture amplification	Picture amplification	Theoretical and practical lecture	Solving exercises + daily exam
12 th week	4hr	The student learns Automatic gain control	Automatic gain control	Theoretical and practical lecture	Solving exercises + daily exam
13 th week	4hr	The student learns Introduction to color TV	Introduction to color TV	Theoretical and practical lecture	Solving exercises + daily exam
14 th week	4hr	The student learns Cross band filter	Cross band filter	Theoretical and practical lecture	Solving exercises + daily exam
15 th week	4hr	The student learns Amplifier of color	Amplifier of color	Theoretical and practical lecture	Solving exercises + daily exam
16 th week	4hr	The student learns Auto color control	Auto color control	Theoretical and practical lecture	Solving exercises + daily exam
17 th week	4hr	The student learns Color synchronization interval	Color synchronization	Theoretical and practical	Solving exercises + daily

			interval	lecture	exam
18 th week	4hr	The student learns Color oscillation	Color oscillation	Theoretical and practical lecture	Solving exercises + daily exam
19 th week	4hr	The student learns Color amplification	Color amplification	Theoretical and practical lecture	Solving exercises + daily exam
20 th week	4hr	The student learns Color detector	Color detector	Theoretical and practical lecture	Solving exercises + daily exam
21 th week	4hr	The student learns Delay time line	Delay time line	Theoretical and practical lecture	Solving exercises + daily exam
22 th week	4hr	The student learns Final step of color amplifier	Final step of color amplifier	Theoretical and practical lecture	Solving exercises + daily exam
23 th week	4hr	The student learns Processing of picture signal	Processing of picture signal	Theoretical and practical lecture	Solving exercises + daily exam
24 th week	4hr	The student learns Visual signal detector	Visual signal detector	Theoretical and practical lecture	Solving exercises + daily exam
25 th week	4hr	The student learns Visual signal amplifier	Visual signal amplifier	Theoretical and practical lecture	Solving exercises + daily exam
26 th week	4hr	The student learns Processing of color signal	Processing of color signal	Theoretical and practical lecture	Solving exercises + daily exam
27 th week	4hr	The student learns NITSC	NITSC	Theoretical and practical lecture	Solving exercises + daily exam
28 th week	4hr	The student learns PAL	PAL	Theoretical and practical lecture	Solving exercises + daily exam
29 th week	4hr	The student learns SECAM	SECAM	Theoretical and practical lecture	Solving exercises + daily exam
30 th week	4hr	The student learns Specifications of SECAM system	Specifications of SECAM system	Theoretical and practical lecture	Solving exercises + daily exam

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks

b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Principles of tv
Main references (sources)	Principles of tv
Recommended books and references (scientific journals, reports...)	Principles of tv
Electronic References, Websites	

Course Description Form

1-Course Name:

Electronic Circuits

2-Course Code:

ETE203-24-YM

3-Semester / Year:

Year

4-Description Preparation Date:

26-10-2025

5-Available Attendance Forms:

Theoretical lecture

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

30 hours/ 8 unit

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

Name: Alaa Hadi Mohammed

Email: alaa.musa@atu.edu.iq

8-Course Objectives

Course Objectives	At the end of the course the student will be able to:
	1. Know about the methods of the electronic circuits design.
	2. Student to be able to build and operate the electronic circuits on the practical breadboard.
	3. Student to be able to make use form the academic studying in marketing.

9-Teaching and Learning Strategies

Strategy	At the beginning of every theoretical lecture, there is an introduction to the lecture topic. This would include most of the questions that can be asked about the topic and will be answered during the lecture. Students will be taken through a discussion to find the pre-answers to those questions. This is followed by a detailed explanation of the topic by which many examples and solutions are given. Moreover, the lecture includes different educational videos which would virtually clarify the topic. On the other hand, during the practical lecture, the students are given the lecture as mentioned above, in addition to the practical application, which includes connecting the electronic circuits and recording the data obtained from the circuit to be compared with the theoretical results, and then writing a detailed report on the experiment and its results.
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10-Course Structure

Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Power supplies: 1- Using a variable resistor. 2- Using a transistor with variable resistance. 3- Using a Darlington connection with a variable resistance.	Power supplies	Theoretic al lecture	oral examination and quiz
2 nd & 3 rd weeks	4hr	The student learns Voltage regulators: parallel voltage regulator with the derivation of its equation - series voltage regulator with the derivation of its equations. Examples of the two topics	Voltage regulators	Theoretic al lecture	oral examination and quiz
4 rd week	2hr	The student learns Thyristor: its structure and properties, its symbol. Representing the thyristor by two transistors (ideal latch). The circuit and the idea of work.	Thyristor	Theoretic al lecture	oral examination and quiz
5 th week	2hr	The student learns Diac and Triac: structure, symbol, and characteristics. Applications on flashing, protection, and alarm.	Diac and Triac	Theoretic al lecture	oral examination and quiz
6 th week	2hr	The student learns Silicon rectifier applications: load surge protection and working idea. Using a silicon rectifier to control the lighting intensity of a lamp: the practical circuit, core equations, and wave diagrams.	Silicon rectifier	Theoretic al lecture	oral examination and quiz
7 th & 8 th weeks	4hr	The student learns Oscillators: Definition of back feed and its types. Mathematical equations for the final enlargement of the system. Oscillation conditions for oscillators. Examples of oscillators (LC oscillator, Hartley oscillator, Colbits oscillator, and phase shift oscillator).	Oscillators	Theoretic al lecture	oral examination and quiz
9 th & 10 th & 11 th weeks	6hr	The student learns The transistor as a switch: its specifications, its operation on the load line, and its response to a rectangular input panel. Vibrators and their types (the monostable vibrator, bistable vibrator, and unstable vibrator). Mathematical relationships, shapes, and waves of oscillators.	Vibrators	Theoretic al lecture	oral examination and quiz
12 th & 13 th weeks	4hr	The student learns Operational amplifier: its equivalent circuit and specifications (input resistance, output resistance, and	Operational amplifier	Theoretic al lecture	oral examination and quiz

		amplification). Inverting and non-inverting amplifiers with magnification equations.			
14 th & 15 th weeks	4hr	The student learns Inverting adder circuit and non-inverting adder circuit with output equations. solved examples	Operational amplifier applications	Theoretic al lecture	oral examination and quiz
16 th week	2hr	The student learns Subtractor circuit: equations and applied circuit with examples.	Operational amplifier applications	Theoretic al lecture	oral examination and quiz
17 th & 18 th weeks	4hr	The student learns Integrator and Differentiator Circuit: Derivation of output equations with examples.	Operational amplifier applications	Theoretic al lecture	oral examination and quiz
19 th week	2hr	The student learns The comparator: its circle and the idea of work with examples.	Operational amplifier applications	Theoretic al lecture	oral examination and quiz
20 th week	2hr	The student learns Using op-amps in rectification circuits: ideal half-wave rectifier and ideal full-wave rectifier with examples.	Operational amplifier applications	Theoretic al lecture	oral examination and quiz
21 st week	2hr	The student learns Schmitt trigger: its circuit and the idea of the work. Drawing the characteristics of the conversion and the output voltage with examples.	Operational amplifier applications	Theoretic al lecture	oral examination and quiz
22 nd week	2hr	The student learns square wave generator: its circuit, derivation of the equation for the output frequency. A design examples.	Wave generators using the operational amplifier	Theoretic al lecture	oral examination and quiz
23 rd week	2hr	The student learns Pulse generator: its circuit, working idea, and derivation of the pulse width equation with an example.	Wave generators using the operational amplifier	Theoretic al lecture	oral examination and quiz
24 th week	2hr	The student learns Triangle wave generator: its circuit, working idea, and derivation of the frequency equation for the output wave with examples.	Wave generators using the operational amplifier	Theoretic al lecture	oral examination and quiz
25 th & 26 th week	4hr	The student learns the analog calculator: its design with examples. Timer IC555: its construction and use in oscillators, with the derivation of pulse width calculation equations. Solved examples.	Analog calculator	Theoretic al lecture	oral examination and quiz
27 th week	2hr	The student learns Low-pass filter (LPF) and high-pass filter (HPF), their properties and response curve equations with examples.	Active RC filters	Theoretic al lecture	oral examination and quiz
28 th week	2hr	The student learns Band-pass filter (BPF) and band-stop filter (BSF); their properties, and response curve equations with examples.	Active RC filters	Theoretic al lecture	oral examination and quiz
29 th week	2hr	The student learns Basic methods for fabrication integrated circuits.	Integrated circuit fabrication	Theoretic al lecture	oral examination and quiz
30 th week	2hr	The student learns Fabrication of an integrated circuit for an NPN transistor, manufacturing integrated resistors and capacitors, and manufacturing an integrated	Integrated circuit fabrication	Theoretic al lecture	oral examination and quiz

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Zener regulator	DC voltage regulators	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns Parallel voltage regulator	DC voltage	practical	oral examination and

			regulators	lecture	writing report
3 rd week	2hr	The student learns Series voltage regulator	DC voltage regulators	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Controlling the lighting intensity of a lamp using the thyristor	Thyristor	practical lecture	oral examination and writing report
5 th week	2hr	The student learns The mono-stable vibrator	The vibrators	practical lecture	oral examination and writing report
6 th week	2hr	The student learns The bi-stable vibrator	The vibrators	practical lecture	oral examination and writing report
7 th week	2hr	The student learns The unstable vibrator	The vibrators	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Phase shift oscillator	The oscillators	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Hartley oscillator	The oscillators	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Colbits oscillator	The oscillators	practical lecture	oral examination and writing report
11 th week	2hr	I The student learns nverting and non-inverting operational amplifiers	The operational amplifier	practical lecture	oral examination and writing report
12 th week	2hr	T The student learns he inverting adder	The operational amplifier	practical lecture	oral examination and writing report
13 th week	2hr	The student learns the non-inverting adder	The operational amplifier	practical lecture	oral examination and writing report
14 th week	2hr	The student learns the subtractor	The operational amplifier	practical lecture	oral examination and writing report
15 th week	2hr	The student learns the differentiator	The operational amplifier	practical lecture	oral examination and writing report
16 th week	2hr	The student learns the integrator	The operational amplifier	practical lecture	oral examination and writing report
17 th week	2hr	The student learns The Comparator	The operational amplifier	practical lecture	oral examination and writing report
18 th week	2hr	The student learns Schmitt trigger	The operational amplifier	practical lecture	oral examination and writing report
19 th week	2hr	The student learns Ideal half-wave rectifier	The operational amplifier	practical lecture	oral examination and writing report
20 th week	2hr	The student learns Ideal full-wave rectifier	The operational amplifier	practical lecture	oral examination and writing report
21 st week	2hr	The student learns Sine wave generator using operational amplifier	The sine wave generator	practical lecture	oral examination and writing report
22 nd week	2hr	The student learns Square wave generator using operational amplifier	The square wave generator	practical lecture	oral examination and writing report
23 rd week	2hr	The student learns Triangle wave generator using an operational amplifier	The triangle wave generator	practical lecture	oral examination and writing report
24 th week	2hr	The student learns Using the timer IC555 as a mono-stable oscillator	The timer IC555	practical lecture	oral examination and writing report
25 th week	2hr	The student learns Using the timer IC555 as an unstable vibrator	The timer IC555	practical lecture	oral examination and writing report
26 th week	2hr	The student learns Active LPF filter	Active filters	practical	oral examination and

				lecture	writing report
27 th week	2hr	The student learns Active HPF filter	Active filters	practical lecture	oral examination and writing report
28 th week	2hr	The student learns Active BPF filter	Active filters	practical lecture	oral examination and writing report
29 th week	2hr	The student learns Active BSF filter	Active filters	practical lecture	oral examination and writing report
30 th week	2hr	The student learns Prepare a model of an integrated circuit and learn how to design it	The integrated Circuits	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	The methodical book (The electronic circuits)
Main references (sources)	The methodical book (The electronic circuits)
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the electronic circuits topics
Electronic References, Websites	https://stackexchange.com/

Course Description Form

1-Course Name:
Electronic Measurements Instrumentation
2-Course Code:
ETE204-24-YM
3-Semester / Year:
Year
4-Description Preparation Date:
26-10-2025
5-Available Attendance Forms:
Theoretical lecture
6-Number of Credit Hours (Total) / Number of Units (Total)
120 hours/ 4 unit
7-Course administrator's name (mention all, if more than one name)
Name: Asmaa Adnan
Email: asmaa.najm@atu.edu.iq

8-Course Objectives

Course Objectives	At the end of the course the student will be able to: - Understands electrical measurement devices and how they operate. - Familiarizes themselves with maintenance methods for electrical measurement devices. - Learns how to connect and operate electrical circuits..
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9-Teaching and Learning Strategies

Strategy	1. Student Discussion and Questioning: • Engage students in discussions, encouraging them to pose questions related to the lecture topic. • Foster critical and analytical thinking, guiding them towards problem-solving approaches aligned with the subject. 2. Material Explanation and Visual Aids: • Present the content coherently, addressing initial inquiries and primary discussions. • Utilize available visual aids for clarification, including illustrated materials on websites and real-world examples. • Incorporate practical demonstrations to enhance understanding. Feedback and Assessment: • Implement feedback loops to evaluate students' grasp of the material. • Assess the extent of student comprehension through interactive discussions and participation. Utilize real-life scenarios and solved examples to reinforce the lesson
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10-Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Classification of Devices, Signal Devices, and their Foundations: Types of Torque: Influential Torque, Deflecting Torque, Balancing Torque, Residual Torque.	Device classification	Theoretical lecture	oral examination and quiz
2 nd week	2hr	The student learns Devices with Moving Coils - D'Arsonval Movement as a Current and Voltage Meter: Structure and Torque Equations	Measuring devices	Theoretical lecture	oral examination and quiz
3 rd week	2hr	The student learns Galvanometer - sensitivity of the calorimeter - final deviation - motor behavior - decay.	Galvanometer	Theoretical lecture	oral examination and quiz
4 th week	2hr	The student learns AC ammeter - resistance in parallel with it. Examples of a resistive voltmeter for an oven on a bathroom with a sensitive voltmeter.	Resistance in parallel	Theoretical lecture	oral examination and quiz
5 th week	2hr	The student learns Resistance measurement - voltmeter method - ohmmeter device - type - balance.	Straight resistance	Theoretical lecture	oral examination and quiz
6 th week	2hr	The student learns Differential Avometer - Renewal of AC devices.	Avometer	Theoretical lecture	oral examination and quiz
7 th week	2hr	The student learns AC current measuring devices - electro-dynamometer - installation	AC current measuring	Theoretical lecture	oral examination and quiz

		- moment equation.	devices		
8 th week	2hr	The student learns Iron measuring devices - installation - animation equations - moments - advantages - equality.	installation	Theoretical lecture	oral examination and quiz
9 th week	2hr	The student learns Decibel measuring devices.	Decibel measuring devices	Theoretical lecture	oral examination and quiz
10 th week	2hr	The student learns Use of electrodanometer - Jodi phase power meter - installation - with deflection angle equalizer.	Electrodanometer	Theoretical lecture	oral examination and quiz
11 th week	2hr	The student learns Frequency meter - installation and starts working.	Frequency scale	Theoretical lecture	oral examination and quiz
12 th week	2hr	The student learns Al-Mujahid - Renewal of voltmeter and ammeter.	For stress	Theoretical lecture	oral examination and quiz
13 th week	2hr	The student learns Thermocouple devices.	Thermal devices	Theoretical lecture	oral examination and quiz
14 th week	2hr	The student learns AC bridges - Wheatstone bridge work - Measurement errors - Effect of conducting wires - Double Kelvin bridge	DC bridges	Theoretical lecture	oral examination and quiz
15 th week	2hr	The student learns Oscilloscope basics - block diagram - aircraft valve - installation - screen - cathode valve connections.	Oscilloscope basics	Theoretical lecture	oral examination and quiz
16 st week	2hr	The student learns Vertical deflection system as a function - input selector, vertical magnifier, scanning line, selection function - types of analysis - horizontal deflection system - basic sweep generator - nitrous sweep - mug sweep - horizontal magnifier - oscilloscope sensors - passive filament sensors - mullite sensors.	Magnifier	practical lecture	oral examination and writing report
17 nd week	2hr	The student learns Lissajous problem - phase calculation - frequency calculation.	The whims	practical lecture	oral examination and writing report
18 rd week	2hr	The student learns Dual oscillatory radiation buffer head.	Signal plotter	practical lecture	oral examination and writing report
19 th week	2hr	The student learns Electronic measuring devices - electronic voltmeter - basic circuit - transistor type - electronic millimeter.	Electronic measuring devices	practical lecture	oral examination and writing report
20 th week	2hr	The student learns Electronic measuring devices - electronic voltmeter - basic circuit - transistor type - electronic millimeter.	Electronic measuring devices	practical lecture	oral examination and writing report
21 th week	2hr	The student learns Considerations in choosing an electronic voltmeter - input impedance - voltage ranges - decibels - sensitivity with bandwidth - AC current measurement.	Voltmeter	practical lecture	oral examination and writing report
22 th week	2hr	The student learns Digital voltmeter - general specifications - component gradient type - balance Darfur.	Voltmeter	practical lecture	oral examination and writing report
23 th week	2hr	Devices used to control sensitivity on measuring devices.	Electronic measuring devices	practical lecture	oral examination and writing report
24 th week	2hr	The student learns IEEE488 interface circuit (electric switch).	The electric gearbox	practical lecture	oral examination and writing report
25 th week	2hr	The student learns Description of digital control of timing signal in measurement based on attenuation.	Digital control	practical lecture	oral examination and writing report
26 th week	2hr	The student learns AC ammeter - resistance	Resistance in	practical	oral examination and

		in parallel with it. Examples of a resistive voltmeter for an oven on a bathroom with a sensitive voltmeter.	parallel	lecture	writing report
27 th week	2hr	The student learns Resistance measurement - voltmeter method - ohmmeter device - type - balance.	Straight resistance	practical lecture	oral examination and writing report
28 th week	2hr	The student learns Differential Avometer - Renewal of AC devices.	Avometer	practical lecture	oral examination and writing report
29 th week	2hr	The student learns AC current measuring devices - electro dynamometer - installation - moment equation.	AC current measuring devices	practical lecture	oral examination and writing report
30 th week	2hr	The student learns Iron measuring devices - installation - animation equations - moments - advantages - equality.	installation	practical lecture	oral examination and writing report

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Classification of devices, indicating devices and the foundations based on them, types of acting torques - deflection torques - balance torques - diminishing torques.	Galvanometer	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns Moving coil measuring devices - d'Arsonval movement as a measure of current and voltage - composition - moment equations.	Resistance in parallel	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns Galvanometer - galvanometer sensitivity - final deviation - kinetic behavior - decay mechanism.	Straight resistance	practical lecture	oral examination and writing report
4 th week	2hr	The student learns DC ammeter - resistance in parallel with it. Examples of DC voltmeter - resistance in series with it - sensitivity of voltmeter.	Avometer	practical lecture	oral examination and writing report
5 th week	2hr	The student learns Resistance measurement - ammeter-voltmeter method - ohmmeter device - series type - parallel type.	AC current measuring devices	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Differential chart amplifier - calibration of direct current devices.	installation	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Alternating current measuring devices - electro dynamometer - installation - moment equation.	Decibel measuring devices	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Measuring devices with moving iron - installation - moment equations - advantages - equality.	Electrodynamometer	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Decibel measuring devices.	Frequency scale	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Use of the electro dynamometer - single-phase power meter - composition - deflection angle equation.	For stress	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Frequency meter-- installation and working principle.	Thermal devices	practical lecture	oral examination and writing report
12 th week	2hr	The student learns Stress-calibration of voltmeter and ammeter.	DC bridges	practical lecture	oral examination and writing report
13 th week	2hr	The student learns Thermal devices -	Oscilloscope	practical lecture	oral examination

		thermocouple device.	basics		and writing report
14 th week	2hr	The student learns DC bridges - Wheatstone bridge, working principle - Measurement errors - Effect of conducting wires - Double Kelvin bridge	Magnifier	practical lecture	oral examination and writing report
15 th week	2hr	The student learns Oscilloscope basics - block diagram - cathode ray valve - installation - screen - cathode ray valve connections.	The whims	practical lecture	oral examination and writing report
16 st week	2hr	The student learns Vertical deflection system Functional diagram - input selector molar vertical amplifier - delay line, delay line function - types of delay line - horizontal deflection system - basic sweep generator - sweep synchronizer - sweep mug - horizontal amplifier - oscilloscope sensors - passive voltage sensors - sensors High voltages.	Signal plotter	practical lecture	oral examination and writing report
17 nd week	2hr	The student learns Lissajous problem - phase calculation - frequency calculation.	Electronic measuring devices	practical lecture	oral examination and writing report
18 rd week	2hr	The student learns Dual radiation oscilloscope - storage oscilloscope.	Electronic measuring devices	practical lecture	oral examination and writing report
19 th week	2hr	The student learns Electronic measuring devices - electronic voltmeter - basic circuit - transistor type - electronic millimeter.	Voltmeter	practical lecture	oral examination and writing report
20 th week	2hr	The student learns Electronic measuring devices - electronic voltmeter - basic circuit - transistor type - electronic millimeter.	Voltmeter	practical lecture	oral examination and writing report
21 th week	2hr	The student learns Considerations in choosing an electronic voltmeter - input impedance - voltage ranges - decibels - sensitivity with bandwidth - current measurement.	Electronic measuring devices	practical lecture	oral examination and writing report
22 th week	2hr	The student learns Digital voltmeter - general specifications - regression type, integration type - constant balance.	The electric gearbox	practical lecture	oral examination and writing report
23 th week	2hr	The student learns Devices used to control the sensitivity of measuring devices.	Digital control	practical lecture	oral examination and writing report
24 th week	2hr	The student learns IEEE488 interconnect circuit (electric switch).	Resistance in parallel	practical lecture	oral examination and writing report
25 th week	2hr	The student learns Describe digital control with example timing signal in microprocessor based measurement.	Straight resistance	practical lecture	oral examination and writing report
26 th week	2hr	The student learns DC ammeter - resistance in parallel with it. Examples of DC voltmeter - resistance in series with it - sensitivity of voltmeter.	Avometer	practical lecture	oral examination and writing report
27 th week	2hr	The student learns Resistance measurement - ammeter-voltmeter method - ohmmeter device - series type - parallel type.	AC current measuring devices	practical lecture	oral examination and writing report
28 th week	2hr	The student learns Differential chart amplifier - calibration of direct current devices.	installation	practical lecture	oral examination and writing report
29 th week	2hr	The student learns Alternating current measuring devices - electro-dynamometer - installation - moment equation.	Device classification	practical lecture	oral examination and writing report

30 th week	2hr	The student learns Measuring devices with moving iron - installation - moment equations - advantages - equality.	Measuring devices	practical lecture	oral examination and writing report
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11- Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Electronic measuring devices and measuring techniques
Main references (sources)	Written by Hani Aziz, Abdullah Muhammad Gabriel Jesus
Recommended books and references (scientific journals, reports...)	Electronic devices and measurement techniques
Electronic References, Websites	Electronic devices and measurement techniques

Course Description Form

1-Course Name:	
Microcomputers	
2-Course Code:	
ETE205-24-YM	
3-Semester / Year:	
Year	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms	
Theoretical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total) :	
120	
7-Course administrator's name (mention all, if more than one name)	
Name: Saad Salah hameed albarrak	
Email: Saad.hameed@atu.edu.iq	
8-Course Objectives	
	Cognitive goals

	A1- The student understands the types of computers in general. A2- The student understands microcomputers and their types. A3. The student can write a program in machine language			
9-Teaching and Learning Strategies				
Strategy	B - Skills objectives of the course. B1 - The student can deal with the microcomputer and recognize its components. B2 - The student can implement a program in machine language in practice.			
10-Course Structure				
Week	Hours	Required learning outcomes	Education method	Evaluation method
1 st	4	The student learns Introducing the vocabulary of the subject and the distribution of exam grades - numerical systems - the decimal system - the binary system - the octal system - the hexadecimal system and its importance for microcomputers - conversions between systems.	Theoretical and practical lectures	Oral and written exams
2 nd	4	The student learns Introducing microcomputers, their types, and their relationship to other electronic computers	Theoretical and practical lectures	Oral and written exams
3 rd	4	The student learns Definitions of microcomputer terms: bit-byte-nibble-word-instruction-program-software-structures-high-level languages-low-level languages-assembly language-machine language.	Theoretical and practical lectures	Oral and written exams
4 th	4	The student learns Microcomputer architecture - block diagram - input unit - keyboard - mouse - the two types of mouse and a comparison between them - the input port.	Theoretical and practical lectures	Oral and written exams
5 th	4	The student learns The transmission system - the data carrier - the address carrier - the lines of control and control - the benefit of each - a comparison between them.	Theoretical and practical lectures	Oral and written exams
6 th	4	The student learns Output unit - screen - the difference between a computer screen and a TV screen - an output port.	Theoretical and practical lectures	Oral and written exams
7 th	4	The student learns Memory - main memory - read only memory - read and write memory - a comparison between them - auxiliary memories and the difference between them and the main memory.	Theoretical and practical lectures	Oral and written exams
8 th	4	The student learns CPU - Microprocessor - Definition - Block diagram showing the architecture of the microprocessor - Microprocessor 8085 - Terminal diagram and its block diagram - Data bus bumpers - Address bus bumpers and a comparison between them.	Theoretical and practical lectures	Oral and written exams
9 th	4	The student learns General registers - A register (accumulator) - Arithmetic and logic unit - Flag register - Flag of the 8085 microprocessor - Arithmetic example for determining the state of each flag and interpreting the state - The utility of the flag register.	Theoretical and practical lectures	Oral and written exams
10 th	4	The student learns Informing the Z-80 microprocessor	Theoretical and	Oral and written

		and comparing it with the information of the 8085 microprocessor – Arithmetic example – PC program counter – SP stack pointer – Instruction register – Instruction decoder – Control unit.	practical lectures	exams
11 th	4	The student learns Directions of the 8085-Z80 microprocessor - the symbols used to remember - the machine language - a comparison between them - how to extract the codes in the machine language from the instructions table.	Theoretical and practical lectures	Oral and written exams
12 th	4	The student learns Directions of the data transfer group and its types - solving examples - writing an application program.	Theoretical and practical lectures	Oral and written exams
13 th	4	The student learns Input and output instructions and their relationship to data transmission group instructions - practical examples.	Theoretical and practical lectures	Oral and written exams
14 th	4	The student learns A set of arithmetic Instructions and their types - practical examples - their use in amplifying the digital signal with an applied example.	Theoretical and practical lectures	Oral and written exams
15 th	4	The student learns The set of logical stimuli and their types - practical examples - and their use in solving digital circuits.	Theoretical and practical lectures	Oral and written exams
16 th	4	The student learns A group of branching instructions and their types - conditional and unconditional and their dependence on flags - practical examples - the importance of this group in writing programs.	Theoretical and practical lectures	Oral and written exams
17 th	4	The student learns The set of control commands - what is their relationship to the activation keys - how do they differ from the rest of the previous instructions.	Theoretical and practical lectures	Oral and written exams
18 th	4	The student learns Programs to perform arithmetic operations: addition - subtraction - multiplication - division - intended addressing and its types in the 8085 processor	Theoretical and practical lectures	Oral and written exams
19 th	4	The student learns Stages of executing a directive - Instructing cycle - Machine cycle - The timing diagram for executing a command (instructing the contents of the accumulator to be stored in a memory location for example) - How the microprocessor reads data in memory.	Theoretical and practical lectures	Oral and written exams
20 th	4	The student learns Composition of repetition loops - time delay loops - one loop - two loops - three loops - application programs for each of them.	Theoretical and practical lectures	Oral and written exams
21 st	4	The student learns Generating pulses with a required frequency and a known duty cycle compared to pulse generators that use integrated circuits.	Theoretical and practical lectures	Oral and written exams
22 nd	4	The student learns Practical examples showing how to exploit time-delay loops in industrial and domestic fields.	Theoretical and practical lectures	Oral and written exams
23 rd	4	The student learns Writing a program for an ascending counter - with an example application	Theoretical and practical lectures	Oral and written exams
24 th	4	The student learns Writing a program for a countdown timer - with an example	Theoretical and practical lectures	Oral and written exams
25 th	4	The student learns Writing an ascending/descending	Theoretical and	Oral and written

		counter program - with an example application.	practical lectures	exams
26 th	4	The student learns Microprocessor 8086 - Specifications - Architecture - Terminal Diagram.	Theoretical and practical lectures	Oral and written exams
27 th	4	The student learns Addressing types for the 8086 microprocessor - Directions for data transfer - Directions for multiplication and division - Examples of other instructions.	Theoretical and practical lectures	Oral and written exams
28 th	4	The student learns Comparison of an eight-ranked microprocessor (such as the 8085) and a 16-ranked microprocessor (such as the 8086).	Theoretical and practical lectures	Oral and written exams
29 th	4	The student learns Microprocessors with 32 ranks and their most prominent specifications - the microprocessors used in Pentium computers.	Theoretical and practical lectures	Oral and written exams
30 th	4	The student learns A general review of the curriculum vocabulary	Theoretical and practical lectures	Oral and written exams

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester = 10 marks

2. Practical:

- a. First semester = 10 marks
- b. Second semester = 10 marks

3. daily oral and preparation = 10 Marks

4. Final exam

- a. Theoretical = 40 marks
- b. Practical = 10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Control systems
Main references (sources)	Control systems
Recommended books and references (scientific journals, reports...)	Control systems
Electronic References, Websites	Control systems

Course Description Form

1-Course Name:

Control Systems

2-Course Code:

ETE217-24-CM					
3-Semester / Year:					
Year					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
30 hours/ 3 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: Hassan Farhan Rashag Email: Hassan.rashag@atu.edu.iq					
8-Course Objectives					
Course Objectives	At the end of the course the student will be able to: 1-be understands the contactor, overload and timer 2- design and connect the electrical system				
9-Teaching and Learning Strategies					
Strategy	1.to discus the programming of control with students And to enhance the practical experience for the student and how to interface between control systems and equipment.				
10.Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	3hr	The student learns Introduction control system	Introduction control system	Theoretical and practical lecture	Solving exercises + daily exam
2 nd week	3hr	The student learns Types of control systems	Types of control systems	Theoretical and practical lecture	Solving exercises + daily exam
3 rd week	3hr	The student learns Types of classical control	Types of classical control	Theoretical and practical lecture	Solving exercises + daily exam
4 th week	3hr	The student learns Types of components of classicakl control	Types of components of classicakl control	Theoretical and practical lecture	Solving exercises + daily exam
5 th week	3hr	The student learns Design control system for running thre phase IM	Design control system for running thre phase IM	Theoretical and practical lecture	Solving exercises + daily exam
6 th week	3hr	The student learns Design system to running star delta IM	Design system to running star delta IM	Theoretical and practical lecture	Solving exercises + daily exam
7 th week	3hr	The student learns Types of timers and its connections	Types of timers and its connections	Theoretical and practical lecture	Solving exercises + daily exam
8 th week	3hr	The student learns Design control system for running clock wise and ant clock wise direction	Design control system for running clock wise and ant clock wise direction	Theoretical and practical lecture	Solving exercises + daily exam

9 th week	3hr	The student learns Design track control system using four timers	Design track control system using four timers	Theoretical and practical lecture	Solving exercises + daily exam
10 th week	3hr	The student learns Design phase failure system	Design phase failure system	Theoretical and practical lecture	Solving exercises + daily exam
11 th week	3hr	The student learns Connect and running three phase machine	Connect and running three phase machine	Theoretical and practical lecture	Solving exercises + daily exam
12 th week	3hr	The student learns Pid controller and its applications	Pid controller and its applications	Theoretical and practical lecture	Solving exercises + daily exam
13 th week	3hr	The student learns Transfer function with stability of system	Transfer function with stability of system	Theoretical and practical lecture	Solving exercises + daily exam
14 th week	3hr	The student learns Running three phase system without off push button	Running three phase system without off push button	Theoretical and practical lecture	Solving exercises + daily exam
15 th week	3hr	The student learns Design and connect system for level sensors	Design and connect system for level sensors	Theoretical and practical lecture	Solving exercises + daily exam

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Control systems
Main references (sources)	Control systems
Recommended books and references (scientific journals, reports...)	Control systems
Electronic References, Websites	Control systems

Course Description Form

1-Course Name:
Computer and Artificial Intelligence
2-Course Code:
ATU221
3-Semester / Year:

Year					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
30 hours/ 4 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: hafidh ali shubat					
Email: : h.ali@atu.edu.iq					
8-Course Objectives					
Course Objectives	At the end of the course the student will be able to: 1. Teaching the student to be familiar with the basic rules for dealing with and managing a computer. 2. It helps him in completing projects, printing matters, creating presentations, and designing engineering plans. 3. The student learns to use the Internet in many fields, including education, scientific research, trade, and marketing through electronic correspondence, web pages, and electronic communication.				
9-Teaching and Learning Strategies					
Strategy	Live questions and answers about previous material Analyzing the student's ability to comprehend through home work, carried out at home and stored on the computer Discs to display directly in front of students to see how much they learned from the previous lecture- Showing educational films specific to the subject in order to consolidate the ability to learn, use feedback, and evaluate the extent of the student's understanding of the subject.				
10-Course Structure					
Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	1hr	The student learns Network concept	Network	Theoretical lecture	oral examination and quiz
2 nd week	1hr	The student learns Types of networks and the concept of the Internet	Network	Theoretical lecture	oral examination and quiz
3 rd week	1hr	The student learns Description of the main screen, its components, and how to connect to the global network	Network	Theoretical lecture	oral examination and quiz
4 th week	1hr	The student learns Take advantage of different search engines	Network	Theoretical lecture	oral examination and quiz
5 th week	1hr	The student learns Learn about ways to search for and access information	Network	Theoretical lecture	oral examination and quiz
6 th week	1hr	The student learns Learn about the concept of Excel: its benefits and specifications	Excel	Theoretical lecture	oral examination and quiz
7 th week	1hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	Theoretical lecture	oral examination and quiz
8 th week	1hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	Theoretical lecture	oral examination and quiz
9 th week	1hr	The student learns Identify the main screen and its	Excel	Theoretical	oral examination and

		components, including various menus and tools		lecture	quiz
10 th week	1hr	The student learns the concept of the cell, basic data types and how to enter them	Excel	Theoretical lecture	oral examination and quiz
11 th week	1hr	The student learns the concept of the cell, basic data types and how to enter them	Excel	Theoretical lecture	oral examination and quiz
12 th week	1hr	The student learns How to save data Open the saved file.	Excel	Theoretical lecture	oral examination and quiz
13 th week	1hr	The student learns enter data and perform calculations	Excel	Theoretical lecture	oral examination and quiz
14 th week	1hr	The student learns Inserting various arithmetic functions	Excel	Theoretical lecture	oral examination and quiz
15 th week	1hr	The student learns AutoCAD program: getting to know the program environment	AutoCAD	Theoretical lecture	oral examination and quiz
16 th week	1hr	The student learns Preparing the drawing sheet, opening a new file, drawing borders, drawing units, network, jumping, storage	AutoCAD	Theoretical lecture	oral examination and quiz
17 th week	1hr	The student learns Recognizing the different drawing commands, line, point...	AutoCAD	Theoretical lecture	oral examination and quiz
18 th week	1hr	Recognizing the different drawing commands, line, point...	AutoCAD	Theoretical lecture	oral examination and quiz
19 th week	1hr	The student learns Learn about modification commands	AutoCAD	Theoretical lecture	oral examination and quiz
20 th week	1hr	The student learns Learn about modification commands	AutoCAD	Theoretical lecture	oral examination and quiz
21 th week	1hr	The student learns Add dimensions	AutoCAD	Theoretical lecture	oral examination and quiz
22 th week	1hr	The student learns Add texts and precise drawing sectors	AutoCAD	Theoretical lecture	oral examination and quiz
23 th week	1hr	The student learns Control drawing specifications	AutoCAD	Theoretical lecture	oral examination and quiz
24 th week	1hr	The student learns Introduction to 3D drawing	AutoCAD	Theoretical lecture	oral examination and quiz
25 th week	1hr	The student learns Creating 3D surfaces	AutoCAD	Theoretical lecture	oral examination and quiz
26 th week	1hr	The student learns Create 3D objects	AutoCAD	Theoretical lecture	oral examination and quiz
27 th week	1hr	The student learns Create 3D objects	AutoCAD	Theoretical lecture	oral examination and quiz
28 th week	1hr	The student learns Create 3D objects	AutoCAD	Theoretical lecture	oral examination and quiz
29 th week	1hr	The student learns Create 3D objects	AutoCAD	Theoretical lecture	oral examination and quiz
30 th week	1hr	The student learns Change the interface from 3D to 2D or classic	AutoCAD	Theoretical lecture	oral examination and quiz

Practical

Week	2hr	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Network concept	Network	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns Types of networks and the concept of the Internet	Network	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns Description of the main screen, its components, and how to connect to the global network	Network	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Take advantage of different search engines	Network	practical lecture	oral examination and writing report

5 th week	2hr	The student learns Learn about ways to search for and access information	Network	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Learn about the concept of Excel: its benefits and specifications	Excel	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Identify the main screen and its components, including various menus and tools	Excel	practical lecture	oral examination and writing report
10 th week	2hr	The student learns the concept of the cell, basic data types and how to enter them	Excel	practical lecture	oral examination and writing report
11 th week	2hr	The student learns the concept of the cell, basic data types and how to enter them	Excel	practical lecture	oral examination and writing report
12 th week	2hr	The student learns How to save data Open the saved file.	Excel	practical lecture	oral examination and writing report
13 th week	2hr	The student learns enter data and perform calculations	Excel	practical lecture	oral examination and writing report
14 th week	2hr	The student learns Inserting various arithmetic functions	Excel	practical lecture	oral examination and writing report
15 th week	2hr	The student learns AutoCAD program: getting to know the program environment	AutoCAD	practical lecture	oral examination and writing report
16 th week	2hr	The student learns Preparing the drawing sheet, opening a new file, drawing borders, drawing units, network, jumping, storage	AutoCAD	practical lecture	oral examination and writing report
17 th week	2hr	The student learns Recognizing the different drawing commands, line, point...	AutoCAD	practical lecture	oral examination and writing report
18 th week	2hr	The student learns Recognizing the different drawing commands, line, point...	AutoCAD	practical lecture	oral examination and writing report
19 th week	2hr	The student learns Learn about modification commands	AutoCAD	practical lecture	oral examination and writing report
20 th week	2hr	The student learns Learn about modification commands	AutoCAD	practical lecture	oral examination and writing report
21 th week	2hr	The student learns Add dimensions	AutoCAD	practical lecture	oral examination and writing report
22 th week	2hr	The student learns Add texts and precise drawing sectors	AutoCAD	practical lecture	oral examination and writing report
23 th week	2hr	The student learns Control drawing specifications	AutoCAD	practical lecture	oral examination and writing report
24 th week	2hr	The student learns Introduction to 3D drawing	AutoCAD	practical lecture	oral examination and writing report
25 th week	2hr	The student learns Creating 3D surfaces	AutoCAD	practical lecture	oral examination and writing report
26 th week	2hr	The student learns Create 3D objects	AutoCAD	practical lecture	oral examination and writing report
27 th week	2hr	The student learns Create 3D objects	AutoCAD	practical lecture	oral examination and writing report
28 th week	2hr	The student learns Create 3D objects	AutoCAD	practical lecture	oral examination and writing report
29 th week	2hr	The student learns Create 3D objects	AutoCAD	practical lecture	oral examination and writing report
30 th week	2hr	The student learns Change the interface from 3D to 2D or classic	AutoCAD	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks
- 2. Practical:**
 - a. First semester= 10 marks
 - b. Second semester= 10 marks
- 3. daily oral and preparation= 10 Marks**
- 4. Final exam**
 - a. Theoretical=40 marks
 - b. Practical =10 marks

12-Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Required textbooks (curricular books, if any)
Main references (sources)	Main references (sources)
Recommended books and references (scientific journals, reports...)	Recommended books and references (scientific journals, reports...)
Electronic References, Websites	Electronic References, Websites

Course Description Form

1. Course Name:	
Technical English Language	
2. Course Code:	
ATU101	
3. Semester / Year:	
Year	
4. Description Preparation Date:	
2025-12-18	
5. Available Attendance Forms:	
In-person attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hours / 2 unite	
7. Course administrator's name (mention all, if more than one name)	
Name: Asmaa Adnan Email: asmaa.najm@atu.edu.iq	
8. Course Objectives	
Course Objectives	- The student should understand the specialty terminology in English - Skills objectives for the course. - The student learns to speak English and know the terminology
9. Teaching and Learning Strategies	
Strategy	- Discussing course topics with students and posing questions related to the lecture content, encouraging active participation and enhancing critical and analytical thinking skills in understanding and using the language. - Explaining the course material in a structured and simplified manner appropriate to the level of first-year students, while linking vocabulary and grammatical rules to the technical and applied aspects of their specialization. - Using available instructional aids such as presentations, visual materials, and educational

- videos from online sources to facilitate comprehension and reinforce linguistic concepts.
- Employing realistic and practical examples from daily life and the technical field, along with solving various exercises inside the classroom to enhance practical language understanding.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	1	Unit one : hello Am / are /is/ my/ your This is with practice in work	Students will understand the use of the verb <i>to be</i> (am / is). Students will identify basic possessive adjectives (my / your). Students will be able to form simple introductory sentences using <i>This is</i> .	Theoretical lecture	oral examination and quiz
3-4	1	Unit two : your world He/she/they /his /her Question	Students will understand personal pronouns (he / she / they). Students will distinguish possessive pronouns (his / her). Students will be able to form simple questions in English.	Theoretical lecture	oral examination and quiz
5-6	1	Unit three: all about	Students will acquire basic vocabulary describing objects in their surroundings. Students will be able to express themselves using short and simple sentences.	Theoretical lecture	oral examination and quiz
7-8	1	Unit four: family and friends Possessive adjectives Possessive's Has/have Adjective + noun	Students will understand possessive adjectives. Students will correctly use the verb <i>have / has</i> . Students will construct adjective + noun phrases correctly.	Theoretical lecture	oral examination and quiz
9-10	1	Unit five: the way I love Present simple I / you / we / they A and An Adjective + noun	Students will understand the present simple tense with (I / you / we / they). Students will distinguish between indefinite articles (a / an). Students will be able to describe daily habits using simple sentences.	Theoretical lecture	oral examination and quiz
12-11	1	Unit six: every day Present simple he /she Questions and negatives Adverbs of frequency	Students will understand the use of the present simple tense with (he / she). Students will be able to form affirmative, negative, and interrogative sentences. Students will correctly use adverbs of frequency (always / usually / sometimes).	Theoretical lecture	oral examination and quiz
14-13	1	Unit seven : my favorites Question words Pronouns This and that	Students will recognize and use Wh-questions. Students will distinguish the correct use of pronouns. Students will correctly use demonstratives (this / that).	Theoretical lecture	oral examination and quiz
16-15	1	Unit eight : where I live There is / are prepositions	Students will understand the use of <i>there is / there are</i> . Students will correctly use prepositions of place. Students will be able to	Theoretical lecture	oral examination and quiz

			describe their place of residence or a simple location in English.		
17-18	1	Unit nine : : where I live There is / are prepositions	Students will understand the simple past tense of irregular verbs.Students will distinguish between basic active and passive forms (was / were).	Theoretical lecture	oral examination and quiz
19-20	1	Unit ten : we had a great time Past simple – regular and irregular Question Negative Age	Students will use the simple past tense of regular and irregular verbs correctly.Students will be able to form questions and negatives in the past tense.Students will understand the use of the word <i>since</i> .	Theoretical lecture	oral examination and quiz
21-22	1	Unit eleven : I can do that	Students will understand the use of the modal verb <i>can / can't</i> .Students will correctly use adverbs.Students will be able to make simple requests.	Theoretical lecture	oral examination and quiz
23-24	1	Unit twelve : please and thank you I'd like Some and any Like and would like	Students will use the structure <i>I would like to</i> .Students will distinguish between <i>some</i> and <i>any</i> .Students will differentiate between <i>like</i> and <i>would like</i> .	Theoretical lecture	oral examination and quiz
25-26-27	1	Unit thirteen : here and now Present continuous Present simple and present continuous	Students will understand the present continuous tense.Students will distinguish between the present simple and present continuous in appropriate contexts.	Theoretical lecture	oral examination and quiz
28-29-30	1	Unit fourteen : its time to go Future plans Revision writing email and informant letter	Students will be able to express future plans.Students will review the main grammar rules and vocabulary of the course.Students will be able to write a simple email and an informal letter in English.	Theoretical lecture	oral examination and quiz

11. 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

1. First Term Theoretical Exam: 20 / 100
2. Second Term Theoretical Exam: 20 / 100
3. Student Activities: 10 / 100
4. Final Theoretical Exam: 50 / 100

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	New Headway Plus - Beginner
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1-Course Name:	
Programmable logic controller (PLC)	
2-Course Code:	
ETE229-24-CM	
3-Semester / Year:	
Year	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Theoretical lecture and practical	
6-Number of Credit Hours (Total) / Number of Units (Total)	
30 hours/ 3 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Hassan Farhan Rashag Email: Hassan.rashag@atu.edu.iq	
8-Course Objectives	
Course Objectives	At the end of the course the student will be able to: • be understands the plc programming • design and connect the electrical system
9-Teaching and Learning Strategies	
Strategy	To discuss the programming of plc with students And to enhance the practical experience for the student and how to interface between plc and external cct.

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	3hr	The student learns Introduction to plc	Introduction to plc	Theoretical and practical lecture	Solving exercises + daily exam
2 nd week	3hr	The student learns Types of plc	Types of plc	Theoretical and practical lecture	Solving exercises + daily exam
3 rd week	3hr	The student learns Programming of plc based on input and output ports	Programming of plc based on input and output ports	Theoretical and practical lecture	Solving exercises + daily exam
4 th week	3hr	The student learns The vertical and horizontal scanning of plc	The vertical and horizontal scanning of plc	Theoretical and practical lecture	Solving exercises + daily exam
5 th week	3hr	The student learns Types of run mode	Types of run mode	Theoretical and practical lecture	Solving exercises + daily exam
6 th week	3hr	The student learns Installing wplsoft	Installing wplsoft	Theoretical and practical lecture	Solving exercises + daily exam
7 th week	3hr	The student learns Simulation of plc	Simulation of plc	Theoretical and practical lecture	Solving exercises + daily exam
8 th week	3hr	The student learns The interfacing between plc and pc computer	The interfacing between plc and pc computer	Theoretical and practical lecture	Solving exercises + daily exam

9 th week	3hr	The student learns Design control system for running three phase induction machine	Design control system for running three phase induction machine	Theoretical and practical lecture	Solving exercises + daily exam
10 th week	3hr	The student learns Convert the Simulink to ladder language	Convert the Simulink to ladder language	Theoretical and practical lecture	Solving exercises + daily exam
11 th week	3hr	The student learns Design control system for running multi systems	Design control system for running multi systems	Theoretical and practical lecture	Solving exercises + daily exam
12 th week	3hr	The student learns Design control system for star delta motor by timer	Design control system for star delta motor by timer	Theoretical and practical lecture	Solving exercises + daily exam
13 th week	3hr	The student learns Rising edge and falling edge of plc	Rising edge and falling edge of plc	Theoretical and practical lecture	Solving exercises + daily exam
14 th week	3hr	The student learns Programming of timers of plc	Programming of timers of plc	Theoretical and practical lecture	Solving exercises + daily exam
15 th week	3hr	The student learns Master control of plc with its programming	Master control of plc with its programming	Theoretical and practical lecture	Solving exercises + daily exam

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Delta plc book
Main references (sources)	Wplsoft programing
Recommended books and references (scientific journals, reports...)	Wplsoft programing
Electronic References, Websites	Wplsoft programing

Course Description Form

1-Course Name: Baath crimes
Crimes of the Ba'ath regime in Iraq
2-Course Code:
ATU241
3-Semester / Year:

Year					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
60hours/ 1 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: Noor Ayed Abdullah Sarkal Al-Khafaji					
Email: noor.serkal.iba14@atu.edu.iq					
8-Course Objectives					
Course Objectives		- At the end of the course the studen. - Know about human rights - In addition, the student will be able to deal with different Theories of human right t will be able to:			
9-Teaching and Learning Strategies					
Strategy		It is to shed light for the generations born after the fall of the regime on the many crimes committed by the Baath Party regime and Saddam Hussein against the Iraqi people. These crimes were diverse, including war crimes, crimes against humanity, genocide, and economic crimes			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	1	The student learns Theconcept of crimes linguistically and terminologically Crime departments	Theconcept of crimes linguistically and terminologically Crime departments	Theoretical lecture	oral examination and quiz
3-4	1	The student learns Types of international Crimes	Types of international Crimes	Theoretical lecture	oral examination and quiz
5-6	1	The student learns Decisions issued by the Supreme Criminal Court	Decisions issued by the Supreme Criminal Court	Theoretical lecture	oral examination and quiz
7-8	1	The student learns Psychologicaland social crimesand their effects, and themost prominent	Psychologicaland social crimesand their effects, and themost prominent	Theoretical lecture	oral examination and quiz
9-10	1	The student learns violations of the Baathist regime in Iraq	violations of the Baathist regime in Iraq	Theoretical lecture	oral examination and quiz
12-11	1	The student learns Psychological crimes, mechanism of psychological crimes	Psychological crimes, mechanism of psychological crimes	Theoretical lecture	oral examination and quiz
14-13	1	The student learns The mechanism of pressure and psychological punishment / the mechanism of scientific impoverishment / the effects of psychological crimes	The mechanism of pressure and psychological punishment / the mechanism of scientific impoverishment / the effects of psychological crimes	Theoretical lecture	oral examination and quiz
16-15	1	The student learns where I live	Unite eight : where I live	Theoretical lecture	oral examination and quiz

		There is / are prepositions	There is / are prepositions		
17-18	1	The student learns Social crimes, first Section	Social crimes, first Section	Theoretical lecture	oral examination and quiz
19-20	1	The student learns Social crimes, section two	Social crimes, section two	Theoretical lecture	oral examination and quiz
21-22	1	The student learns Violations of Iraqi laws and their forms, Section Two	Violations of Iraqi laws and their forms, Section Two	Theoretical lecture	oral examination and quiz
23-24	1	The student learns Some decisions regarding political and military violations of the Baath	Some decisions regarding political and military violations of the Baath	Theoretical lecture	oral examination and quiz
25-26-27	1	The student learns Genocide graves of the 1991 Shaaban uprising, first section	Genocide graves of the 1991 Shaaban uprising, first section	Theoretical lecture	oral examination and quiz
28-29-30	1	The student learns Genocide Graves of the 1991 Shaaban Uprising, Section Two	Genocide Graves of the 1991 Shaaban Uprising, Section Two	Theoretical lecture	oral examination and quiz

11.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

1. First Term Theoretical Exam: 20 / 100
2. Second Term Theoretical Exam: 20 / 100
3. Student Activities: 10 / 100
4. Final Theoretical Exam: 50 / 100

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	According to the project topic
Main references (sources)	Methodical books
Recommended books and references (scientific journals, reports...)	According to the project topic
Electronic References, Websites	According to the project topic

Course Description Form

1. Course Name
Arabic Language 2
2. Course Code:
Arabic Language
3. Semester / Year:
First and Second Semester / 2025
4. Date of Syllabus Preparation:
2025/10/16

5. Available Attendance Methods					
Theoretical lecture					
6. Total Credit Hours / Total Units					
Total Hours: 30 – Total Units					
Course Coordinator (if more than one, list all)					
7.					
Name: Noor Aayed Abdullah Email: noor.serkal.iba14@atu.edu.iq					
8.					
1. and preserving it from errors. 2. Develop the student's spelling skills. 3. Assist the student in knowing the correct way to write numbers, read them, and write the hamza in its various forms. 4. Review Arabic grammar rules to help the student avoid grammatical mistakes. 5. Enhance the student's skills in appreciating the beauty of literary expression and imitating elegant texts in writing. 6. Help the student identify common language mistakes and guide them.			Course Objectives: To enable the student to		
9-					
Lecture Strategy: It relies on the direct explanation of knowledge and information from the teacher to the student					
10-Course Structure					
Assessment Method	Learning Method	Unit or Topic Name	Expected Learning Outcomes	Hours	week
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Lesson on illustrating the importance of the Arabic language in general for non-specialist students. A Hadith on mastering one’s work. Poem by Al-Sharif Al-Radi mourning his mother.	Knowledge and Application	1	1
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns From Surah Al-Isra, verses 23 to 29.	Knowledge and Application	1	3+2
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns The present tense: its nominative, accusative, and jussive forms.	Knowledge and Application	1	5+4
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Genitive constructions in the Arabic language.	Knowledge and Application	1	7+6
Daily Preparation	Theoretical	The student learns	Knowledge and	1	9+8

Daily Exams Oral Exams		Accusative constructions in the	Application		
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Arabic language. Common linguistic errors.	Knowledge and Application	1	11+10
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns between daad and thaa.'	Knowledge and Application	1	13+12
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns The difference between taa and haa The difference between the short alif and long alif. The difference The origin of Arabic dictionaries.	Knowledge and Application	1	14
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns From Surah Yusuf, verses 1 to 7.	Knowledge and Application	1	15
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns From the Hadith	Knowledge and Application	1	16
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns A poem by Al-Mutanabbi	Knowledge and Application	1	17
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Morphology: declension of nouns.	Knowledge and Application	1	18
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Numbers and their rules.	Knowledge and Application	1	19
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Grammatical	Knowledge and Application	1	21+20
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns dependents	Knowledge and Application	1	23+22
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Common linguistic errors.	Knowledge and Application	1	24
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Rhetoric: Ilm al-Badi' – figurative embellishments	Knowledge and Application	1	25
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Ilm al-Badi' – verbal embellishments	Knowledge and Application	1	26
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Dictionaries: Al-Maqayis and Al-Sihah	Knowledge and Application	1	27
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns A poem by Mustafa Jamal about Baghdad.	Knowledge and Application	1	29+28
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Common linguisti errors.	Knowledge and Application	1	30
11-Course Evaluation					

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12- Learning and Teaching Resources

	Required textbooks (if any): None
Arabic Language Curriculum for Non-Specialist Departments Dictionary of Common Linguistic and Grammatical Errors / Khidr Abu Al-Aynayn	Primary references (sources:(
	Recommended supporting books and references (scientific journals, reports, etc.): None
https://ketabpedia.com	Electronic references, websites:

1. Scientific Department, Department of Electronic Technologies
2. Name of the academic or vocational program: Smart Mobile Branch
3. Date of preparation of the description: October 26, 2025
4. Name of the final certificate: Technical Diploma
5. Academic system: Semester
6. Accreditation program: ABET
7. Other external influences: Private sector companies

1. Program Vision

The academic program aspires to achieve all its paragraphs and work on procession all changes and updates in the field reality and add them to the academic aspect with practical, applicable scientific visions.

2. Program Mission

The academic program provides a necessary summary of the most important characteristics of the program and the learning outcomes that the student is expected to achieve, demonstrating whether he has made the most of the available opportunities. It is accompanied by a description of each course within the program.

3. Program Objectives

The specialization aims to graduated qualified personnel to work in the labor market capable of operating and maintaining electronic circuits, audio and video devices, receiving and transmitting devices, microprocessor circuits, and others.

4. Program Accreditation

Nothing.

5. Other external influences

Nothing.

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

6. Program Structure/ Electronic Department / Smart Mobiles Branch

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	16	13.79%	All courses are core and there are no electives
College Requirements	6	16	13.79%	All courses are core and there are no electives
Department Requirements	23	84	72.413 %	All courses are core and there are no electives
Summer Training	-	Without units	-	All courses are core and there are no electives
Other	-	-	-	

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

7/ Program Description – Electronic Department / Smart Mobiles Branch

First Year

Year/Level	Course Code	Course Name	Credit Hours
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			Theoretical	Practical
1 st Year / 1 st Semester	ATU132	Human rights	2	0
1 st Year / 1 st Semester	ATU122	Computer and artificial intelligence	0	2
1 st Year / 1 st Semester	ATU112	Arabic Language	2	0
1 st Year / 1 st Semester	ETS114-24-CM	Mathmatics-1	2	0
1 st Year / 1 st Semester	ETS112-24-CM	Principles of digital circuits	2	2
1 st Year / 1 st Semester	ETS111-24-CM	Principles of electronics	2	2
1 st Year / 1 st Semester	ETS113-24-CM	Direct current circuits	2	2
1 st Year / 1 st Semester	ETS115-24-CM	Electronics workshop-1	0	3
1 st Year / 1 st Semester	ETS116-24-CM	Engineering drawing	0	3
1 st Year / 1 st Semester	ETS117-24-CM	Mechanical Workshop	0	4
1 st Year / 2 nd Semester	ATU132	Human Rights and Democracy	2	0
1 st Year / 2 nd Semester	ATU222	Computer and artificial intelligence	0	2
1 st Year / 2 nd Semester	ATU102	English language	2	0
1 st Year / 2 nd Semester	ETS124-24-CM	Mathmatics-2	2	0
1 st Year / 2 nd Semester	ETS123-24-CM	Digital circuits	2	2
1 st Year / 2 nd Semester	ETS121-24-CM	Electronics	2	2
1 st Year / 2 nd Semester	ETS122-24-CM	Alternative current circuits	2	2
1 st Year / 2 nd Semester	ETS125-24-CM	Workshop electronics-2	0	3
1 st Year / 2 nd Semester	ETS127-24-CM	Electrical drawing	0	3
1 st Year / 2 nd Semester	ETS126-24-CM	Electrical workshop	0	4

7.1/ Program Description – Electronic Department / Smart Mobiles Branch

Second Year				
Year/Level	Course Code	Course Name	Credit Hours	
			Theoretica l	Practica l
2 nd Year / 1 st Semester	ETS211-24-CM	Communication system	2	2
2 nd Year / 1 st Semester	ETS214-24-CM	Microwaves	2	2
2 nd Year / 1 st Semester	ETS212-24-CM	Electronic circuits	2	2
2 nd Year / 1 st Semester	ATU202	English Language	2	0
2 nd Year / 1 st Semester	ATU222	Computer and artificial intelligence	0	2
2 nd Year / 1 st Semester	ETS213-24-CM	Wire communication system	2	2
2 nd Year / 1 st Semester	ETS216-24-CM	Maintenance principles of smartphone devices	0	3
2 nd Year / 1 st Semester	ETS215-24-CM	Data transmission and wireless networks	2	2
2 nd Year / 1 st Semester	ETS225-24-CM	Principles of optical Fibers	2	2
2 nd Year / 1 st Semester	ATU242	Baath Party crimes		
2 nd Year / 1 st Semester	ETS217-24-CM	Project-1	0	2
2 nd Year / 2 nd Semester	ETS221-24-CM	Digital communication system	2	2
2 nd Year / 2 nd Semester	ETS224-24-CM	Advance microwaves	2	2
2 nd Year / 2 nd Semester	ETS222-24-CM	Advanced electronic circuits	2	2
2 nd Year / 2 nd Semester	ATU202	English language	2	0
2 nd Year / 2 nd Semester	ATU222	Advanced computer applications	0	2
2 nd Year / 2 nd Semester	ETS223-24-CM	Advanced wire communication system	2	2
2 nd Year / 2 nd Semester	ETS216-24-CM	Maintenance of smartphone devices	0	3
2 nd Year / 2 nd Semester	ETS227-24-CM	Professional ethics	2	2
2 nd Year / 2 nd Semester	ETS225-24-CM	Advanced optical fibers	2	2
2 nd Year / 2 nd Semester	ETS228-24-CM	Projects-2	0	2

8. Expected learning outcomes of the program

Knowledge

1) Understanding the fundamental principles of electrical and electronic circuits.	1) The student will be able to understand and maintain electronic systems.
2) Understanding the principles of electronic communication systems.	2) The student will be able to understand and maintain communication systems and audio-visual equipment.
3) Familiarity with industrial electronic control technologies and power electronics.	3) The student will be able to design integrated control systems.
4) Knowledge of the basics of occupational safety and technical standards in the field of electronics.	4) The student will be able to design electrical and electronic diagrams in accordance with technical safety requirements.

Skills

1) Building and assembling electronic circuits in the laboratory.	1) The student will be able to operate, maintain, build, and repair electronic circuits and audio-visual equipment.
2) Programming microcontrollers and processors.	2) The student will be able to program and operate electronic devices and circuits.
3) Analyzing electronic circuits and systems using mathematical laws and models.	3) The student will be able to analyze and understand electronic circuits using mathematical models.
4) Designing electronic solutions for real-world engineering problems.	4) The student will be able to find solutions to real-world electronic problems.

Ethics

1) Adherence to engineering ethics.	1) The graduate will be able to adhere to the ethics of the engineering profession in all their academic and practical activities.
2) Ability to learn independently and keep pace with technological advancements.	2) They will possess the ability for continuous self-learning and to keep abreast of the latest technological developments in the field of electronics.
3) Time management skills and the ability to complete projects within deadlines.	3) The graduate will demonstrate high efficiency in time management and in completing engineering projects and tasks within specified timeframes.
4) Respect for quality and safety standards.	4) They will strictly adhere to quality and occupational safety standards in the design, implementation, and operation of electronic systems, thereby achieving a safe working environment and reliable engineering performance.

9. Teaching and Learning Strategies

Lectures, practical training in laboratories and summer field training in the field of work.

10. Evaluation methods

It is evaluated through attendance, daily lectures participation, and its behavior.
As well as through daily, monthly and yearly examinations, discussions and dialogues during the educational process.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant professor	Electrical /Electronics Engineering	Electronics and communications			1	
Lecturer	Electrical /control Engineering	Control			1	
Lecturer	Electrical /Electronics Engineering	Electronics			1	
Lecturer	Electrical Engineering	Power			1	
Assistant Lecturer	Electrical Engineering	Electronics			1	
Assistant Lecturer	Communications Engineering	Electronics and communications			1	
Assistant Lecturer	Electrical /Electronics Engineering	Electronics and communications			1	
Assistant Lecturer	Electrical Engineering	Electronics and communications			1	
Assistant Lecturer	Electrical power Engineering	Electrical power Engineering			1	
Assistant Lecturer	Electronics and communications Engineering	Electronics and communications Engineering			1	
Assistant Lecturer	Arabic language	language			1	
Assistant Lecturer	Arabic language	Teaching Methods			1	
Assistant Lecturer	Mathematics	Self-analysis +dynamic system			1	
Assistant Lecturer	Laser physics	Laser physics			1	
Assistant Lecturer	physics	Materials physics			1	

Assistant Lecturer	physics	Nano technology			1	
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Professional Development

Mentoring new faculty members

The guidance mechanism in this field is internal through training courses, workshops, and discussion panels within the department or with other departments within the institution.

Professional development of faculty members

1. Teamwork within the group effectively and actively
2. Manage time effectively and set priorities with the ability to work on regular schedules
3. Leadership and the ability to direct and motivate others
4. Independence at work.

12. Acceptance Criterion

8. Iraqi nationality
9. Possession of an Iraqi preparatory school certificate supported by certification from the General Directorate of Education in the governorate or an equivalent certificate.
10. The student must be born in 1994 onwards.
11. Successful in the medical examination according to the conditions for each study, and the blind student (who meets the conditions for applying for appropriate humanitarian studies) will be submitted through central admission.
12. Devoted to study. It is not permissible to combine work and study (at the same time) in colleges and morning institutes. This includes employees of all government institutions. In order for them to continue studying, they must obtain a study leave from their departments starting in accordance with the instructions in force. It is not permissible to combine two studies either, and in the event of a dispute being proven. He writes to the Ministry to cancel his acceptance (the student employee can postpone his studies according to the instructions in order to fulfill the condition of completing two years of service - satisfactory to be entitled to obtain study leave and in accordance with the instructions for granting study leave).
13. Among my graduates:
 - a. The current academic year.
 - b. The previous academic year of those who are not centrally accepted into any college or institute, and they are accepted according to the minimum limits for the year of their graduation, and if it is proven that the student's acceptance into any college or institute will be returned to his original acceptance and it will be considered a year of failure for him.
14. Non-Iraqi students who hold an Iraqi preparatory certificate and are accepted centrally will be notified in writing to review the Central Admissions Department / Expatriates Division to state their exemption or demands for tuition fees in foreign currency according to the controls in Chapter Seven.

13. The most important sources of information about the program

- | |
|--|
| <ol style="list-style-type: none">1 - The curriculum determined by the Ministry of Higher Education and Scientific Research.2- Available methodological books.3- Books in the institute's library. |
|--|

14.Program Development Plan

- | |
|--|
| <ol style="list-style-type: none">1- Student research.2- Scientific seminars.3- Personal training.4- Scientific discussions.5- Vocational training during the year |
|--|

		Required program Learning outcomes													
				Knowledge				Skills				Ethics			
Year/Level	Course Code	Course Name	Basic or optional	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
1st Year 1st Semester	ETS113-24-CM	Direct Current Circuits	Basic	✓				✓			✓	✓			✓
	ETS114-24-CM	Mathematics 1	Basic	✓						✓				✓	
	ETS115-24-CM	Electronic Workshop 1	Basic	✓			✓	✓	✓	✓	✓	✓	✓		✓
	ETS117-24-CM	Mechanical Workshops	Basic				✓			✓		✓	✓		✓
	ATU122	Computer and Artificial Intelligence	Optional			✓			✓		✓			✓	
	ATU132	Human Rights and Democracy	Optional												✓
	ETS116-24-CM	Engineering drawing	Basic	✓						✓					
	ETS112-24-CM	Principles of Digital Circuits	Basic	✓	✓			✓		✓	✓	✓	✓		
	ETS111-24-CM	Principles of Electronics	Basic	✓	✓			✓		✓	✓	✓			✓
	ATU112	Arabic Language	Optional										✓		

				Knowledge				Skills				Ethics			
Year/Level	Course Code	Course Name	Basic or optional	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First Year Second Semester	ETS122-24-CM	Alternating Current Circuits	Basic	✓			✓			✓	✓	✓	✓		
	ETS124-24-CM	Mathematics 2	Basic			✓				✓				✓	
	ETS125-24-CM	Electronic Workshop 2	Basic	✓		✓	✓	✓	✓	✓		✓			✓
	ETS126-24-CM	Electrical Workshops	Basic	✓		✓		✓		✓	✓		✓		✓
	ETS127-24-CM	Electrical drawing	Basic			✓					✓	✓			
	ETS123-24-CM	Digital Electronic	Basic		✓	✓		✓		✓		✓	✓		
	ETS121-24-CM	Electronics	Basic	✓	✓				✓	✓		✓			✓
	ATU102	English Language	Optional	✓				✓				✓			

		Required program Learning outcomes													
				Knowledge				Skills				Ethics			
Year/Level	Course Code	Course Name	Basic or optional	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Second Year First Semester	ETS211-24-CM	Communications Systems	Basic	✓	✓		✓	✓			✓	✓	✓		
	ETS214-24-CM	Microwaves	Basic	✓	✓				✓	✓		✓		✓	
	ETS212-24-CM	Electronic Circuits	Basic	✓	✓	✓		✓		✓	✓	✓			✓
	ATU202	English Language	Optional	✓				✓					✓		
	ATU222	Computer and Artificial Intelligence	Optional			✓			✓		✓		✓		
	ETS213-24-CM	Principles of Communication Systems	Basic		✓			✓			✓	✓			✓
	ETS216-24-CM	Smartphone Maintenance 1	Basic	✓	✓			✓	✓	✓	✓	✓	✓		✓
	ETS215-24-CM	Data Communication and Wireless Networks	Basic	✓	✓	✓		✓		✓		✓	✓		
	ETS225-24-CM	Crimes of the Ba'ath regime in Iraq	Basic									✓			
	ETS217-24-CM	Project 1	Basic					✓	✓	✓	✓	✓	✓	✓	✓

Year/Level	Course Code	Course Name	Basic or optional	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Second Year Second Semester	ETS221-24-CM	Digital Communication Systems	Basic	✓	✓		✓	✓	✓	✓		✓			
	ETS224-24-CM	Advanced Communications Systems	Basic	✓	✓			✓	✓	✓		✓			
	ETS222-24-CM	Advanced Electronic Circuits	Basic	✓	✓	✓		✓		✓	✓	✓			
	ATU202	Arabic Language	Optional	✓				✓					✓		
	ETS223-24-CM	Microcontroller Principles	Basic	✓	✓			✓	✓	✓		✓		✓	
	ETS226-24-CM	Smartphone Maintenance 2	Basic	✓	✓			✓	✓	✓	✓	✓	✓		✓
	ETS227-24-CM	Professional Ethics	Basic									✓			✓
	ETS225-24-CM	Optical Fiber	Basic		✓				✓	✓		✓	✓		
	ETS228-24-CM	Project 2	Basic					✓	✓	✓	✓	✓	✓	✓	✓

Course Description Form

1-Course Name:					
Principles of Electronics					
2-Course Code:					
ETS111-24-CM					
3-Semester / Year:					
Semester					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
120 hours/ 4 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: Zaidon Waleed					
Email: Dr.zaidoon.waleed@gmail.com					
8-Course Objectives					
Course Objectives	Course Objectives ➤ To introduce students to: - The concept of semiconductors, their types, properties, and applications. - Bipolar transistors, their structure, symbols, properties, and operating regions. - Integrated circuits, optoelectronics, and their components. ➤ To enable students to: 1. Use basic electronic devices available in the laboratory. 2. Connect electronic components in simple electronic circuits. 3. Understand the specifications and characteristics of electronic components. 4. Identify and implement practical circuits for some components.				
9-Teaching and Learning Strategies					
Strategy	1- Discussing with the students and asking questions about the lecture topic and how to think critically and analytically, and then directing them towards how to solve the problem in a way that suits the topic. 2- Explaining the material in a consistent way that is appropriate for the initial inquiries and discussions of the subject, in addition to using the available means of clarification that help consolidate the lesson, such as using video scenes on websites and realistic examples, in addition to addressing many solved examples. 3. Use feedback and evaluate the student's understanding of the material.				
10-Course Structure					
Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1 st week	2hr	The student learns Semiconductor theory - atomic structure - energy levels - crystals - conduction in crystals - holes current - how holes move.	Semiconductor theory	Theoretical lecture	oral examination and quiz
2 nd week	2hr	The student learns doping - positive type (P) semiconductor - negative type (N) semiconductor - current of electrons and current of holes bulk resistance.	doping	Theoretical lecture	oral examination and quiz
3 rd and 4 th week	2hr	The student learns Semiconductor Diodes- PN Junction- Depletion Region Formation- Barrier Voltage- Energy Hill- Thermal Effects - Biased Diode - Forward Bias- Reverse Bias - Characteristic Curves (Forward and Reverse)- Transient Crossing Current- Minority Carrier Current- Permissible Leakage Current- Breakdown Voltage- Avalanche Voltage-Maximum Forward Current - Maximum Reverse Current - Equivalent Circuit of the Diode Biased diode - forward bias - reverse bias - characteristic curves in the forward and reverse directions -. The equivalent circuit of a diode	Semiconductor diodes and Diode bias	Theoretical lecture	oral examination and quiz
5 th week	2hr	The student learns The diode as a current rectifier - a half-wave rectifier - the calculation of dc value of the current - the r.m.s value of current - the output frequency.	Half-wave rectification	Theoretical lecture	oral examination and quiz
6 th week	2hr	The student learns Full-wave rectification - using a center-tapped transformer - bridge rectifier - calculating average and effective values of voltages and currents - output frequency - comparison between half-wave and full-wave rectification - comparison between full-wave rectifiers.	Full-wave rectification	Theoretical lecture	oral examination and quiz
7 th week	2hr	The student learns Filters – filtering using capacitor - RC and LC filters - output voltages - ripple - voltage doubler - clipping circuits - positive clipping - negative clipping - combination clipping - peak-to-peak detector - positive and negative clamps.	Filters	Theoretical lecture	oral examination and quiz
8 th week	2hr	The student learns Zener diode - composition - symbol - forward and reverse characteristics - breakdown and breakage voltages - Zener impedance - temperature effects.	Zener diode	Theoretical lecture	oral examination and quiz
9 th week	2hr	The student learns Zener approximations - constant voltage regulation - constant voltage source circuit - variable capacitance diode and its applications.	Zener approximations	Theoretical lecture	oral examination and quiz
10 th week	2hr	The student learns Bipolar transistor - structure - symbol - characteristics - regions - definition of (B_{dc}) and definition of (C_{dc}), the relationship between them - definition of important regions on the characteristic's curves.	Bipolar transistor	Theoretical lecture	oral examination and quiz
11 th week	2hr	The student learns Transistor bias circuits - base bias - emitter bias - collector bias - approximation in the transistor and the equivalent circuit.	Transistor bias	Theoretical lecture	oral examination and quiz
12 th week	2hr	The student learns Transistor characteristics curves – operation regions - definition of I_{ceo} and I_{cbo} -	Transistor characteristics	Theoretical lecture	oral examination

		current gain curve - relationship between I_{cbo} and I_c	curves		and quiz
13 th week	2hr	The student learns Transistor bias circuits - base bias - emitter bias	Transistor bias circuits	Theoretical lecture	oral examination and quiz
14 th week	2hr	The student learns Collector bias - self-bias - feedback bias - voltage divider bias - applied examples.	Transistor bias circuits	Theoretical lecture	oral examination and quiz
15 th week	2hr	The student learns Transistor DC equivalent circuit – DC load line	Transistor DC equivalent circuit	Theoretical lecture	oral examination and quiz
16 th week	2hr	The student learns operating points - quiescent point - applied examples	Operating Points	Theoretical lecture	oral examination and quiz

Week	Hours	practical	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Introduction to the use of equipment used in the laboratory	Common emitter amplifier	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns characteristics of diodes in forward bias and drawing of the characteristics curve -	Common collector amplifier	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns characteristics of diodes in reverse bias and drawing of the characteristics curve -	Common source amplifier - common drain amplifier	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Half-wave rectifier.	Measurement of hybrid parameters	practical lecture	oral examination and writing report
5 th week	2hr	The student learns full wave bridge rectifier	Series voltage regulator	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Full wave rectifier using a center tapped transformer	characteristics of field effect transistor FET	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Half-wave rectifier with RC filter and RL filter	Common source amplifier.	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Full wave rectifier with RC filter and RL filter.	Common drain amplifier	practical lecture	oral examination and writing report
9 th week	2hr	The student learns clipping circuits (positive, negative, and compound)	Photodiode characteristics.	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Constant voltage doubled circuits (for three or four times)	Characteristics of phototransistor	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Zener diode - forward and reverse characteristics.	Characteristics of thyristor SCR	practical lecture	oral examination and writing report
12 th week	2hr	The student learns The use of a zener diode in regulating constant voltage with a fixed resistive load - The use of a zener diode in regulating voltage with a variable resistive load	Phase angle control using thyristors	practical lecture	oral examination and writing report
13 th week	2hr	The student learns Characteristics of the common-base transistor.	Controlling the illumination of a lamp using a thyristor	practical lecture	oral examination and writing report
14 th	2hr	The student learns Characteristics of the	Amplifier circuit	practical	oral examination

week		common-emitter transistor.	using integrated circuit	lecture	and writing report
15 th week	2hr	The student learns Common base amplifier (finding voltage gain and current gain)	Use an op amp to add and subtract two signals	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular, books, if any)	1- Electronic and audio circuits (written by: Dhia Mahdi and others), Dar Al-Takni - Authority of Technical Institutes - Dar Al-Hekma 1990. 2- Electronic Circuits (Written by: Dhia Mahdi and others) Authority of Technical Institutes 1990. 3- Power Electronics (Written by: Dhia Mahdi and others) Dar Al-Hekma 1990. 4- Industrial Electronics (Written by: Dhia Mahdi and others) Authority of Technical Institutes - Dar Al-Hekma 1985. 5- An Introduction to semiconductors By: (K.I.Gross & J.Y.Rwood).
Main references (sources)	Electronic devices and circuit theory ROBERT L. BOYLESTED
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the electronic circuits topics.
Electronic References, Websites	All websites and video lectures related to electronic principles.

Course Description Form

1-Course Name:	
Principles of Digital Circuits	
2-Course Code:	
ETS112-24-CM	
3-Semester / Year:	
Semester	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Theoretical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
120 hours/ 4 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: zahraa hasan hadi Email: zahraa.hadi.iba@atu.edu.iq	
8-Course Objectives	
Course Objectives	Course Objectives ➤ To introduce students to: • The concept of semiconductors, their types, properties, and applications. • Bipolar transistors, their structure, symbols, properties, and operating regions. • Integrated circuits, optoelectronics, and their components. ➤ To enable students to: 1. Use basic electronic devices available in the laboratory. 2. Connect electronic components in simple electronic circuits. 3. Understand the specifications and characteristics of electronic components. 4. Identify and implement practical circuits for some components.
9-Teaching and Learning Strategies	
Strategy	3- Discussing with the students and asking questions about the lecture topic and how to think critically and analytically, and then directing them towards how to solve the problem in a way that suits the topic. 4- Explaining the material in a consistent way that is appropriate for the initial inquiries and discussions of the subject, in addition to using the available means of clarification that help consolidate the lesson, such as using video scenes on websites and realistic examples, in addition to addressing many solved examples. 3. Use feedback and evaluate the student's understanding of the material.

Course Structure

Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st week	2hr	The student learns A general idea of numerical systems (types and details)	numerical systems	Theoretical lecture	oral examination and quiz
2nd week	2hr	The student learns Transfers between the numerical systems	numerical systems	Theoretical lecture	oral examination and quiz
3rd week	2hr	The student learns Logic gates (types, working principle, truth tables, logical symbol)	Logic gates	Theoretical lecture	oral examination and quiz
4th week	2hr	The student learns How to connect the logic gates to form logic circuits.	Logic gates	Theoretical lecture	oral examination and quiz
5th week	2hr	The student learns Boolean algebra and the rule of de-Morgan	Boolean algebra	Theoretical lecture	oral examination and quiz
6th week	2hr	The student learns Simplification of logical equations using Boolean algebra and the laws of De Morgan's laws.	Boolean algebra	Theoretical lecture	oral examination and quiz
7th week	2hr	The student learns The design of the logical gates using NOR and NAND circuits,	Design of logic gates	Theoretical lecture	oral examination and quiz
8th week	2hr	The student learns Ways of writing the equation from truth table (POS, SOP).	Boolean algebra	Theoretical lecture	oral examination and quiz
9th week	2hr	The student learns Karnaugh Map (for two variables, the three variables, the four variables)	Karnaugh Map	Theoretical lecture	oral examination and quiz
10th week	2hr	The student learns Simplification of logical equations using Karnaugh Map	Karnaugh Map	Theoretical lecture	oral examination and quiz
11th week	2hr	The student learns Calculations in the binary system (addition, subtraction, subtraction using complements).	Binary system calculations	Theoretical lecture	oral examination and quiz
12th week	2hr	The student learns Logic circuit applications (half adder, full adder, parallel adder circuits)	Logic circuit applications	Theoretical lecture	oral examination and quiz
13th week	2hr	The student learns Binary subtractor circuits (half subtractor, full subtractor parallel subtractor) circuit using the adder circuit by method of 1s complements.	Logic circuit applications	Theoretical lecture	oral examination and quiz
14th week	2hr	The student learns The circuit of digital comparator (one stage)	Digital comparator	Theoretical lecture	oral examination and quiz
15th week	2hr	The student learns The circuit of digital comparator (two stages)	Digital comparator	Theoretical lecture	oral examination and quiz

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st week	2hr	The student learns Deriving the truth table of NOT-AND-OR Gates using Switches	Logic gates	practical lecture	oral examination and writing report
2nd week	2hr	The student learns Deriving the truth table of NOT-AND-OR Gates using diodes and transistors	Logic gates	practical lecture	oral examination and writing report

3rd week	2hr	The student learns Deriving the truth table of NOT-AND-OR Gates using diodes and transistors	Logic gates	practical lecture	oral examination and writing report
4th week	2hr	The student learns NOR-and NANAD Gates using diodes and transistors	Design of logic gates	practical lecture	oral examination and writing report
5th week	2hr	The student learns EX-OR and EX-NOR Gates	Logic gates	practical lecture	oral examination and writing report
6th week	2hr	The student learns Demorgan's first and second law	Boolean algebra	practical lecture	oral examination and writing report
7th week	2hr	The student learns Deriving the basic gates from NAND gate using circuit of NAND gate	Design of logic gates	practical lecture	oral examination and writing report
8th week	2hr	The student learns Deriving the basic gates from NOR gate using circuit of NOR gate	Design of logic gates	practical lecture	oral examination and writing report
9th week	2hr	The student learns Deriving the EX-OR gate from NAND gate and NOR gate	Design of logic gates	practical lecture	oral examination and writing report
10th week	2hr	The student learns Comparator circuit with one rank	Digital comparator	practical lecture	oral examination and writing report
11th week	2hr	The student learns Comparator circuit with two rank	Digital comparator	practical lecture	oral examination and writing report
12th week	2hr	The student learns Comparator circuit with four numbers using IC 7485	Digital comparator	practical lecture	oral examination and writing report
13th week	2hr	The student learns Conversion circuit from Binary to Decimal number	Design of logic gates	practical lecture	oral examination and writing report
14th week	2hr	The student learns Conversion circuit from Decimal to Binary number	Design of logic gates	practical lecture	oral examination and writing report
15th week	2hr	The student learns Half adder circuit using different gates and NAND gate	Half adder	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Digital electronics and its applications - Malvino
Main references (sources)	Digital electronics and its applications - Malvino
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the logic circuits topics
Electronic References, Websites	https://stackexchange.com/

Course Description Form

1-Course Name:

Direct Current Circuits					
2-Course Code:					
ETS113-24-CM					
3-Semester / Year:					
Semester					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
4 hours/ 4 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: zahraa hasan hadi					
Email: zahraa.hadi.iba@atu.edu.iq					
8-Course Objectives					
Course Objectives	At the end of the course the student will be able to: 1. To define the electric circuits and electrical measurement to the students . 2. To prepare students for studying different calculations of alternating circuits and direct current circuits and different theories of measuring instruments.				
9-Teaching and Learning Strategies					
Strategy	Live questions and answers about previous material Analyzing the student's ability to comprehend through homework, carried out at home and stored on the computer Discs to display directly in front of students to see how much they learned from the previous lecture- Showing educational films specific to the subject in order to consolidate ability to learn, use feedback, and evaluate the extent of the student's understanding of the subject.				
10-Course Structure					
Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Resonance circuits, series and parallel resonance circuits, resonance condition, current, voltage, and phase angle calculation resonance circuits. Bandwidth calculation, quality factor, relation between inductance and capacitance, examples	Resonance circuits	Theoretical lecture	oral examination and quiz
2 nd week	2hr	The student learns Applying Thévenin and Norton and superposition theorem on AC circuits, examples.	Applying Thévenin and Norton	Theoretical lecture	2hr
3 rd week	2hr	The student learns Power in AC circuits (resistor only, inductor only, capacitor only, resistor, inductor and capacitor on series and parallel), effective power and not effective power calculation.	Power in AC circuits	Theoretical lecture	2hr
4 th week	2hr	The student learns Total Appearing power, power triangle, power factor, power factor affection on AC circuits, power factor improving, examples.	Total Appearing power,	Theoretical lecture	2hr
5 th week	2hr	The student learns Maximum power transformation in AC circuits, equation derivation, examples.	Maximum power transformation in AC circuits, equation derivation, examples.	Theoretical lecture	2hr
6 th week	2hr	The student learns Nodal analysis on DC circuits, introduction, nodal voltage, voltage equation, nodal voltage equation calculation, common conductivity, transformation conductivity.	Nodal analysis on DC circuits	Theoretical lecture	2hr

7 th week	2hr	The student learns Examples on nodal analysis circuits.	Examples on nodal	Theoretical lecture	2hr
8 th week	2hr	The student learns Three phase AC circuits, AC circuit current generation (single phase, two phase, three phase), AC three phase circuits, delta star AC three phase circuits, current voltage power calculation in AC three phase circuits, properties, examples.	Three phase AC circuits	Theoretical lecture	2hr
9 th week	2hr	The student learns Examples on AC three phase delta- star circuits, balance load, unbalance load.	Examples on AC three phase delta- star circuits, balance load, unbalance load	Theoretical lecture	2hr
10 th week	2hr	The student learns Measuring methods of power for three phase circuits, wattmeter device, wattmeter connection and effective power, ineffective power, appearing power, power measuring using wattmeter, power calculation in delta star connection, using two wattmeter, three wattmeter	Measuring methods of power	Theoretical lecture	2hr
11 th week	2hr	The student learns Transition circuit cases, DC transition circuit cases, circuits (RLC – RC - RL)	Transition circuit cases	Theoretical lecture	2hr
12 th week	2hr	The student learns Alternative currents in transition circuits, sinusoidal currents in RLC, RC, RL, transition currents.	Alternative currents in transition circuits, sinusoidal currents in RLC, RC, RL, transition currents	Theoretical lecture	2hr
13 th week	2hr	The student learns Self-induction inductor(electromagnetic induction), definition, self- induction equation in inductor, mutual induction between two inductors, equation of mutual induction according inductors connection: a. Series connection b. Cross Series connection	Self-induction inductor	Theoretical lecture	2hr
14 th week	2hr	The student learns Transformer, transformer components, transformer drawing, properties, operation function, transformer types, examples.	Transformer, transformer components, transformer drawing, properties, operation function, transformer types, examples.	Theoretical lecture	2hr
15 th week	2hr	The student learns Curves of growing and fading currents in inductive circuits, explanation, and affection on DC circuits, current drawing in constant time, charging and discharging of capacitors in DC circuits, examples.	Curves of growing and fading currents	Theoretical lecture	2hr

2hr					
Week	2hr	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Resonance circuits, series and parallel resonance circuits, resonance condition, current, voltage, and phase angle calculation resonance circuits. Bandwidth calculation, quality factor, relation between inductance and capacitance, examples	Electrical circuits and measurements	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns Applying Thévenin and Norton and superposition theorem on AC circuits, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns Power in AC circuits (resistor only, inductor only, capacitor only, resistor, inductor and capacitor on series and parallel), effective power and not effective power	Electrical circuits and measurements	practical lecture	oral examination and writing report

		calculation.			
4 th week	2hr	The student learns Total Appearing power, power triangle, power factor, power factor affection on AC circuits, power factor improving, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
5 th week	2hr	The student learns Maximum power transformation in AC circuits, equation derivation, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Nodal analysis on DC circuits, introduction, nodal voltage, voltage equation, nodal voltage equation calculation, common conductivity, transformation conductivity.	Electrical circuits and measurements	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Examples on nodal analysis circuits.	Electrical circuits and measurements	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Three phase AC circuits, AC circuit current generation (single phase, tow phase, three phase), AC three phase circuits, delta star AC three phase circuits, current voltage power calculation in AC three phase circuits, properties, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Examples on AC three phase delta- star circuits, balance load, unbalance load.	Electrical circuits and measurements	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Measuring methods of power for three phase circuits, wattmeter device, wattmeter connection and effective power, ineffective power, appearing power, power measuring using wattmeter, power calculation in delta star connection, using tow wattmeter, three wattmeter	Electrical circuits and measurements	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Transition circuit cases, DC transition circuit cases, circuits (RLC – RC - RL)	Electrical circuits and measurements	practical lecture	oral examination and writing report
12 th week	2hr	The student learns Alternative currents in transition circuits, sinusoidal currents in RLC, RC ,RL, transition currents.	Electrical circuits and measurements	practical lecture	oral examination and writing report
13 th week	2hr	The student learns Self-induction inductor(electromagnetic induction), definition, self- induction equation in inductor, mutual induction between tow inductors, equation of mutual induction according inductors connection: a. Series connection b. Cross Series connection	Electrical circuits and measurements	practical lecture	oral examination and writing report
14 th week	2hr	The student learns Transformer, transformer components, transformer drawing, properties, operation function, transformer types, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
15 th week	2hr	The student learns Curves of growing and fading currents in inductive circuits, explanation, and affection on DC circuits, current drawing in constant time, charging and discharging of capacitors in DC circuits, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report

11-Course Evaluation	
The distribution of the score out of 100 is according to the following:	
1. Theoretical: a. First Month = 10 marks b. Second Month = 10 marks	
2. Practical: a. First Month = 10 marks b. Second Month = 10 marks	
3. daily oral and preparation= 10 Marks	
4. Final exam a. Theoretical=40 marks b. Practical =10 marks	
12-Learning and Teaching Resources	
Electrical Technology (Edward Hughes).	Basic circuits (A.M.F Brooks) pergaman press. Introduction to Electric circuits (M.Roman witz) J willy. 7): Basic Electrical Engineering (Fitzgerald Rlginborthan). McGraw- Hill
Electrical Technology (B.L Theraja) .	Electrical Technology (B.L Theraja) .
Fundamental Electric circuits (David A . B ell)	Fundamental Electric circuits (David A . B ell)
Introductory circuit Analysis by Robert Boylestad	Basic circuits (A.M.F Brooks) pergaman press. Introduction to Electric circuits (M.Roman witz) J willy. 7): Basic Electrical Engineering (Fitzgerald Rlginborthan). McGraw- Hill

Course Description Form

1-Course Name:	
Mathematics-1	
2-Course Code:	
ETS114-24-CM	
3-Semester / Year:	
Semester	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Theoretical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
30 hours/ 4 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Eman Jawad Najy Email: eman.naji@atu.edu.iq	
8-Course Objectives	
Course Objectives	At the end of the course the student will be able to: 1. The student understands the laws and mathematical issues

	2. To solve simple and complex electrical circuits using mathematics 3. knows the applications of Engineering Mathematics
9-Teaching and Learning Strategies	
Strategy	1. Discuss the students and ask questions about the topic of the lecture and how to think critically and analytically, and then guide them towards how to solve the problem in a way that suits the topic. 2. Explain the material in a consistent manner commensurate with the initial inquiries and discussions of the topic, in addition to using the available means of explanation that help to consolidate the lesson through solved examples and exercises that provoke brainstorming students. 3. The use of feedback and assessment of the student's comprehension of the material.

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Types of matrices, operations on matrices	Types of matrices, operations on matrices	Theoretical lecture	Solving exercises + daily exam
2 nd week	2hr	The student learns Solving linear equations using determinants (Cramer's rule)	Cramer's rule)	Theoretical lecture	Solving exercises + daily exam
3 rd week	2hr	The student learns Vectors –vector analysis-scalar and Vector quantities – vector algebra –operations on vectors – phase angle	Vectors –vector analysis	Theoretical lecture	Solving exercises + daily exam
4 th week	2hr	The student learns Orthogonal vectors-scalar and directional multiplication-applications.	Orthogonal vectors-scalar	Theoretical lecture	Solving exercises + daily exam
5 th week	2hr	The student learns Trigonometric function - trigonometric relations-logarithmic function	Trigonometric function - trigonometric relations-logarithmic function	Theoretical lecture	Solving exercises + daily exam
6 th week	2hr	The student learns Exponential functions Hyperbola functions and their applications	Exponential functions Hyperbola functions and their applications	Theoretical lecture	Solving exercises + daily exam
7 th week	2hr	The student learns Limits – limits of algebraic and trigonometric functions-applications	Limits – limits of algebraic and trigonometric functions-applications	Theoretical lecture	Solving exercises + daily exam
8 th week	2hr	The student learns Differential – derivation by definition – derivation of algebraic functions-chain rule	Differential –derivation by definition – derivation of algebraic functions-chain rule	Theoretical lecture	Solving exercises + daily exam
9 th week	2hr	The student learns Standard implicit function-higher-order derivative	Standard implicit function-higher-order derivative	Theoretical lecture	Solving exercises + daily exam
10 th week	2hr	The student learns Derivation of trigonometric and logarithmic functions	Derivation of trigonometric and logarithmic functions	Theoretical lecture	Solving exercises + daily exam
11 th week	2hr	The student learns The derivative of exponential functions	The derivative of exponential functions	Theoretical lecture	Solving exercises + daily exam
12 th week	2hr	The student learns Applications of the derivation-the equation of tangent and column -, acceleration and velocity	Applications of the derivation-the equation of tangent and column -, acceleration and velocity	Theoretical lecture	Solving exercises + daily exam
13 th week	2hr	The student learns Increasing and decreasing-minor and great endings	Increasing and decreasing-minor and	Theoretical lecture	Solving exercises + daily exam

			great endings		
14 th week	2hr	The student learns General physical and engineering applications	General physical and engineering applications	Theoretical lecture	Solving exercises + daily exam
15 th week	2hr	The student learns Indefinite integration-integration of algebraic-trigonometric functions	Indefinite integration-integration of algebraic-trigonometric functions	Theoretical lecture	Solving exercises + daily exam

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Applied mathematics-yaqub sibagha
Main references (sources)	Solving electrical circuits-Joseph Methods for solving differential equations-Khaled Ahmed Samarai-Yahya Abdul said Calculus ((Thomas)) Laplace transformation
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the applied mathematics
Electronic References, Websites	All applied mathematics websites on the internet

Course Description Form

1-Course Name:
Computer and artificial intelligence
2-Course Code:
ATU122
3-Semester / Year:
Semester
4-Description Preparation Date:
26-10-2025
5-Available Attendance Forms:
Theoretical lecture
6-Number of Credit Hours (Total) / Number of Units (Total)

30 hours/ 2 unit

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

Name: hafidh ali shubat

Email: : h.ali@atu.edu.iq

8-Course Objectives

Course Objectives	Teaching the student to be familiar with the basic rules for dealing with and managing a computer to help him complete projects Printing matters, preparing statistics and graphs, creating presentations and designing engineering plans And so on, and with the emergence of the Internet as a means of communication available to everyone, it has become very necessary for students to learn to use it Computer This is due to the role of the Internet in many fields, including education, scientific research, trade and marketing Through electronic correspondence, web pages, and electronic communication.
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1. Teaching and Learning Strategies

1. Discussing with the students and asking questions about the lecture topic and how to think critically and analytically, and then directing them towards how to solve the problem in a way that is appropriate to the topic.
2. Explaining the material in a consistent way that is appropriate for the initial inquiries and discussions of the subject, in addition to using available means of explanation that help consolidate the lesson, such as using video clips on websites and realistic examples, in addition to addressing many solved examples.
3. Use feedback and evaluate the student's understanding of the material.

9-Course Structure

Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	The student learns Run Word 2010, file tab, program interfaces and bars	introduction	lecture	Tests + weekly reports
2	1	The student learns Home tab, portfolio, font and paragraphs group	Home tab	lecture	Tests + weekly reports
3	1	The student learns Styles group, Edit group, and Page Layout tab	Page Layout tab	lecture	Tests + weekly reports
4	1	The student learns Set the page layout, page setting, and page background	Page Layout tab	lecture	Tests + weekly reports
	1	The student learns Paragraph	Display tab	lecture	

5		group, arrangement group, and display tab, document views			Tests + weekly reports
6	1	The student learns Show group, Zoom in and out group, Window, Help instructions	Display tab	lecture	Tests + weekly reports
7	1	The student learns Insert tab, Pages group, Tables group	Insert tab	lecture	Tests + weekly reports
8	1	The student learns Table Tools and Table Design tab	Tools tab	1 lecture	Tests + weekly reports
9	1	The student learns Illustrations, a group of links, a group of headers and footers, and a group of adding equations and symbols	. Tools tab	ecture	Tests + weekly reports
10	1	The student learns Layout tab, watermark and page borders	Layout tab	lecture	Tests + weekly reports
11	1	The student learns Additional tasks for Microsoft Word, references tab, tables of contents, and footnotes group	References tab	lecture	Tests + weekly reports
12	1	The student learns Collection of references, citations, captions, and index collection	References tab	lecture	Tests + weekly reports
13	1	The student learns Resource table group, correspondence tab, and create group, mail merge	Correspondence tab	lecture	Tests + weekly reports
14	1	The student learns The Writing and Inserting Fields group and the Previewing the results group	Correspondence tab	Lectures	Tests + weekly reports
15	1	The student learns Review tab: review, language, group comments, changes, compare and protect	Review tab	Lectures	Tests + weekly reports

Course Structure

Practical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	The student learns Run Word 2010, file tab, program interfaces and bars	introduction	practical lecture	Tests + weekly reports
2	1	The student learns Home tab, portfolio, font and paragraphs group	Home tab	practical lecture	Tests + weekly reports
3	1	The student learns Styles group, Edit group, and Page Layout tab	Page Layout tab	practical lecture	Tests + weekly reports
4	1	The student learns Set the page layout, page setting, and page background	Page Layout tab	practical lecture	Tests + weekly reports
5	1	The student learns Paragraph group, arrangement group, and	Display tab	practical lecture	Tests + weekly reports

		display tab, document views			
6	1	The student learns Show group, Zoom in and out group, Window, Help instructions	Display tab	practical lecture	Tests + weekly reports
7	1	The student learns Insert tab, Pages group, Tables group	Insert tab	practical lecture	Tests + weekly reports
8	1	The student learns Table Tools and Table Design tab	Tools tab	practical lecture	Tests + weekly reports
9	1	The student learns Illustrations, a group of links, a group of headers and footers, and a group of adding equations and symbols	Tools tab	practical lecture	Tests + weekly reports
10	1	The student learns Layout tab, watermark and page borders	Layout tab	practical lecture	Tests + weekly reports
11	1	The student learns Additional tasks for Microsoft Word, references tab, tables of contents, and footnotes group	References tab	practical lecture	Tests + weekly reports
12	1	The student learns Collection of references, citations, captions, and index collection	References tab	practical lecture	Tests + weekly reports
13	1	The student learns Resource table group, correspondence tab, and create group, mail merge	Correspondence tab	practical lecture	Tests + weekly reports
14	1	The student learns The Writing and Inserting Fields group and the Previewing the results group	Correspondence tab	practical lecture	Tests + weekly reports
15	1	The student learns Review tab: review, language, group comments, changes, compare and protect	Review tab	practical lecture	Tests + weekly reports

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First Month = 10 marks
- Second Month = 10 marks

2. Practical:

- First Month = 10 marks
- Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- Theoretical=40 marks
- Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Engineering and electrical drawing
Main references (sources)	Descriptive geometry

Recommended books and references (scientific journals, reports...)	All books and Journals which includes the Engineering and electrical drawing
Electronic References, Websites	All sites and video lectures that are interested in electrical drawing

Course Description Form

1-Course Name:	
Engineering drawing	
2-Course Code:	
ETS116-24-CM	
3-Semester / Year:	
Semester	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Practical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
45 hours/ 3 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Eman Jawad Najy Email: eman.naji@atu.edu.iq	
8-Course Objectives	
Course Objectives	1. He knows the advantages of computer drawing . 2. Recognizes the system interface (AUTO CAD), its bars, drawing and adjustment menus . 3. Learns to use the AUTO CAD program for drawing electrical and electronic circuits .
9-Teaching and Learning Strategies	
Strategy	1.Explain the material to students in a way that the student learns how to draw using a computer 2.Students apply various drawings and strengthen their skills in dealing with the required drawin and modification instructions . 3.Assessment of students through paintings and exams

10-Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	3hr	The student learns Advantages of computer drawing and the basic components of the AUTOCAD program	Engineering drawing	practical lecture	Daily exam and boards
2 nd week	3hr	The student learns How to activate and run the AutoCAD Program program interface hide tapes activate tapes and icons	Engineering drawing	practical lecture	Daily exam and boards
3 rd week	3hr	The student learns Detailed explanation of the components of the draw bar, Modify, tools bar	Engineering drawing	practical lecture	Daily exam and boards

4 th week	3hr	The student learns Identify the types of drawing lines in the program and how to download the types of lines	Engineering drawing	practical lecture	Daily exam and boards
5 th week	3hr	The student learns How to draw line, circle, arc, in their different ways	Engineering drawing	practical lecture	Daily exam and boards
6 th week	3hr	The student learns How to draw polygon, polyline ,rectangle, multiline	Engineering drawing	practical lecture	Daily exam and boards
7 th week	3hr	The student learns Adding dimensions and texts in the AutoCad program	Engineering drawing	practical lecture	Daily exam and boards
8 th week	3hr	The student learns Performing engineering operations, drawing a triangle in its three ways, drawing a straight line parallel to a known straight line, and drawing a circle passing the vertices of the Triangle	Engineering drawing	practical lecture	Daily exam and boards
9 th week	3hr	The student learns Divide a straight line into several equal parts draw a pentagonal polygon with radius information	Engineering drawing	practical lecture	Daily exam and boards
10 th week	3hr	The student learns Projectors how to draw projectors how to execute projectors	Engineering drawing	practical lecture	Daily exam and boards
11 th week	3hr	The student learns Practical applications to projectors	Engineering drawing	practical lecture	Daily exam and boards
12 th week	3hr	The student learns Practical applications to projectors	Engineering drawing	practical lecture	Daily exam and boards
13 th week	3hr	The student learns Practical applications to projectors	Engineering drawing	practical lecture	Daily exam and boards
14 th week	3hr	The student learns Practical applications to projectors	Engineering drawing	practical lecture	Daily exam and boards
15 th week	3hr	The student learns How to draw and create three-dimensional drawings in AUTOCAD	Engineering drawing	practical lecture	Daily exam and boards

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Engineering and electrical drawing
Main references (sources)	Descriptive geometry
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the Engineer and electrical drawing
Electronic References, Websites	All sites and video lectures that are interested

Course Description Form

1. Course Name:					
Human Rights and Democracy					
2. Course Code:					
ATU132					
3. Semester / Year:					
Semester					
4. Description Preparation Date:					
26-10-2025					
5. Available Attendance Forms:					
Theoretical lecture					
6. Number of Credit Hours (Total) / Number of Units (Total)					
30 hours/ 1 unit					
7. Course administrator's name (mention all, if more than one name)					
Name: mustafa abbas mohammed					
Email: mustafaalkhafaji815@gmail.com					
8. Course Objectives					
Course Objectives	At the end of the course the student will be able to: Know about human rights. In addition, the student will be able to deal with different Theories of human right				
9. Teaching and Learning Strategies					
Strategy	At the beginning of every theoretical lecture, there is an introduction to the lecture topic. This would include most of the questions that can be asked about the topic and will be answered during the lecture. Students will be taken through a discussion in order to find the pre answers to those questions.				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	The student learns Explain the term of human rights	Explain the term of human rights	Theoretical lecture	oral examination and quiz
2	1	The student learns The historical of human rights	The historical of human rights	Theoretical lecture	oral examination and quiz
3	1	The student learns Development of human rights	Development of human rights	Theoretical lecture	oral examination and quiz
4	1	The student learns Development of human right	Development of human right	Theoretical lecture	oral examination and quiz
5	1	The student learns Development of human rights	Development of human rights	Theoretical lecture	oral examination and quiz
6	1	The student learns Human rights and Sumerian civilization	Human rights and Sumerian civilization	Theoretical lecture	oral examination and quiz
7	1	The student learns Human rights in Roman civilization	Human rights in Roman civilization	Theoretical lecture	oral examination and quiz
8	1	The student learns Human rights in the Nile Valley civilization	Human rights in the Nile Valley civilization	Theoretical lecture	oral examination and quiz
9	1	The student learns Introduction to heavenly	Introduction to heavenly religions.	Theoretical lecture	oral examination and quiz

		religions.			
10	1	The student learns Human rights in Judaism	Human rights in Judaism	Theoretical lecture	oral examination and quiz
11	1	The student learns Human rights in the Christian religion	Human rights in the Christian religion	Theoretical lecture	oral examination and quiz
12	1	The student learns Human rights in the Islamic religion	Human rights in the Islamic religion	Theoretical lecture	oral examination and quiz
13	1	The student learns Human rights in the Islamic religion	Human rights in the Islamic religion	Theoretical lecture	oral examination and quiz
14	1	The student learns Comparison between other religions and Islam	Comparison between other religions and Islam	Theoretical lecture	oral examination and quiz
15	1	The student learns Democracy and Islam	Democracy and Islam	Theoretical lecture	oral examination and quiz

11.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

1. First Term Theoretical Exam: 20 / 100
2. Second Term Theoretical Exam: 20 / 100
3. Student Activities: 10 / 100
4. Final Theoretical Exam: 50 / 100

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Human Rights book
Main references (sources)	The organization of human rights magazine
Recommended books and references (scientific journals, reports...)	The organization of human rights magazine
Electronic References, Websites	The organization of human rights magazine

Course Description Form

1. Course Name	
Arabic Language 2	
2. Course Code:	
Arabic Language	
3. Semester / Year:	
First and Second Semester / 2025	
4. Date of Syllabus Preparation:	
2025/10/16	
5. Available Attendance Methods	
Theoretical lecture	
6. Total Credit Hours / Total Units	
Total Hours: 30 – Total Units	
Course Coordinator (if more than one, list all)	

7.

Name: Noor Aayed Abdullah

Email: noor.serkal.iba14@atu.edu.iq

8.

1. preserving it from errors.
2. Develop the student's spelling skills.
3. Assist the student in knowing the correct way to write numbers, read them, and write the hamza in its various forms.
4. Review Arabic grammar rules to help the student avoid grammatical mistakes.
5. Enhance the student's skills in appreciating the beauty of literary expression and imitating elegant texts in writing.
6. Help the student identify common language mistakes and guide them.

Course Objectives: To enable the student to

9-

Lecture Strategy: It relies on the direct explanation of knowledge and information from the teacher to the student

10-Course Structure

Assessment Method	Learning Method	Unit or Topic Name	Expected Learning Outcomes	Hours	week
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Lesson on illustrating the importance of the Arabic language in general for non-specialist students. A Hadith on mastering one's work. Poem by Al-Sharif Al-Radi mourning his mother.	Knowledge and Application	1	1
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns From Surah Al-Isra, verses 23 to 29.	Knowledge and Application	1	2
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns The present tense: its nominative, accusative, and jussive forms.	Knowledge and Application	1	3
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Genitive constructions in the Arabic language.	Knowledge and Application	1	4
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Accusative constructions in the	Knowledge and Application	1	5
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Arabic language. Common linguistic errors.	Knowledge and Application	1	6

Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns between daad and thaa.'	Knowledge and Application	1	7
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns The difference between taa and haa. The difference between the short alif and long alif The difference The origin of Arabic dictionaries.	Knowledge and Application	1	8
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns From Surah Yusuf, verses 1 to 7.	Knowledge and Application	1	9
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns From the Hadith	Knowledge and Application	1	10
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns A poem by Al-Mutanabbi	Knowledge and Application	1	11
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Morphology: declension of nouns.	Knowledge and Application	1	12
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Numbers and their rules.	Knowledge and Application	1	13
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns Grammatical	Knowledge and Application	1	14
Daily Preparation Daily Exams Oral Exams	Theoretical	The student learns dependents	Knowledge and Application	1	15

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First semester = 10 marks
- b. Second semester= 10 marks

2. Practical:

- a. First semester= 10 marks
- b. Second semester= 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12- Learning and Teaching Resources

	Required textbooks (if any): None
Arabic Language Curriculum for Non-Specialist Departments	Primary references (sources:(

Dictionary of Common Linguistic and Grammatical Errors / Khidr Abu Al-Aynayn	
	Recommended supporting books and references (scientific journals, reports, etc.): None
https://ketabpedia.com	Electronic references, websites:

Course Description Form

1-Course Name:	
Electronics	
2-Course Code:	
ETS121-24-CM	
3-Semester / Year:	
Semester	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Theoretical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
30 hours/ 8 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Alaa Hadi Mohammed Email: alaa.musa@atu.edu.iq	
8-Course Objectives	
Course Objectives	At the end of the course the student will be able to: 1. Know about the methods of the electronic circuits design.

2. Student to be able to build and operate the electronic circuits on the practical breadboard.
3. Student to be able to make use form the academic studying in marketing.

9-Teaching and Learning Strategies

10-Course Structure

Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st & 2 nd & 3 rd weeks	6hr	The student learns Power amplifier class A. Power amplifier class B. Power amplifier class B.	Power amplifiers	Theoretical lecture	oral examination and quiz
4 th week	2hr	The student learns power supplies.	power supplies	Theoretical lecture	oral examination and quiz
5 th week	2hr	The student learns Voltage regulator using series connection transistor	Voltage regulator	Theoretical lecture	oral examination and quiz
6 th week	2hr	The student learns Thyristor - triggering and switch off Methods – Applications.	Thyristor	Theoretical lecture	oral examination and quiz
7 th & 8 th weeks	4hr	The student learns Oscillators and their definition – Feedback and its types – Oscillation conditions – Phase shift oscillator – Colpitts and Harley oscillator.	Oscillators	Theoretical lecture	oral examination and quiz
9 th & 10 th & 11 th weeks	6hr	The student learns Transistor as a switch - Oscillators and their types - Bistable - Monostable - Astable oscillator.	Multivibrators	Theoretical lecture	oral examination and quiz
12 th & 13 th weeks	4hr	The student learns Operational Amplifier - Equivalent Circuit and Specifications - Inverting and Non-inverting Amplifier.	Operational Amplifier	Theoretical lecture	oral examination and quiz
14 th & 15 th weeks	4hr	The student learns Inverting and Non-Inverting Adder Circuit - Examples	Operational amplifier	Theoretical lecture	oral examination and quiz

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st & 2 nd & 3 rd weeks	6hr	The student learns Power amplifier class A. Power amplifier class B. Power amplifier class B.	Power amplifiers	practical lecture	oral examination and writing report
4 th week	2hr	The student learns power supplies.	power supplies	practical lecture	oral examination and writing report
5 th week	2hr	The student learns Voltage regulator using series connection transistor	Voltage regulator	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Thyristor - triggering and switch off Methods – Applications.	Thyristor	practical lecture	oral examination and writing report
7 th & 8 th weeks	4hr	The student learns Oscillators and their definition – Feedback and its types – Oscillation conditions – Phase shift oscillator –	Oscillators	practical lecture	oral examination and writing

		Colpitts and Harley oscillator.			report
9 th & 10 th & 11 th weeks	6hr	The student learns Transistor as a switch - Oscillators and their types - Bistable - Monostable - Astable oscillator.	Multivibrators	practical lecture	oral examination and writing report
12 th & 13 th weeks	4hr	The student learns Operational Amplifier - Equivalent Circuit and Specifications - Inverting and Non-inverting Amplifier.	Operational Amplifier	practical lecture	oral examination and writing report
14 th & 15 th weeks	4hr	The student learns Inverting and Non-Inverting Adder Circuit - Examples	Operational amplifier	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First Month = 10 marks
- Second Month = 10 marks

2. Practical:

- First Month = 10 marks
- Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- Theoretical=40 marks
- Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	The methodical book (The electronic circuits)
Main references (sources)	The methodical book (The electronic circuits)
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the electronic circuits topics
Electronic References, Websites	https://stackexchange.com/

Course Description Form

1-Course Name:
Alternating Current Circuits
2-Course Code:
ETS122-24-CM
3-Semester / Year:
Semester
4-Description Preparation Date:
26-10-2025
5-Available Attendance Forms:
Theoretical lecture
6-Number of Credit Hours (Total) / Number of Units (Total)

4 hours/ 4 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: zahraa hasan hadi					
Email: zahraa.hadi.iba@atu.edu.iq					
8-Course Objectives					
Course Objectives	At the end of the course the student will be able to: To define the electric circuits and electrical measurement to the students . To prepare students for studying different calculations of alternating circuits and direct current circuits and different theories of measuring instruments.				
9-Teaching and Learning Strategies					
Strategy	Live questions and answers about previous material Analyzing the student’s ability to comprehend through home work, carried out at home and stored on the computer Discs to display directly in front of students to see how much they learned from the previous lecture- Showing educational films specific to the subject in order to consolidate the ability to learn, use feedback, and evaluate the extent of the student’s understanding of the subject.				
10-Course Structure					
Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2h	The student learns Series resonance, parallel resonance..	Series resonance, parallel resonance.	Theoretical lecture	2h
2 nd week	2h	The student learns Applying Thévenin and Norton theorems in AC circuits.	Applying Thévenin and Norton theorems in AC circuits.	Theoretical lecture	2h
3 rd week	2h	The student learns Comparison between analog voltmeter and digital voltmeter in DC and AC voltage, examples.	Comparison between analog voltmeter and digital	Theoretical lecture	2h
4 th week	2h	The student learns Maximum power transition in AC currents, examples.	Maximum power transition in AC	Theoretical lecture	2h
5 th week	2h	The student learns Power measuring using voltmeter and three ammeters, examples.	Power measuring using voltmeter and three ammeters, examples.	Theoretical lecture	2h
6 th week	2h	The student learns Power measuring, power factor measuring using wattmeter, examples.	Power measuring, power factor measuring using wattmeter, examples	Theoretical lecture	2h
7 th week	2h	The student learns Power factor improving, examples.	Power factor improving, examples	Theoretical lecture	2h
8 th week	2h	The student learns Voltage and current in three phase delta- star connection	Voltage and current in three phase delta- star connection	Theoretical lecture	2h
9 th week	2h	The student learns Resistor using Wetston bridge, examples.	Resistor using Wetston bridge, examples	Theoretical lecture	2h
10 th week	2h	The student learns loaded Voltage divider, unloaded Voltage divider.	loaded Voltage divider, unloaded Voltage divider.	Theoretical lecture	2h
11 th week	2h	The student learns Resister measuring using Ammeter and voltmeter, examples.	Resister measuring using Ammeter and voltmeter, examples.	Theoretical lecture	2h
12 th week	2h	The student learns Using amplifier to measuring high resistor in isolators,	Using amplifier to measuring high resistor in isolators,	Theoretical lecture	2h
13 th week	2h	The student learns Increasing Ammeter range, fitting Ammeter using other device.	Increasing Ammeter range, fitting Ammeter	Theoretical lecture	2h

			using other device		
14 th week	2h	The student learns Increasing voltmeter range, fitting Ammeter using other device.	Increasing voltmeter range, fitting Ammeter using other device	Theoretical lecture	2h
15 th week	2h	The student learns Studding time constant in inductive circuit (RL), Studding time constant in capacitive circuit (RC).	Studding time constant in inductive circuit (RL), Studding time constant in capacitive circuit (RC).	Theoretical lecture	2h
Week	2hr	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Series resonance, parallel resonance..	Electrical circuits and measurements	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns Applying Thévenin and Norton theorems in AC circuits.	Electrical circuits and measurements	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns Comparison between analog voltmeter and digital voltmeter in DC and AC voltage, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Maximum power transition in AC currents, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
5 th week	2hr	The student learns Power measuring using voltmeter and three ammeters, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Power measuring, power factor measuring using wattmeter, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Power factor improving, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Voltage and current in three phase delta- star connection	Electrical circuits and measurements	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Resistor using Wetston bridge, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
10 th week	2hr	The student learns loaded Voltage divider, unloaded Voltage divider.	Electrical circuits and measurements	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Resister measuring using Ammeter and voltmeter, examples.	Electrical circuits and measurements	practical lecture	oral examination and writing report
12 th week	2hr	The student learns Using amplifier to measuring high resistor in isolators,	Electrical circuits and measurements	practical lecture	oral examination and writing report
13 th	2hr	The student learns Increasing Ammeter range,	Electrical circuits and	practical	oral

week		fitting Ammeter using other device.	measurements	lecture	examination and writing report
14 th week	2hr	The student learns Increasing voltmeter range, fitting Ammeter using other device.	Electrical circuits and measurements	practical lecture	oral examination and writing report
15 th week	2hr	The student learns Studding time constant in inductive circuit (RL), Studding time constant in capacitive circuit (RC).	Electrical circuits and measurements	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. Fiest Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Electrical Technology (Edward Hughes).	Basic circuits (A.M.F Brooks) pergaman press. 6): Introduction to Electric circuits (M.Roman witz) John willy. 7): Basic Electrical Engineering (Fitzgerald and Rlgginborthan). McGraw- Hill
Electrical Technology (B.L Theraja) .	Electrical Technology (B.L Theraja) .
Fundamental Electric circuits (David A . B ell)	Fundamental Electric circuits (David A . B ell)
Introductory circuit Analysis by Robert L. Boylestad	Basic circuits (A.M.F Brooks) pergaman press. 6): Introduction to Electric circuits (M.Roman witz) John willy. 7): Basic Electrical Engineering (Fitzgerald and Rlgginborthan). McGraw- Hill

Course Description Form

1-Course Name:
Digital Electronic
2-Course Code:
ETS123-24-CM
3-Semester / Year:
Semester
4-Description Preparation Date:
26-10-2025
5-Available Attendance Forms:
Theoretical lectures

6-Number of Credit Hours (Total) / Number of Units (Total)					
Number of study hours = 4 / Number of units = 6					
7-Course administrator's name (mention all, if more than one name)					
Name: Assi. Lec. Sakena Abbas Fadhel Email: sakenaabbas@gmail.com					
8-Course Objectives					
Course Objectives		The student learns about electrical measuring devices and how they work. Learns how to maintain electrical measuring devices Learns how to connect and operate electrical circuits			
9-Teaching and Learning Strategies					
Strategy		1. Discuss with students and ask questions about the lecture topic and how to think critically and analytically, then guide them towards how to solve the problem in a manner that is consistent with the topic. 2. Explain the material in a consistent manner that is consistent with the initial inquiries and discussions of the topic, in addition to using available means of clarification that help consolidate the lesson, such as using visual scenes on websites and real-life examples, in addition to addressing many solved examples. 3. Use feedback and evaluate the student's understanding of the material.			
10-Course Structure (Theoretical)					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	2	The student learns A general idea of numerical systems (types and details)	Digital Principles	Lectures	Oral Exams
2 nd	2	The student learns Transfers between the numerical systems	Digital Principles	Lectures	Oral Exams
3 rd	2	The student learns Logic gates (types, working principle, truth tables, logical symbol)	Digital Principles	Lectures	Oral Exams
4 th	2	The student learns How to connect the logic gates to form logic circuits.	Digital Principles	Lectures	Oral Exams
5 th	2	The student learns Boolean algebra and the rule of de-Morgan	Digital Principles	Lectures	Oral Exams
6 th	2	The student learns Simplification of logical equations using Boolean algebra and the laws of De Morgan's laws.	Digital Principles	Lectures	Oral Exams
7 th	2	The student learns The design of the logical gates using NOR and NAND circuits,	Digital Principles	Lectures	Oral Exams
8 th	2	The student learns Ways of writing the equation from truth table (POS, SOP).	Digital Principles	Lectures	Oral Exams
9 th	2	The student learns Karnaugh Map (for two variables, the three variables, the four variables)	Digital Principles	Lectures	Oral Exams
10 th	2	The student learns Simplification of logical equations using Karnaugh Map	Digital Principles	Lectures	Oral Exams
11 th	2	The student learns Calculations in the binary system (addition, subtraction, subtraction using complements).	Digital Principles	Lectures	Oral Exams
12 th	2	The student learns Logic circuit	Digital Principles	Lectures	Oral Exams

		applications (half adder, full adder, parallel adder circuits)			
13 th	2	The student learns Binary subtractor circuits (half subtractor, full subtractor parallel subtractor) circuit using the adder circuit by method of 1s complements.	Digital Principles	Lectures	Oral Exams
14 th	2	The student learns The circuit of digital comparator (one stage and two stages)	Digital Principles	Lectures	Oral Exams
15 th	2	The student learns The circuit of decoder size of 2:4 ,3:8 and 4:10	Digital Principles	Lectures	Oral Exams

Course Structure (Practical)

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	2	The student learns Educe the truth table of NOT-AND-OR Gates using Switches	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
2 nd	2	The student learns Educe the truth table of NOT-AND-OR Gates using diodes and transistors	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
3 rd	2	The student learns Educe the truth table of NOT-AND-OR Gates using diodes and transistors	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
4 th	2	The student learns NOR-and NAND Gates using diodes and transistors	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
5 th	2	The student learns EX-OR and EX-NOR Gates	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
6 th	2	The student learns Demorgan's first and second law	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
7 th	2	The student learns Deriving the basic gates from NAND gate using circuit of NAND gate	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
8 th	2	The student learns Deriving the basic gates from NOR gate using circuit of NOR gate	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
9 th	2	The student learns Deriving the EX-OR gate from NAND gate and NOR gate	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
10 th	2	The student learns Comparator circuit with one rank	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
11 th	2	The student learns Comparator circuit with two rank	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
12 th	2	The student learns Comparator circuit with four numbers using IC 7485	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
13 th	2	The student learns Conversion circuit from Binary to Decimal number	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
14 th	2	The student learns Conversion circuit from Decimal to Binary number	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports
15 th	2	The student learns Half adder circuit using different gates and NAND gate	Digital Principles	Theoretical lecture + Practical application	Tests + weekly reports

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Digital electronics and its applications - Malvino
Main references (sources)	Digital electronics and its applications - Malvino
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the logic circuits topics
Electronic References, Websites	https://stackexchange.com/

Course Description Form

1-Course Name:	
Mathematics-2	
2-Course Code:	
ETS124-24-CM	
3-Semester / Year:	
Semester	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Theoretical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
30 hours/ 4 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Eman Jawad Najy Email: eman.naji@atu.edu.iq	
8-Course Objectives	
Course Objectives	At the end of the course the student will be able to: 1. The student understands the laws and mathematical issues 2. To solve simple and complex electrical circuits using mathematics 3. knows the applications of Engineering Mathematics
9-Teaching and Learning Strategies	
Strategy	1. Discuss the students and ask questions about the topic of the lecture and how to think critically and analytically, and then guide them towards how to solve the problem in way that suits the topic. 2. Explain the material in a consistent manner commensurate with the initial inquiries

and discussions of the topic, in addition to using the available means of explanation to help to consolidate the lesson through solved examples and exercises that provoke brainstorming students .

10.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Integration of exponential functions	Integration of exponential functions	practical lecture	Solving exercises + daily exam
2 nd week	2hr	The student learns Integration of exponential functions	Definite integration-applications-the space under the curve-between two curves	practical lecture	Solving exercises + daily exam
3 rd week	2hr	The student learns Rotational volumes – the length of the curved arc	Rotational volumes – the length of the curved arc	practical lecture	Solving exercises + daily exam
4 th week	2hr	The student learns Physical and engineering applications	Physical and engineering applications	practical lecture	Solving exercises + daily exam
5,6, 7 th week	2hr	The student learns General methods of integration, including compensation, segmentation, the use of partial, exponential and logarithmic fractions and their applications	General methods of integration, including compensation, segmentation, the use of partial,	practical lecture	Solving exercises + daily exam
8 th week	2hr	The student learns Numerical methods in integration – the base of the trapezoid	Numerical methods in integration – the base of the trapezoid	practical lecture	Solving exercises + daily exam
9,10 th week	2hr	The student learns Solving discrete, homogeneous and linear differential equations with their various applications	Solving discrete, homogeneous and linear differential equations with their various applications	practical lecture	Solving exercises + daily exam
11 th week	2hr	The student learns Complex numbers addition, subtraction, multiplication and division	Complex numbers addition, subtraction, multiplication and division	practical lecture	Solving exercises + daily exam
12 th week	2hr	The student learns the polar and algebraic formula and the transformation between them and vice versa	The polar and algebraic formula and the transformation between them and vice versa	practical lecture	Solving exercises + daily exam
13 th week	2hr	The student learns Powers and roots - representation of roots	Powers and roots - representation of roots	practical lecture	Solving exercises + daily exam
14 th week	2hr	The student learns Statistical operations – frequency distributions – histogram – frequency curve	Statistical operations – frequency distributions – histogram –frequency curve	practical lecture	Solving exercises + daily exam
15 th week	2hr	Arithmetic mean-rate-deviation L=Standard-variance- and the median	Arithmetic mean-rate-deviation L=Standard-variance- and the median	practical lecture	Solving exercises + daily exam

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Applied mathematics-yaequb sibagha
Main references (sources)	Solving electrical circuits-Joseph Methods for solving differential equations-Khaled Ahmed Samarai-Yahya Abdul said Calculus ((Thomas)) Laplace transformation
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the applied mathematics
Electronic References, Websites	All applied mathematics websites on the internet

Course Description Form

1-Course Name:
English Language
2-Course Code:
ATU201
3-Semester / Year:
Semester
4-Description Preparation Date:
26-10-2026
5-Available Attendance Forms:
Theoretical lecture
6-Number of Credit Hours (Total) / Number of Units (Total)
30 hours/ 2 unit
7-Course administrator's name (mention all, if more than one name)
Name: Rusul Noori Saeed Email: : rusul.saeed.iba12@atu.edu.iq
8-Course Objectives

Course Objectives		1. The student should understand the specialty terminology in English 2. Skills objectives for the course. 3. The student learns to speak English and know the terminology			
9-Teaching and Learning Strategies					
Strategy		Speak English fluently			
10-Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learnin g method	Evaluation method
1-4	1	The student learns Introduction and Review to English language. Introduction to parts of speech. Sentence Patterns.	Introduction to parts of speech	Theoretical lecture	oral examination and quiz
5-6	1	The student learns Reading Comprehension and structure (selected scientific passages general to all specializations)	selected scientific passages general to all specializations	Theoretical lecture	oral examination and quiz
7-8	1	The student learns Scientific Attitude (Simple present)	Simple present	Theoretical lecture	oral examination and quiz
9-10	1	The student learns Scientific mentality (in the present continuous tense)	Discussing sentence formation in the present continuous tense	Theoretical lecture	oral examination and quiz
11-12	1	The student learns Present Perfect and Present Perfect Continuous	Discussing sentence formation in the present perfect and its types	Theoretical lecture	oral examination and quiz
13-14	1	The student learns Test	Test	Theoretical lecture	oral examination and quiz
15-16	1	The student learns Scientific methods (in the simple past tense)	Scientific methods (simple past): how it is used, its rules, and sentence formation	Theoretical lecture	oral examination and quiz
17-18	1	The student learns Talking about your job	Talking about your job	Theoretical lecture	oral examination and quiz
19-20	1	The student learns Scientific methods (in the simple future tense)	Explaining scientific methods and forming simple sentences in the simple future tense	Theoretical lecture	oral examination and quiz
21-22	1	The student learns Conditional “If”	Discussing conditional clauses and sentence formation using “if”	Theoretical lecture	oral examination and quiz
23-24	1	The student learns Writing Technical Reports	Writing Technical Reports	Theoretical lecture	oral examination and quiz
25-29	1	The student learns Nouns, pronouns, and synonyms	Discussing nouns and their pronouns in their different types and using general synonyms	Theoretical lecture	Oral examination and quiz
30	1	The student learns General review with the final test	Final Test	Theoretical lecture	oral examination and quiz

11-Course Evaluation	
• Daily preparation 10: marks • Daily and oral exams 10: marks • Monthly exams 20: score • Final written exam: 50 marks	
12-Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Technical language book project
Main references (sources)	Technical language book project
Recommended books and references (scientific journals, reports...)	Technical language book project
Electronic References, Websites	Technical language book project

Course Description Form

1-Course Name:	
Electrical drawing	
2-Course Code:	
ETS127-24-CM	
3-Semester / Year:	
Semester	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Practical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
45 hours/ 3 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Eman Jawad Najy Email: eman.naji@atu.edu.iq	
8-Course Objectives	
Course Objectives	He knows the advantages of computer drawing . Recognizes the system interface (AUTO CAD), its bars, drawing and adjustment menus . Learns to use the AUTO CAD program for drawing electrical and electronic circuits .
9-Teaching and Learning Strategies	
Strategy	1.Explain the material to students in a way that the student learns how to draw using a computer 2.Students apply various drawings and strengthen their skills in dealing with the required drawing and modification instructions. 3.Assessment of students through paintings and exams
10-Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	3hr	The student learns How to draw and create three-dimensional drawings in the AutoCAD program	Electrical drawing	practical lecture	Daily exam and boards
2 nd week	3hr	The student learns How to draw and create three-dimensional drawings in the AutoCAD program	Electrical drawing	practical lecture	Daily exam and boards
3 rd week	3hr	The student learns How to draw and create three-dimensional drawings in the AutoCAD program	Electrical drawing	practical lecture	Daily exam and boards
4 th week	3hr	The student learns How to draw and create three-dimensional drawings in the AutoCAD program	Electrical drawing	practical lecture	Daily exam and boards
5 th week	3hr	The student learns Electronic electrical codes overview	Electrical drawing	practical lecture	Daily exam and boards
6 th week	3hr	The student learns Block , Insert, Block , Attribute	Electrical drawing	practical lecture	Daily exam and boards
7 th week	3hr	The student learns How to insert electrical and electronic codes to the program interface	Electrical drawing	practical lecture	Daily exam and boards
8 th week	3hr	The student learns Connecting electrical and electronic symbols by fonts and practical applications	Electrical drawing	practical lecture	Daily exam and boards
9 th week	3hr	The student learns Practical applications for drawing electrical circuits	Electrical drawing	practical lecture	Daily exam and boards
10 th week	3hr	The student learns Practical applications for drawing electrical circuits	Electrical drawing	practical lecture	Daily exam and boards
11 th week	3hr	The student learns Practical applications for drawing electrical circuits	Electrical drawing	practical lecture	Daily exam and boards
12 th week	3hr	The student learns Practical applications of electronic circuit drawing	Electrical drawing	practical lecture	Daily exam and boards
13 th week	3hr	The student learns Practical applications of electronic circuit drawing	Electrical drawing	practical lecture	Daily exam and boards
14 th week	3hr	The student learns Practical applications of electronic circuit drawing	Electrical drawing	practical lecture	Daily exam and boards
15 th week	3hr	The student learns Practical applications of electronic circuit drawing	Electrical drawing	practical lecture	Daily exam and boards

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First Month = 10 marks
- Second Month = 10 marks

2. Practical:

- First Month = 10 marks
- Second Month = 10 marks

3. daily oral and preparation= 10 Marks**4. Final exam**

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Engineering and electrical drawing
Main references (sources)	Descriptive geometry
Recommended books and references (scientific journals, reports...)	All books and Journals which includes Engineering and electrical drawing
Electronic References, Websites	All sites and video lectures that are interested electrical drawing

Course Description Form

1-Course Name:	
Communication Systems	
2-Course Code:	
ETS211-24-CM	
3-Semester / Year:	
Semester	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Theoretical lecture + laboratory + scientific visits	
6-Number of Credit Hours (Total) / Number of Units (Total)	
4 hours/ 4unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Ruwaida Abdul Ameer Abdul Kreem Email: ruwaida.abdulkareem.iba@atu.edu.iq	
8-Course Objectives	
Course Objective	At the end of the course the student will be able to: 1. Identify the basic principles of communications systems, both wired and wireless. 2. Learn about the methods of transferring information in communications systems, their specifications and features, and the types and methods of embedding used 3. Recognizes the various types of radio, television and telephone systems 4. Learns how to connect and operate communications circuits
9-Teaching and Learning Strategies	
Strategy	1-Explaining the study material in a way that suits the students'levels in the class through simple explanations, illustrations, and appropriate examples to convey the idea clearly and distinctly. 2-Use the discussion strategy to discuss the questions raised during the lecture. 3-Use a cooperative learning strategy to solve homework. 4-Use the feedback method during the lecture to determine the extent of the student's

understanding of the study material.
5-Using surprise exams to evaluate students' level.

10-Course Structure

Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Filters (BPF)-(HPF)-(LPF) - (BSF)-(RC)	Filters	Theoretical lecture	oral examination and quiz
2 nd week	2hr	The student learns Active filter (BPF)-(HPF)-(LPF) - (BSF).	Active filter	Theoretical lecture	oral examination and quiz
3 rd week	2hr	The student learns Modulation, types, AM modulation, wave analysis.	Modulation	Theoretical lecture	oral examination and quiz
4 th week	2hr	The student learns Spectrum frequency, power distributed, calculate modulation.	Spectrum frequency	Theoretical lecture	oral examination and quiz
5 th week	2hr	The student learns Types of AM with its spectrum.	Types of AM	Theoretical lecture	oral examination and quiz
6 th week	2hr	The student learns Types of modulation used to generate AM.	Types of modulation	Theoretical lecture	oral examination and quiz
7 th week	2hr	The student learns Detector of AM- distortion in demodulation circuits-Envelope (AGC)- Synchronous Detector- Detector.	Detector of AM	Theoretical lecture	oral examination and quiz
8 th week	2hr	The student learns Block diagram for transmitting and receiving AM-sensitivity of receiving device.	Block diagram for transmitting and receiving	Theoretical lecture	oral examination and quiz
9 th week	2hr	The student learns FM modulation-PM modulation mathematic analysis for modulated waves-modulation ratio-frequency deviation.	FM modulation-	Theoretical lecture	oral examination and quiz
10 th week	2hr	The student learns The width of spectrum frequency for FM and PM	width of spectrum frequency	Theoretical lecture	oral examination and quiz
11 th week	2hr	The student learns Types of FM generation- Stereo FM -(Stereo)	Types of FM generation	Theoretical lecture	oral examination and quiz
12 th week	2hr	The student learns Some types of Detector of FM	Detector of FM	Theoretical lecture	oral examination and quiz
13 th week	2hr	The student learns Coding -Sampling-Quantization-Coding transform	Coding	Theoretical lecture	oral examination and quiz
14 th week	2hr	The student learns PM-PCM-PPM-PDM and PAM	PM Modulation	Theoretical lecture	oral examination and quiz
15 th week	2hr	The student learns TDM-FDM-Multiplexing	Multiplexing	Theoretical lecture	oral examination and quiz

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Laboratory environment introduction, devices of the lab, lab reports.	Laboratory environment introduction	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns Tuned circuits (series resonance, parallel resonance)	Tuned circuits	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns Filters circuits, low and high frequency filter circuits with effective and not effective components.	Filters circuits	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Filter design (BSF -. BPF)	filter design	practical lecture	oral examination and writing report
5 th week	2hr	The student learns Frequency spectrum, power distribution, modulation index calculation.	Frequency spectrum,	practical lecture	oral examination and writing

					report
6 th week	2hr	The student learns Multistage RF amplifier, tuner with power amplifier.	Multistage RF amplifier	practical lecture	oral examination and writing report
7 th week	2hr	The student learns RF amplifier equality affection	RF amplifier	practical lecture	oral examination and writing report
8 th week	2hr	The student learns AM modulation circuits, DSB-SC modulation	AM modulation	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Balance Modulator Circuits	Balance Modulator	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Modulation index calculation using trapezoidal methods	Modulation index	practical lecture	oral examination and writing report
11 th week	2hr	The student learns generation (SSB)	generation (SSB)	practical lecture	oral examination and writing report
12 th week	2hr	The student learns AM detection using diode AM detection using diode	AM detection	practical lecture	oral examination and writing report
13 th week	2hr	The student learns AM detection using synchronous detector, oscillator-fitting voltage.	AM detection	practical lecture	oral examination and writing report
14,15 th week	2hr	The student learns Spectrum analysis using spectrum analysis.	Spectrum analysis	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	1-Electronic communication. Dennis- Riddy 2-Modulation. Conner 3-Principle of Communication Systems Tuab&Segilling. 4- Telecommunication for Technition.
Main references (sources)	1-D. Blake, "Introduction to Communication Systems," 8/16/01. 2-A. B. Carlson and P. B. Crilly, COMMUNICATION SYSTEMS: An

	Introduction to Signals and Noise in Electrical Communication, 5th ed., McGraw-Hill. 3-"Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/. [Accessed 14 May 2020].
Recommended books and references (scientific journals, reports...)	- "Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020].
Electronic References, Websites	- "Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020].

Course Description Form

1-Course Name:	
Advanced Electronic Circuits	
2-Course Code:	
ETS222-24-CM	
3-Semester / Year:	
Semester	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
Theoretical lecture	
6-Number of Credit Hours (Total) / Number of Units (Total)	
120 hours/ 4 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Zaidon Waleed	
Email: Dr.zaidoon.waleed@gmail.com	
8-Course Objectives	
Course Objectives	Course Objectives ➤ To introduce students to: - The concept of semiconductors, their types, properties, and applications. - Bipolar transistors, their structure, symbols, properties, and operating regions. - Integrated circuits, optoelectronics, and their components. ➤ To enable students to: - Use basic electronic devices available in the laboratory. - Connect electronic components in simple electronic circuits. - Understand the specifications and characteristics of electronic components. - Identify and implement practical circuits for some components.

9-Teaching and Learning Strategies

Strategy	1- Discussing with the students and asking questions about the lecture topic and how to think critically and analytically, and then directing them towards how to solve the problem in a way that suits the topic. 2- Explaining the material in a consistent way that is appropriate for the initial inquiries and discussions of the subject, in addition to using the available means of clarification that help consolidate the lesson, such as using video scenes on websites and realistic examples, in addition to addressing many solved examples. 3. Use feedback and evaluate the student's understanding of the material.
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10-Course Structure

Theoretical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Semiconductor theory - atomic structure - energy levels - crystals - conduction in crystals - holes current - how holes move.	Semiconductor theory	Theoretical lecture	oral examination and quiz
2 nd week	2hr	The student learns doping - positive type (P) semiconductor - negative type (N) semiconductor- current of electrons and current of holes bulk resistance.	doping	Theoretical lecture	oral examination and quiz
3 rd and 4 th week	2hr	The student learns Semiconductor Diodes- PN Junction- Depletion Region Formation- Barrier Voltage- Energy Hill- Thermal Effects - Biased Diode -Forward Bias- Reverse Bias - Characteristic Curves (Forward and Reverse)- Transient Crossing Current- Minority Carrier Current- Permissible Leakage Current- Breakdown Voltage- Avalanche Voltage-Maximum Forward Current - Maximum Reverse Current - Equivalent Circuit of the Diode Biased diode - forward bias - reverse bias – characteristic curves in the forward and reverse directions -. The equivalent circuit of a diode	Semiconductor diodes and Diode bias	Theoretical lecture	oral examination and quiz
5 th week	2hr	The student learns the diode as a current rectifier - a half-wave rectifier - the calculation of dc value of the current - the r.m.s value of current - the output frequency.	Half-wave rectification	Theoretical lecture	oral examination and quiz
6 th week	2hr	The student learns Full-wave rectification - using a center-tapped transformer - bridge rectifier - calculating average and effective values of voltages and currents - output frequency - comparison between half-wave and full-wave rectification - comparison between full-wave rectifiers.	Full-wave rectification	Theoretical lecture	oral examination and quiz
7 th week	2hr	The student learns Filters – filtering using capacitor - RC and LC filters - output voltages - ripple - voltage doubler - clipping circuits - positive clipping - negative clipping - combination clipping - peak-to-peak detector - positive and negative clamps.	Filters	Theoretical lecture	oral examination and quiz

8 th week	2hr	The student learns Zener diode - composition - symbol - forward and reverse characteristics - breakdown and breakage voltages - Zener impedance - temperature effects.	Zener diode	Theoretical lecture	oral examination and quiz
9 th week	2hr	The student learns Zener approximations - constant voltage regulation - constant voltage source circuit - variable capacitance diode and its applications.	Zener approximations	Theoretical lecture	oral examination and quiz
10 th week	2hr	The student learns Bipolar transistor - structure - symbol - characteristics - regions - definition of (B_{dc}) and definition of (C_{dc}), the relationship between them - definition of important regions on the characteristic's curves.	Bipolar transistor	Theoretical lecture	oral examination and quiz
11 th week	2hr	The student learns Transistor bias circuits - base bias - emitter bias - collector bias - approximation in the transistor and the equivalent circuit.	Transistor bias	Theoretical lecture	oral examination and quiz
12 th week	2hr	The student learns Transistor characteristics curves - operation regions - definition of I_{ceo} and I_{cbo} - current gain curve - relationship between I_{cbo} and I_c	Transistor characteristics curves	Theoretical lecture	oral examination and quiz
13 th week	2hr	The student learns Transistor bias circuits - base bias - emitter bias	Transistor bias circuits	Theoretical lecture	oral examination and quiz
14 th week	2hr	The student learns Collector bias - self-bias - feedback bias - voltage divider bias - applied examples.	Transistor bias circuits	Theoretical lecture	oral examination and quiz
15 th week	2hr	The student learns Transistor DC equivalent circuit - DC load line	Transistor DC equivalent circuit	Theoretical lecture	oral examination and quiz

Week	Hours	practical	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Introduction to the use of equipment used in the laboratory	Common emitter amplifier	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns characteristics of diodes in forward bias and drawing of the characteristics curve -	Common collector amplifier	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns characteristics of diodes in reverse bias and drawing of the characteristics curve -	Common source amplifier - common drain amplifier	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Half-wave rectifier.	Measurement of hybrid parameters	practical lecture	oral examination and writing report
5 th week	2hr	The student learns full wave bridge rectifier	Series voltage regulator	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Full wave rectifier using a center tapped transformer	characteristics of field effect transistor FET	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Half-wave rectifier with RC filter and RL filter	Common source amplifier.	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Full wave rectifier with RC filter and RL filter.	Common drain amplifier	practical lecture	oral examination and writing report
9 th week	2hr	The student learns clipping circuits (positive, negative, and compound)	Photodiode characteristics.	practical lecture	oral examination and writing report

10 th week	2hr	The student learns Constant voltage doubled circuits (for three or four times)	Characteristics of phototransistor	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Zener diode - forward and reverse characteristics.	Characteristics of thyristor SCR	practical lecture	oral examination and writing report
12 th week	2hr	The student learns The use of a zener diode in regulating constant voltage with a fixed resistive load - The use of a zener diode in regulating voltage with a variable resistive load	Phase angle control using thyristors	practical lecture	oral examination and writing report
13 th week	2hr	The student learns Characteristics of the common-base transistor.	Controlling the illumination of a lamp using a thyristor	practical lecture	oral examination and writing report
14 th week	2hr	The student learns Characteristics of the common-emitter transistor.	Amplifier circuit using integrated circuit	practical lecture	oral examination and writing report
15 th week	2hr	The student learns Common base amplifier (finding voltage gain and current gain)	Use an op amp to add and subtract two signals	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First Month = 10 marks
- Second Month = 10 marks

2. Practical:

- First Month = 10 marks
- Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- Theoretical=40 marks
- Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular, books, if any)	1- Electronic and audio circuits (written by: Dhia Mahdi and others), Dar Al-Takni - Authority of Technical Institutes - Dar Al-Hekma 1990. 2- Electronic Circuits (Written by: Dhia Mahdi and others) Authority of Technical Institutes 1990. 3- Power Electronics (Written by: Dhia Mahdi and others) Dar Al-Hekma 1990. 4- Industrial Electronics (Written by: Dhia Mahdi and others) Authority of Technical Institutes - Dar Al-Hekma 1985. 5- An Introduction to semiconductors By: (K.I.Gross & J.Y.Rwood).
Main references (sources)	Electronic devices and circuit theory ROBERT L. BOYLESTED
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the electronic circuits topics.
Electronic References,	All websites and video lectures related to electronic principles.

Course Description Form

1-Course Name:					
Principles of Communication Systems					
2-Course Code:					
ETS213-24-CM					
3-Semester / Year:					
Semester					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
60 Hours Theoretical _ 60 Hours Practical					
7-Course administrator's name (mention all, if more than one name)					
Name: hawraa neama jasim					
Email: hawraa.jasim.iba9@atu.edu.iq					
8-Course Objectives					
Know the basic components of different communication systems and methods of using the devices correctly		Identifies communications systems and methods of information transmission (their features and specifications). Designed basic circuits used in telecommunications systems and schemes. Understands the principles of systems and installations of transmission and reception systems			
9-Teaching and Learning Strategies					
Strategy	(theoretical lecture, solving examples, workshop, laboratory, graduation project, summer training)				
10-Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student knows about the fundamentals of the phone, some basic concepts in sound	Introduction to the fundamentals of the phone	Theoretical lecture, solving examples	Oral Tests, Editorial Tests, Quarterly and Final Exams, Daily Evaluation
2	2	The student knows the microphone and the speaker in the telephone issue	=	=	=
3	2	The student knows the basic components of the phone device	=	=	=
4	2	The student knows External telephone networks	=	=	=

5	2	Student knows digital subscriber lines dsl	digital subscriber lines dsl	=	=
6	2	The student knows the numbering system in the external telephone networks	the numbering system in the external telephone networks	=	=
7	2	The student knows the digital dividend	The digital dividend	=	=
8	2	The student knows the types of telephone exchanges	the types of telephone exchanges	=	=
9	2	Student knows the time and spatial switch	the time and spatial switch	=	=
10	2	Student knows the types of switch	the types of switch	=	=
11	2	Student knows digital switch	digital switch	=	=
12	2	The student knows the assembly and the errors resulting from the assembly	the assembly and the errors resulting from the assembly	=	=
13	2	Student knows subscriber lines and tracks between divisions, ranks in telephone networks	Subscribers' lines and tracks between divisions, ranks in telephone networks	=	=
14	2	The student knows the paths between the sections and the paths selection plan	paths selection	=	=
15	2	The student knows the marking and its types	knows the marking and its types	=	=

Course Structure/ practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student recognizes the devices in the lab	the devices in the lab	laboratory experiments	Weekly Reports, Quarterly and Final Examinations, Daily Evaluation
2	2	The student knows on the general scheme test Mobile System	the general scheme test Mobile System	=	=
3	2	The student learns on the general scheme test of the sent mobile system	scheme test of the sent mobile system	=	=
4	2	The student learns general scheme test the of the sender mobile system	general scheme test the of the sender mobile system	=	=
5	2	Student learns to study the rate of error in the system	the rate of error in the system	=	=
6	2	The student learns to check the voltage at the points of the transmitter	check the voltage at of the transmitter	=	=
7	2	Student learns to check voltage at receiver points	check voltage at receiver points	=	=
8	2	The student learns to study the charging department in the mobile system	the charging department in the mobile system	=	=
9	2	Student learns to use mobile as modem with AT network	use mobile as modem with AT network	=	=

10	2	Students learn to send and receive messages	send and receive messages	=	=
11	2	Students learn to call and reject or accept upcoming calls	call and reject or accept upcoming calls	=	=
12	2	Student learns on GPRS orders	GPRS orders	=	=
13	2	Student learns Bluetooth technology	Bluetooth technology	=	=
14	2	Student learns on contact with BT device	contact with BT device	=	=
15	2	Student learns on Bluetooth Archive (BIP, BPP, DUNP, FTP, HID, OPP, SAP, A2DP, PBAP, SPP)	Bluetooth Archive	=	=

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Fundamentals of Communication... by Dr.: Bizkhorshid, Dr. Khurkhamilmrai
Main references (sources)	Electronic communication "Denn-Riddy: 2-Modulation " conner
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	The Unique Location in Physics

Course Description Form

1. Course Name:
Microwave
2. Course Code:
ETS214-24-CM
3. Semester / Year:
Semester
4. Description Preparation Date:
26-10-2025

5. Available Attendance Forms:						
Theoretical lectures						
6. Number of Credit Hours (Total) / Number of Units (Total)						
Number of study hours = 4 / Number of units = 4						
7. Course administrator's name (mention all, if more than one name)						
Name: Assi. Lec. Sakena Abbas Fadhel Email: sakenaabbas@gmail.com						
8. Course Objectives						
Course Objectives		• Learn the basics of microwaves • Learn about microwaves and their uses • Learn about electromagnetic waves • And how to apply them practically				
9. Teaching and Learning Strategies						
Strategy		1. Data show 2. Board 3. Daily homework 4. Daily exams 5. Monthly exams				
Course Structure (Theoretical)						
	Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st		2	The student learns Learn the basics of microwaves	Introduction to Microwaves	Data Show Board	Attendance + interaction inside the lecture
2 nd		2	The student learns Microwave and its uses.	Learn about the types of microwaves and their uses.	Data Show Board	Attendance + interaction inside the lecture
3 rd		2	The student learns Waveguide	Waveguide recognition	Data Show Board	Attendance + interaction inside the lecture
4 th		2	The student learns types of waveguides	Learn about the types of waveguides	Data Show Board	Attendance + interaction inside the lecture
5 th		2	The student learns Smith Chart	Learn about the Smith chart and how to apply questions to it.	Data Show Board	Attendance + interaction inside the lecture
6 th		2	The student learns Wave propagation in transmission lines	How waves propagate in transmission lines	Data Show Board	Attendance + interaction inside the lecture
7 th		2	The student learns Practical examples	Practical examples of the above	Data Show Board	Attendance + interaction inside the lecture
8 th		2	The student learns microwave paths	Identifying microwave paths	Data Show Board	Attendance + interaction inside the lecture
9 th		2	The student learns Fresnel Zone	What is the Fresnel Zone (Learn the Basics)	Data Show Board	Attendance + interaction inside the lecture
10 th		2	The student learns electromagnetic waves	Basics of electromagnetic waves and how they are formed	Data Show Board	Attendance + interaction inside the lecture
11 th		2	The student learns Optical properties of electromagnetic waves	Learn about the optical properties of electromagnetic waves	Data Show Board	Attendance + interaction inside the lecture
12 th		2	The student learns Propagation of regular plane waves	How do regular plane waves propagate inside transmission lines?	Data Show Board	Attendance + interaction inside the lecture
13 th		2	The student learns Perpendicular incidence of regular	How plane waves fall perpendicularly	Data Show Board	Attendance + interaction inside the lecture

		plane waves on flat surfaces			
14 th	2	The student learns Microwave valves and generators	Learn about the most important valves and microwave generators and how to deal with them.	Data Show Board	Attendance + interaction inside the lecture
15 th	2	The student learns Satellite Communications	Satellite Communications Basics	Data Show Board	Attendance + interaction inside the lecture
Course Structure (Practical)					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	2	The student learns Learn about practical laboratory equipment	Learn about practical laboratory equipment	Practical devices Blackboard	Attendance + Interaction Inside the lecture + Reports
2 nd	2	The student learns Microwaves Generator	How to Generate Microwaves	Practical devices	Attendance + Interaction Inside the lecture + Reports
3 rd	2	The student learns How to Broadcast Domain Polarization	How to Polarize Broadcast Domain	Practical devices	Attendance + Interaction Inside the lecture + Reports
4 th	2	The student learns Reflection and Transmissibility	How is reflection formed?	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
5 th	2	The student learns Microwave propagation in a flexible waveguide.	Learn how microwaves propagate in a flexible waveguide practically.	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
6 th	2	The student learns Doppler effect	What is the Doppler effect?	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
7 th	2	The student learns Measurements using loss devices	Finding specific measurements using loss devices	Data show Practical devices	Attendance + Interaction Inside the lecture + Report
8 th	2	The student learns Fractional measurement error	What is measurement error?	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
9 th	2	The student learns Complex reflection coefficient	Finding the complex reflection coefficient practically	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
10 th	2	The student learns Impedance measurement using Smith chart	Impedance measurement using Smith chart	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
11 th	2	The student learns Single Slit Antenna	Identifying the Single Slit Antenna	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
12 th	2	The student learns Multi-slot antenna	Identifying the multi-slot antenna	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports

13 th	2	The student learns Studying the characteristics of the dual-slot link	Studying the characteristics of the dual-slot link	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
14 th	2	The student learns Studying the characteristics of voice communication using microwaves	Studying the characteristics of voice communication using microwaves	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
15 th	2	The student learns Studying the characteristics of the dual-slot link in terms of power, frequency and voltage	Studying the characteristics of the dual-slot link in terms of power, frequency and voltage	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports

Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

2. Practical:

- a. First Month = 10 marks
- b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
- b. Practical =10 marks

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Electromagnetic Waves and Antennas Book
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1-Course Name:
Data Transmission and Wireless Networks
2-Course Code:
ETS215-24-CM
3-Semester / Year:
Semester
4-Description Preparation Date:
26-10-2025
5-Available Attendance Forms:

In class				
6-Number of Credit Hours (Total) / Number of Units (Total)				
60 hour / 4 unit				
7-Course administrator's name (mention all, if more than one name)				
Name: Dr Zaidoon Waleed Jawad AL-Shammari Email: Dr.zaidoon.waleed@gmail.com				
8-Course Objectives				
Course Objectives	• Learn about data communications and networks. • Learn how data is transmitted. • Learn about data transmission media and signals.			
9-Teaching and Learning Strategies				
Strategy	• Working methods in data transmission stations and wireless signals. • Identifying working methods in various data transmission and wireless networks.			
10-Course Structure				
Week	Hours	Required Learning Outcomes	Learning method	Evaluation method
1-3	2	The student learns Introduction to Data Communications and Networks.	Lectures	Tests + Weekly Reports
4	2	The student learns Data transmission.	Lectures	Tests + Weekly Reports
5	2	The student learns Data transmission media.	Lectures	Tests + Weekly Reports
6-7	2	The student learns Signal encoding methods.	Lectures	Tests + Weekly Reports
8-10	2	The student learns Digital data communications.	Lectures	Tests + Weekly Reports
11	2	The student learns Pluralism.	Lectures	Tests + Weekly Reports
12	2	The student learns Asynchronous transfer networks.	Lectures	Tests + Weekly Reports
13-14	2	The student learns Local networks and their devices.	Lectures	Tests + Weekly Reports
15	2	The student learns Wireless networks.	Lectures	Tests + Weekly Reports
11-Course Evaluation				
The distribution of the score out of 100 is according to the following:				
1. Theoretical:				
a. First Month = 10 marks				
b. Second Month = 10 marks				
2. Practical:				
a. First Month = 10 marks				
b. Second Month = 10 marks				

3. daily oral and preparation= 10 Marks**4. Final exam**

- a. Theoretical=40 marks
- b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Data communication and networking
Main references (sources)	Data communication and networking
Recommended books and references (scientific journals, reports...)	Data communication and networking
Electronic References, Websites	Data communication and networking

Course Description Form

1-Course Name:	
Computer and Artificial Intelligence	
2-Course Code:	
ATU222	
3-Semester / Year:	
Semester	
4-Description Preparation Date:	
26-10-2025	
5-Available Attendance Forms:	
laboratory	
6-Number of Credit Hours (Total) / Number of Units (Total)	
30 hours/ 4 unit	
7-Course administrator's name (mention all, if more than one name)	
Name: Nada Allawi Fadhil Email: : nada.fadhil.iba5@atu.edu.iq	
8-Course Objectives	
Course Objectives	At the end of the course the student will be able to: Teaching the student to be familiar with the basic rules of dealing with the computer and management to help him in the completion of projects, Printing, statistics and graph preparation, presentation creation and engineering chart designs And, the advent of the Internet as a means of communication accessible to all has become very necessary that the student learn to use the role of the Internet in many fields, including education, scientific research, trade and marketing by electronic correspondence, web pages and electronic speaking.
9-Teaching and Learning Strategies	
Strategy	At the beginning of every theoretical lecture, there is an introduction to the lecture topic. This would include most of the questions that can be asked about the topic and will be answered during the lecture. Students will be taken through a discussion in order to find the pre answers to those questions. This is followed by a detailed explanation of the topic by which many examples and solutions are given. Moreover, the lecture includes different educational videos which would virtually clarify the topic. At the end of the lecture, and to ensure that all students

	have understood the basics of the topic, students are discussed by various questions. On the other hand, during the practical lecture, the students are given the lecture as mentioned above, in addition to the practical application, which includes connecting the logic circuits and recording the data obtained from the circuit in order to be compared with the theoretical results, and then writing a detailed report on the experiment and its results.
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10-Course Structure

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns PowerPoint runs it, program interfaces, and file tab	introduction	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns Open a presentation file, save a new one, and save an inventory presentation in another format	presentation file	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns Open a stock presentation, close a show, print slides on paper, and the home tab	home tab	practical lecture	oral examination and writing report
4 th week	2hr	The student learns Set up the page, theme group, and slide show tab background	slide show tab	practical lecture	oral examination and writing report
5 th week	2hr	The student learns View tab, Presentation Views group, and Master View group	View tab	practical lecture	oral examination and writing report
6 th week	2hr	The student learns Show group, orientation, color group, and grayscale	View tab	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Zoom group, window group, and help instructions	View tab	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Insert objects, add animations, add shapes, group drawing, and edit	Insert tab	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Insert tab, table set, and picture set	Insert tab	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Illustrations, links, group, text, and icons	Insert tab	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Add animations for slides and objects, transition tab, and preview set and a move-to-slide group	transition tab	practical lecture	oral examination and writing report
12 th week	2hr	The student learns Timing group, animation tab, preview group, and animation set	transition tab	practical lecture	oral examination and writing report
13 th week	2hr	The student learns A custom animation group and a timing group	transition tab	practical lecture	oral examination and writing report
14 th week	2hr	The student learns Solve the book's questions	Solve eq.s	practical lecture	oral examination and writing report
15 th week	2hr	Comprehensive exam as a review The student learns	Review	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First Month = 10 marks
- Second Month = 10 marks

2. Practical:

- First Month = 10 marks
- Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- a. Theoretical=40 marks
b. Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer Fundamentals and Desktop Applications Part II/Microsoft office 2010
Main references (sources)	PowerPoint 2010 Advanced Slides, Animation and Layouts. Stephen Moffat, The Mouse Training Company
Recommended books and references (scientific journals, reports...)	All books and magazines concerned with computer principles and applications
Electronic References, Websites	All websites and video lectures related to computer principles and applications

Course Description Form

1-Course Name:					
English Language					
2-Course Code:					
ATU202					
3-Semester / Year:					
Semester					
4-Description Preparation Date:					
14/09/2025-2026					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
30 hours/ 2 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: Rusul Noori Saeed					
Email: : rusul.saeed.iba12@atu.edu.iq					
8-Course Objectives					
Course Objectives	1. The student should understand the specialty terminology in English 2. Skills objectives for the course. 3. The student learns to speak English and know the terminology				
9-Teaching and Learning Strategies					
Strategy	Speak English fluently				
10-Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	The student learns Introduction and Review to English language.	Introduction to parts of speech	Theoretical lecture	oral examination and quiz

		Introduction to parts of speech. Sentence Patterns.			
2	1	The student learns Reading Comprehension and structure (selected scientific passages general to all specializations)	selected scientific passages general to all specialization	Theoretical lecture	oral examination and quiz
3	1	The student learns Scientific Attitude (Simple present)	Simple present	Theoretical lecture	oral examination and quiz
4	1	The student learns Scientific mentality (in the present continuous tense)	Discussing sentence format in the present continuous tense	Theoretical lecture	oral examination and quiz
5	1	The student learns Present Perfect and Present Perfect Continuous	Discussing sentence formation in the present perfect and its types	Theoretical lecture	oral examination and quiz
6	1	The student learns Test	Test	Theoretical lecture	oral examination and quiz
7	1	The student learns Scientific methods (in the simple past tense)	Scientific methods (simple past): how it is used, its rules, and sentence formation	Theoretical lecture	oral examination and quiz
8	1	The student learns Talking about your job	Talking about your job	Theoretical lecture	oral examination and quiz
9-10	1	The student learns Scientific methods (in the simple future tense)	Explaining scientific methods and forming simple sentences in the simple future tense	Theoretical lecture	oral examination and quiz
11-12	1	The student learns Conditional "If"	Discussing conditional clauses and sentence formation using	Theoretical lecture	oral examination and quiz
13	1	The student learns Writing Technical Reports	Writing Technical Reports	Theoretical lecture	oral examination and quiz
14	1	The student learns Nouns, pronouns, and synonyms	Discussing nouns and their pronouns in their different types and using general synonyms	Theoretical lecture	Oral examination quiz
15	1	The student learns General review with the final test	Final Test	Theoretical lecture	oral examination and quiz

11-Course Evaluation

- Daily preparation 10: marks
- Daily and oral exams 10: marks
- Monthly exams 20: score
- Final written exam: 50 marks

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Technical language book project
Main references (sources)	Technical language book project
Recommended books and references (scientific journals, reports...)	Technical language book project
Electronic References, Websites	Technical language book project

Course Description Form

1-Course Name:					
Crimes of the Ba'ath regime in Iraq					
2-Course Code:					
ATU242					
3-Semester / Year:					
Year					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
60hours/ 1 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: Noor Ayed Abdullah Sarkal Al-Khafaji Email: noor.serkal.iba14@atu.edu.iq					
8-Course Objectives					
Course Objectives		At the end of the course the student. Know about human rights In addition, the student will be able to deal with different Theories of human right t will be able to:			
9-Teaching and Learning Strategies					
Strategy		It is to shed light for the generations born after the fall of the regime on the many crimes committed by the Baath Party regime and Saddam Hussein against the Iraqi people. These crimes were diverse, including war crimes, crimes against humanity, genocide, and economic crimes			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1	The student learns The concept of crimes linguistically and terminologically Crime departments	The concept of crimes linguistically and terminologically Crime departments	Theoretical lecture	oral examination and quiz
2	1	The student learns Types of international Crimes	Types of international Crimes	Theoretical lecture	oral examination and quiz
3	1	The student learns Decisions issued by the Supreme Criminal Court	Decisions issued by the Supreme Criminal Court	Theoretical lecture	oral examination and quiz
4	1	The student learns Psychological and social crimesand their effects, and themost prominent	Psychological and social crimesand their effects, and themost prominent	Theoretical lecture	oral examination and quiz
5	1	The student learns violations of the Baathist regime in Iraq	violations of the Baathist regime in Iraq	Theoretical lecture	oral examination and quiz
6	1	The student learns Psychological crimes, mechanism of psychological crimes	Psychological crimes, mechanism of psychological crimes	Theoretical lecture	oral examination and quiz
7	1	The student learns The mechanism of pressure and	The mechanism of pressure and psychological punishment	Theoretical	oral examination

		psychological punishment / the mechanism of scientific impoverishment / the effects of psychological crimes	/ the mechanism of scientific impoverishment / the effects of psychological crimes	lecture	and quiz
8	1	The student learns where I live There is / are prepositions	Unite eight : where I live There is / are prepositions	Theoretical lecture	oral examination and quiz
9	1	The student learns Social crimes, first Section	Social crimes, first Section	Theoretical lecture	oral examination and quiz
10	1	The student learns Social crimes, section two	Social crimes, section two	Theoretical lecture	oral examination and quiz
11	1	The student learns Violations of Iraqi laws and their forms, Section Two	Violations of Iraqi laws and their forms, Section Two	Theoretical lecture	oral examination and quiz
12-13	1	The student learns Some decisions regarding political and military violations of the Baath	Some decisions regarding political and military violations of the Baath	Theoretical lecture	oral examination and quiz
14	1	The student learns Genocide graves of the 1991 Shaaban uprising, first section	Genocide graves of the 1991 Shaaban uprising, first section	Theoretical lecture	oral examination and quiz
15	1	The student learns Genocide Graves of the 1991 Shaaban Uprising, Section Two	Genocide Graves of the 1991 Shaaban Uprising, Section Two	Theoretical lecture	oral examination and quiz

11.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

1. First Term Theoretical Exam: 20 / 100
2. Second Term Theoretical Exam: 20 / 100
3. Student Activities: 10 / 100
4. Final Theoretical Exam: 50 / 100

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	According to the project topic
Main references (sources)	Methodical books
Recommended books and references (scientific journals, reports...)	According to the project topic
Electronic References, Websites	According to the project topic

Course Description Form

1-Course Name:
Digital Communication system
2-Course Code:
ETS221-24-CM
3-Semester / Year:
Semester

4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
4 hours/ 4 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: Ruwaida Abdul Ameer Abdul Kreem Email: ruwaida.abdulkareem.iba@atu.edu.iq					
8-Course Objectives					
Course Objectives	At the end of the course the student will be able to:				
	Identify the basic principles of Digital communications systems, both wired and wireless.				
	Learn about the methods of transferring information in Digital communications systems, their specifications and and features, and the types and methods of embedding used				
	Recognizes the various types of radio, television and telephone systems,satalite				
	Learns how to connect and operate communications circuits				
9-Teaching and Learning Strategies					
Strategy	1-Explaining the study material in a way that suits the students’levels in the class through simple explanations, illustrations, and appropriate examples to convey the idea clearly and distinctly.				
	2-Use the discussion strategy to discuss the questions raised during the lecture.				
	3-Use a cooperative learning strategy to solve homework.				
	4-Use the feedback method during the lecture to determine the extent of the student’s understanding of the study material.				
	5-Using surprise exams to evaluate students’ level.				
10-Course Structure					
Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st week	2hr	The student learns Digital modulation PSK-FSK-ASK	Digital modulation	Theoretical lecture	oral examination and quiz
2nd week	2hr	The student learns Transmitting information and bandwidth, signal to noise ratio	Transmitting information	Theoretical lecture	oral examination and quiz
3rd week	2hr	The student learns Cell phone, frequencies, using techniques FDMA, TDMA and CDMA.	Cell phone	Theoretical lecture	oral examination and quiz
4th week	2hr	The student learns Telegraph circuits, telegraph radio transmitter.	Telegraph circuits	Theoretical lecture	oral examination and quiz
5th week	2hr	The student learns Faximile Transmission (Fas-Receiver)-(Telex)	Faximile Transmission	Theoretical lecture	oral examination and quiz
6th week	2hr	The student learns Optical fiber, types, properties, transmitter, receiver.	Optical fiber	Theoretical lecture	oral examination and quiz
7th week	2hr	The student learns Antenna types, antenna principles, antennas factor.	Antenna types	Theoretical lecture	oral examination and quiz
8th	2hr	The student learns Radio wave propagation	Radio wave	Theoretical	oral

week			propagation	lecture	examination and quiz
9th week	2hr	The student learns Vertical antennas, UHF antennas, microwave antennas, horn antenna.	Vertical antennas,	Theoretical lecture	oral examination and quiz
10th week	2hr	The student learns Microwaves in communications.	Microwaves in communications	Theoretical lecture	oral examination and quiz
11th week	2hr	The student learns Satellite communication, properties, transmitting, receiving, earth station, satellite orbit, and multiple access.	Satellite communication	Theoretical lecture	oral examination and quiz
12th week	2hr	The student learns Microwaves, generation, frequency spectrum.	Microwaves	Theoretical lecture	oral examination and quiz
13th week	2hr	The student learns Mobile, introduction, using techniques, transmitting factors, shadow, interference, noise, wire and wireless transmission	Mobile	Theoretical lecture	oral examination and quiz
14th week	2hr	The student learns GSM network, hierarchies, jobs.	GSM network	Theoretical lecture	oral examination and quiz
15th week	2hr	The student learns Thuraya, Thuraya services, Thuraya properties, SMS, Thuraya applications, coverage area of Thuraya network.	Thuraya	Theoretical lecture	oral examination and quiz

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Mixer function, using diodes and transistor with comparison.	Mixer function	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns (AGC)circuit	(AGC)circuit	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns (FM) generation	(FM) generation	practical lecture	oral examination and writing report
4 th week	2hr	The student learns FM detection using ratio detector	FM detection	practical lecture	oral examination and writing report
5 th week	2hr	The student learns FM detection using foster- seely detector	FM detection	practical lecture	oral examination and writing report
6 th week	2hr	The student learns (AFC)circuits	(AFC)circuits	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Pulse amplitude modulation PAM generation and detection.	PAM generation	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Pulse width modulation PWM generation and detection.	PWM generation	practical lecture	oral examination and writing

					report
9 th week	2hr	The student learns Pulse Position modulation PPM generation and detection.	PPM generation	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Pulse code modulation PCM generation and detection.	PCM generation	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Digital modulation amplitude shift keying modulation (ASK).	Digital modulation(ASK)	practical lecture	oral examination and writing report
12 th week	2hr	The student learns Optical fiber networks (transmitter, receiver)	Optical fiber networks	practical lecture	oral examination and writing report
13 th week	2hr	The student learns Data transmission in optical fiber single mod.	Data transmission single mod	practical lecture	oral examination and writing report
14,15 th week	2hr	The student learns Data transmission in optical fiber multi-mod. Data transmission in optical fiber (PC TO Module) (Module to PC(CVSD)data transition	PM Modulation multi-mod	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First Month = 10 marks
- Second Month = 10 marks

2. Practical:

- First Month = 10 marks
- Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

- Theoretical=40 marks
- Practical =10 marks

12-Learning and Teaching Resources

Required textbooks (curriculum books, if any)	1-Electronic communication. Dennis- Riddy 2-Modulation. Conner 3-Principle of Communication Systems Tuab&Segilling. 4- Telecommunication for Technition.
Main references (sources)	1-D. Blake, "Introduction to Communication Systems," 8/16/01. 2-A. B. Carlson and P. B. Crilly, COMMUNICATION SYSTEMS: An Introduction to Signals and Noise in Electrical Communication, 5th ed., McGraw-Hill. 3-"Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020].
Recommended books and references (scientific journals, reports...)	3-"Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020]

Electronic Websites	Referend	3-"Electronics Projects Focus," Elprocus, 2013. [Online]. Available https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020]
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Course Description Form

1-Course Name:					
Advanced Electronic Circuits					
2-Course Code:					
ETS222-24-CM					
3-Semester / Year:					
Semester					
4-Description Preparation Date:					
26-10-2025					
5-Available Attendance Forms:					
Theoretical lecture					
6-Number of Credit Hours (Total) / Number of Units (Total)					
4 hours/ 4 unit					
7-Course administrator's name (mention all, if more than one name)					
Name: Ruwaida Abdul Ameer Abdul Kreem Email: ruwaida.abdulkareem.iba@atu.edu.iq					
8-Course Objectives					
Course Objectives	At the end of the course the student will be able to: Identify the basic principles of Digital communications systems, both wired and wireless. Learn about the methods of transferring information in Digital communications systems, their specifications and and features, and the types and methods of embedding used Recognizes the various types of radio, television and telephone systems,satalite Learns how to connect and operate communications circuits				
9-Teaching and Learning Strategies					
Strategy	1-Explaining the study material in a way that suits the students'levels in the class through simple explanations, illustrations, and appropriate examples to convey the idea clearly and distinctly. 2-Use the discussion strategy to discuss the questions raised during the lecture. 3-Use a cooperative learning strategy to solve homework. 4-Use the feedback method during the lecture to determine the extent of the student's understanding of the study material. 5-Using surprise exams to evaluate students' level.				
10-Course Structure					
Theoretical					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st week	2hr	The student learns Digital modulation PSK-FSK-ASK	Digital modulation	Theoretical lecture	oral examination and quiz
2nd week	2hr	The student learns Transmitting information and bandwidth, signal to noise ratio	Transmitting information	Theoretical lecture	oral examination and quiz

3rd week	2hr	The student learns Cell phone, frequencies, using techniques FDMA, TDMA and CDMA.	Cell phone	Theoretical lecture	oral examination and quiz
4th week	2hr	The student learns Telegraph circuits, telegraph radio transmitter.	Telegraph circuits	Theoretical lecture	oral examination and quiz
5th week	2hr	The student learns Faximile Transmission (Fas-Receiver)-(Telex)	Faximile Transmission	Theoretical lecture	oral examination and quiz
6th week	2hr	The student learns Optical fiber, types, properties, transmitter, receiver.	Optical fiber	Theoretical lecture	oral examination and quiz
7th week	2hr	The student learns Antenna types, antenna principles, antennas factor.	Antenna types	Theoretical lecture	oral examination and quiz
8th week	2hr	The student learns Radio wave propagation	Radio wave propagation	Theoretical lecture	oral examination and quiz
9th week	2hr	The student learns Vertical antennas, UHF antennas, microwave antennas, horn antenna.	Vertical antennas,	Theoretical lecture	oral examination and quiz
10th week	2hr	The student learns Microwaves in communications.	Microwaves in communications	Theoretical lecture	oral examination and quiz
11th week	2hr	The student learns Satellite communication, properties, transmitting, receiving, earth station, satellite orbit, and multiple access.	Satellite communication	Theoretical lecture	oral examination and quiz
12th week	2hr	The student learns Microwaves, generation, frequency spectrum.	Microwaves	Theoretical lecture	oral examination and quiz
13th week	2hr	The student learns Mobile, introduction, using techniques, transmitting factors, shadow, interference, noise, wire and wireless transmission	Mobile	Theoretical lecture	oral examination and quiz
14th week	2hr	The student learns GSM network, hierarchies, jobs.	GSM network	Theoretical lecture	oral examination and quiz
15th week	2hr	The student learns Thuraya, Thuraya services, Thuraya properties, SMS, Thuraya applications, coverage area of Thuraya network.	Thuraya	Theoretical lecture	oral examination and quiz

Practical

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st week	2hr	The student learns Mixer function, using diodes and transistor with comparison.	Mixer function	practical lecture	oral examination and writing report
2 nd week	2hr	The student learns (AGC)circuit	(AGC)circuit	practical lecture	oral examination and writing report
3 rd week	2hr	The student learns (FM) generation	(FM) generation	practical lecture	oral examination and writing report
4 th week	2hr	The student learns FM detection using ratio detector	FM detection	practical lecture	oral examination and writing report

5 th week	2hr	The student learns FM detection using Foster-Seely detector	FM detection	practical lecture	oral examination and writing report
6 th week	2hr	The student learns (AFC) circuits	(AFC) circuits	practical lecture	oral examination and writing report
7 th week	2hr	The student learns Pulse amplitude modulation PAM generation and detection.	PAM generation	practical lecture	oral examination and writing report
8 th week	2hr	The student learns Pulse width modulation PWM generation and detection.	PWM generation	practical lecture	oral examination and writing report
9 th week	2hr	The student learns Pulse Position modulation PPM generation and detection.	PPM generation	practical lecture	oral examination and writing report
10 th week	2hr	The student learns Pulse code modulation PCM generation and detection.	PCM generation	practical lecture	oral examination and writing report
11 th week	2hr	The student learns Digital modulation amplitude shift keying modulation (ASK).	Digital modulation (ASK)	practical lecture	oral examination and writing report
12 th week	2hr	The student learns Optical fiber networks (transmitter, receiver)	Optical fiber networks	practical lecture	oral examination and writing report
13 th week	2hr	The student learns Data transmission in optical fiber single mod.	Data transmission single mod	practical lecture	oral examination and writing report
14, 15 th week	2hr	The student learns Data transmission in optical fiber multi-mod. Data transmission in optical fiber (PC TO Module) (Module to PC) (CVSD) data transition	PM Modulation multi-mod	practical lecture	oral examination and writing report

11-Course Evaluation

The distribution of the score out of 100 is according to the following:

5. Theoretical:

- First Month = 10 marks
- Second Month = 10 marks

6. Practical:

- First Month = 10 marks
- Second Month = 10 marks

7. daily oral and preparation= 10 Marks

8. Final exam

- Theoretical=40 marks
- Practical =10 marks

12-Learning and Teaching Resources

Required textbooks	1-Electronic communication. Dennis- Riddy
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(curricular books, if any)	2-Modulation. Conner 3-Principle of Communication Systems Tuab&Segilling. 4- Telecommunication for Technition.
Main references (sources)	1-D. Blake, "Introduction to Communication Systems," 8/16/01. 2-A. B. Carlson and P. B. Crilly, COMMUNICATION SYSTEMS: An Introduction to Signals and Noise in Electrical Communication, 5th ed., McGraw-Hill. 3-"Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020].
Recommended books and references (scientific journals, reports...)	3-"Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020]
Electronic References, Websites	3-"Electronics Projects Focus," Elprocus, 2013. [Online]. Available: https://www.elprocus.com/what-is-multiplexing-types-and-their-applications/ . [Accessed 14 May 2020]

Course Description Form

1. Course Name:					
Advanced Communications Systems					
2. Course Code:					
ETS223-24-CM					
3. Semester / Year:					
Semester					
4. Description Preparation Date:					
26-10-2025					
5. Available Attendance Forms:					
Theoretical lectures					
6. Number of Credit Hours (Total) / Number of Units (Total)					
Number of study hours = 4 / Number of units = 4					
7. Course administrator's name (mention all, if more than one name)					
Name: Assi. Lec. Sakena Abbas Fadhel Email: sakenaabbas@gmail.com					
8. Course Objectives					
Course Objectives	- Learn the basics of microwaves - Learn about microwaves and their uses - Learn about electromagnetic waves - And how to apply them practically				
Teaching and Learning Strategies					
Strategy	1. Data show 2. Board 3. Daily homework 4. Daily exams 5. Monthly exams				
Course Structure (Theoretical)					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1 st	2	The student learns Learn the basics of microwaves	Introduction to Microwaves	Data Show Board	Attendance + interaction inside the lecture
2 nd	2	The student learns Microwave and its uses.	Learn about the types of microwaves and their uses.	Data Show Board	Attendance + interaction inside the lecture
3 rd	2	The student learns Waveguide	Waveguide recognition	Data Show Board	Attendance + interaction inside the lecture
4 th	2	The student learns types of waveguides	Learn about the types of waveguides	Data Show Board	Attendance + interaction inside the lecture
5 th	2	The student learns Smith Chart	Learn about the Smith chart and how to apply questions to it.	Data Show Board	Attendance + interaction inside the lecture
6 th	2	The student learns Wave propagation in transmission lines	How waves propagate in transmission lines	Data Show Board	Attendance + interaction inside the lecture
7 th	2	The student learns Practical examples	Practical examples of the above	Data Show Board	Attendance + interaction inside the lecture
8 th	2	The student learns microwave paths	Identifying microwave paths	Data Show Board	Attendance + interaction inside the lecture
9 th	2	The student learns Fresnel Zone	What is the Fresnel Zone (Learn the Basics)	Data Show Board	Attendance + interaction inside the lecture
10 th	2	The student learns electromagnetic waves	Basics of electromagnetic waves and how they are formed	Data Show Board	Attendance + interaction inside the lecture
11 th	2	The student learns Optical properties of electromagnetic waves	Learn about the optical properties of electromagnetic waves	Data Show Board	Attendance + interaction inside the lecture
12 th	2	The student learns Propagation of regular plane waves	How do regular plane waves propagate inside transmission lines?	Data Show Board	Attendance + interaction inside the lecture
13 th	2	The student learns Perpendicular incidence of regular plane waves on flat surfaces	How plane waves fall perpendicularly	Data Show Board	Attendance + interaction inside the lecture
14 th	2	The student learns Microwave valves and generators	Learn about the most important valves and microwave generators and how to deal with them.	Data Show Board	Attendance + interaction inside the lecture
15 th	2	The student learns Satellite Communications	Satellite Communications Basics	Data Show Board	Attendance + interaction inside the lecture

Course Structure (Practical)

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	2	The student learns Learn about practical laboratory equipment	Learn about practical laboratory equipment	Practical devices Blackboard	Attendance + Interaction Inside the lecture + Reports
2 nd	2	The student learns Microwaves Generator	How to Generate Microwaves	Practical devices	Attendance + Interaction Inside the lecture + Reports
3 rd	2	The student learns How to Broadcast Domain Polarization	How to Polarize Broadcast Domain	Practical devices	Attendance + Interaction Inside the lecture + Reports
4 th	2	The student learns Reflection and	How is reflection formed?	Data show Practical	Attendance + Interaction Inside the lecture

		Transmissibility		devices	+ Reports
5 th	2	The student learns Microwave propagation in a flexible waveguide.	Learn how microwaves propagate in a flexible waveguide practically.	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
6 th	2	The student learns Doppler effect	What is the Doppler effect?	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
7 th	2	The student learns Measurements using loss devices	Finding specific measurements using loss devices	Data show Practical devices	Attendance + Interaction Inside the lecture + Report
8 th	2	The student learns Fractional measurement error	What is measurement error?	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
9 th	2	The student learns Complex reflection coefficient	Finding the complex reflection coefficient practically	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
10 th	2	The student the student learns Impedance measurement using Smith chart	Impedance measurement using Smith chart	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
11 th	2	The student learns Single Slit Antenna	Identifying the Single Slit Antenna	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
12 th	2	The student learns Multi-slot antenna	Identifying the multi-slot antenna	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
13 th	2	The student learns Studying the characteristics of the dual-slot link	Studying the characteristics of the dual-slot link	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
14 th	2	The student learns Studying the characteristics of voice communication using microwaves	Studying the characteristics of voice communication using microwaves	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports
15 th	2	The student learns Studying the characteristics of the dual-slot link in terms of power, frequency and voltage	Studying the characteristics of the dual-slot link in terms of power, frequency and voltage	Data show Practical devices	Attendance + Interaction Inside the lecture + Reports

Course Evaluation

The distribution of the score out of 100 is according to the following:

1. Theoretical:

- First Month = 10 marks
- Second Month = 10 marks

2. Practical:

a. First Month = 10 marks

b. Second Month = 10 marks

3. daily oral and preparation= 10 Marks

4. Final exam

a. Theoretical=40 marks

b. Practical =10 marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Electromagnetic Waves and Antennas Book
Recommended books and references (scientific journals, reports...)	Electromagnetic Waves and Antennas Book
Electronic References, Websites	Electromagnetic Waves and Antennas Book