

**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

2024-2025

Introduction:

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

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

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

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

Concepts and terminology:

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

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

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

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

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

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

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

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

Academic Program Description Form

University Name: Al-Furat Al-Awsat Technical University

Faculty/Institute: Babylon Technical Institute

Scientific Department: Department of Medical Devices Techniques

Academic or Professional Program Name: Diploma

Final Certificate Name: Technical Diploma in Medical Devices

Academic System: Annual

Description Preparation Date: 07/10/2024

File Completion Date: 10/12/2024

Signature:

Head of Department Name:

Lect. Dr. Gaith Ali Abd Al-Raheem

Date: 26/2/2025

Signature:

Scientific Associate Name:

Asst. Prof. Dr. Oras Khudhayer Obayes

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Asst. Prof. Khansaa Azeez Obayes

Date:

26/2/2025

Signature:

Assist. Prof. Dr.
Oras Khudhayer Obayes
Temporal dean
Approval of the Dean
Technical Institute

Asst. Prof. Dr. Oras Khudhayer Obayes

1. Program Vision

The department of medical devices techniques at the Babylon technical institute seeks to be a leading scientific center to supply the health institutions and the market with qualified personnel with modern science and technology for various electronic and electromechanical medical devices.

2. Program Mission

Preparing intermediate technical staff specialized in the field of installing, calibrating, operating and maintaining medical devices of all types.

3. Program Objectives

The program aims to prepare specialized technical personnel who are scientifically and practically qualified at a technical level consistent with the requirements of technological development and the advancement of the department's specialization.

4. Program Accreditation

Does the program have program accreditation? And from which agency? No.

5. Other external influences

Is there a sponsor for the program? No.

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
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Institution Requirements	19	109	17.4%	
College Requirements	15	125	12%	
Department Requirements	15	125	12%	
Summer Training		Without units		
Other				

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
2 nd stage		Electromechanical Medical Devices	2	2
2 nd stage		Microcomputers	2	2
2 nd stage		Control	2	2
2 nd stage		Technical English Language	1	–
2 nd stage		Electronic Measuring Devices	2	2
2 nd stage		Maintenance of Medical Devices Workshop	–	4
2 nd stage		Electronic Medical Devices	2	2
2 nd stage		Computer Applications 2	1	2
2 nd stage		Electronic Circuits	2	2
2 nd stage		Programmable Logic Controller	1	2
2 nd stage		Baath Party Crimes	1	–
2 nd stage		Arabic Language	1	–
2 nd stage		Project		
1 st stage		Digital Circuits	2	2
1 st stage		Electronics	2	2
1 st stage		Technical English Language	1	–
1 st stage		Mathematics	2	–
1 st stage		Electrical Circuits and Measurements	2	2
1 st stage		Human Rights and Democracy	1	–
1 st stage		Computer Applications 1	1	2
1 st stage		Engineering Drawing	–	3
1 st stage		Physiology	2	–
1 st stage		Arabic Language	1	–

8. Expected learning outcomes of the program

Knowledge	
Knowledge and understanding	1– Learning how to collect information for public needs. 2– Learning about the operation of equipment and laboratories and how to use medical, diagnostic and therapeutic devices. 3– Learning how to deal with these devices. 4– Following the industrial safety service in laboratories.
Skills	
Subject-based Skills	1– Training the student on all laboratories and make them awareness that how dangerous they are. 2– Training the student on how to connect the devices and how to implement the experiments. 3– Training the student on how to care the laboratory equipment and how to deal with it.
Ethics	
Ethical goals	1- Honesty 2- Fidelity and loyalty 3- Integrity 4- Respect for university, institution, department and colleagues.

9. Teaching and Learning Strategies

The methods that used in teaching of modules are:

1. Lecture by the instructor (lecturer).
2. Class discussion directed by the instructor.
3. Recitation oral questions by teacher answered orally by students.
- 4– Construction of diagrams, charts, or graphs by the instructor.
- 5– Using of white board by the instructor as aid in teaching.
- 6– Tutorial.
- 7– Reading some lectures notes aloud to emphasizes on the important points.

10. Evaluation methods

- 1– Exams such as: quizzes, 1st –term, 2nd –term and final exams.
- 2– Tutorial for the modules in order to discuss the questions that the students had. Correct answers of the students will be taken as additional marks.
- 3– Homework, this includes mathematical analysis of some module's problems.
- 4– Simulation of some modules using different software like Multisim from National Instruments company (Multisim was originally called Electronics Workbench).

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/ Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Professor	Biomedical Engineering	Ph.D. in Artificial Intelligence			1	
Lecturer	Electrical Engineering	Ph.D. in Communications Engineering			1	
Lecturer	Electrical and Electronic Engineering	Ph.D. in DC Power Engineering			1	
Lecturer	Electronic	Ph.D. in Nano Technology			1	
Lecturer	Electronic & Communications Engineering	Ph.D. in Nano Technology			1	

Lecturer	Electrical Engineering	Ph.D. in Electronics & Communications Engineering			1	
Lecturer	Law	Ph.D. in International Trade Law			1	
Lecturer	Electrical Engineering	Master in Electronics & Communications Engineering			1	
Lecturer	Biomedical Equipment Technology Engineering	Master in Biomedical			1	
Assistant Lecturer	Electronic and Computer Engineering	Master in Computer Systems Architecture Engineering			1	
Assistant Lecturer	Electrical Engineering	Master in Power Systems Engineering			1	
Assistant Lecturer	Electrical Engineering	Master in Renewable Energy			1	
Assistant Lecturer	Electrical Engineering	Master in Electronics and Communications			1	
Assistant Lecturer	Electrical Engineering	Master in Electrical Power Engineering			1	
Assistant Lecturer	Computer Science	Master in Computer Science			1	
Assistant Lecturer	Electrical Engineering	Master in Communications Systems Engineering			1	
Assistant Lecturer	Electrical Engineering	Master in Communications			1	

Assistant Lecturer	Electrical Engineering	Master in Industrial Electronics			1	
Assistant Lecturer	Electrical & Electronics Engineering	Master in Electronics			1	
Assistant Lecturer	Electrical Engineering	Master in Electronics			1	
Assistant Lecturer	Biology	Master in Microbiology			1	
Assistant Lecturer	College of Education for Pure Sciences	Master in Functional Analysis			1	
Assistant Lecturer	College of Education for Pure Sciences	Master in Math			1	

Professional Development

Mentoring new faculty members

The head of the department receives new, full-time and part-time faculty members. After welcoming them, he gives them a detailed picture of the work mechanism in the department and everything that related to all academic subjects and tasks.

Professional development of faculty members

Academic and professional development for department staff includes participation in seminars and workshops in various Iraqi universities and institutions, as well as participation in scientific conferences inside and outside Iraq.

12. Acceptance Criterion

- 1- The average of the student.
- 2- The branch (scientific, professional).
- 3- Personal interview for the student.
- 4- Determine the ratio of males to females.
- 5- Determine the number of students according to the department's admission plan.

13. The most important sources of information about the program
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| 1– Text books
2– Books recommended by lecturers
3– Some reliable internet sites. |
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14. Program Development Plan

Every lecturer has the right to develop the curriculum by adding or deleting to keep pace with scientific developments by a rate not exceeding 10% according to the Ministry's instructions.
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Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2 nd stage		Electronic Measuring Devices	Basic	✓	✓			✓				✓	✓		
		Microcomputers	Basic	✓	✓	✓		✓	✓			✓			
		Electronic Circuits	Basic	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
		Computer Applications2	Basic	✓	✓	✓	✓	✓				✓	✓		
		Control	Basic	✓	✓	✓	✓	✓	✓	✓		✓	✓		
		Project	Basic	✓				✓				✓			
		Electronic Medical Devices	Basic	✓	✓	✓		✓		✓		✓	✓		
		Electromechanical Medical Devices	Basic	✓		✓		✓	✓		✓	✓	✓	✓	
		Maintenance of Medical Devices	Basic	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
		Technical English Language	Basic	✓	✓			✓	✓	✓		✓	✓	✓	
1 st stage		Electrical Circuits and Measurements	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
		Mathematics	Basic	✓				✓				✓			
		Factories	Basic	✓		✓		✓		✓		✓		✓	
		Computer Applications1	Basic	✓		✓		✓	✓		✓	✓			
		Human Rights and Democracy	Basic	✓	✓	✓		✓	✓	✓		✓	✓		

		Electrical Circuits and Measurements	Basic	✓	✓	✓		✓	✓	✓		✓	✓	✓	
		Digital Circuits	Basic	✓	✓	✓		✓	✓	✓		✓	✓		
		Electronics	Basic	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓
		Physiology	Basic	✓				✓				✓			

Course Description Form

1. Course Name: Electronic					
2. Course Code: none					
3. Semester / Year: Year					
4. Description Preparation Date: 16-10-2024					
5. Available Attendance Forms: attendance in person					
6. Number of Credit Hours (Total) / Number of Units (Total)					
4 hours per week/ 8 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Abdul Hussein. A. Abd					
Email: abdul.abd@atu.edu.iq					
8. Course Objectives					
Course Objectives		- Use of electronic laboratory equipment. -Connecting electronic components in different circuits -Learn specifications and inspection of electronic components.			
9. Teaching and Learning Strategies					
Strategy		The methods that used in teaching of digital circuits module are: 1. Lecture by the instructor (lecturer). 2. Class discussion directed by the instructor. 3. Recitation oral questions by teacher answered orally by students. 4- Using the white board by the instructor as aid in teaching. 5- Tutorial.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4	The student understands The lesson	Learn about the use of equipment used in the laboratory	Lecture using whiteboard	Quiz, discussion and homework
2	4	The student understands The lesson	P-n junction forward and reverse	Lecture using whiteboard	Quiz, discussion and homework
3	4	The student understands The lesson	A half-wave rectifier	Lecture using whiteboard	Quiz, discussion and homework
4	4	The student understands The lesson	Full wave rectifier using a center tap transformer	Lecture using whiteboard	Quiz, discussion and homework
5	4	The student understands The lesson	Full-wave bridge rectifier	Lecture using whiteboard	Quiz, discussion and homework
6	4	The student understands The lesson	Half-wave rectifier with a filter.	Lecture using whiteboard	Quiz, discussion and homework
7	4	The student understands The lesson	Full-wave rectifier with a filter	Lecture using whiteboard	Quiz, discussion and homework
8	4	The student understands The lesson	Constant voltage multiplier	Lecture using whiteboard	Quiz, discussion and homework
9	4	The student understands The lesson	double Zener – forward and reverse properties	Lecture using whiteboard	Quiz, discussion and homework
10	4	The student understands The lesson	Use of a Zener diode in constant voltage regulation.	Lecture using whiteboard	Quiz, discussion and homework
11	4	The student understands The lesson	bipolar transistor - common base connection properties.	Lecture using whiteboard	Quiz, discussion and homework
12	4	The student understands The lesson	Common emitter connection.	Lecture using whiteboard	Quiz, discussion and homework
13	4	The student understands The lesson	Common base amplifier.	Lecture using whiteboard	Quiz, discussion and homework
14	4	The student understands The lesson	Common emitter amplifier. Nineteenth Combined Bank Amplifier.	Lecture using whiteboard	Quiz, discussion and homework
15	4	The student understands The lesson	joint mosque amplifier.	Lecture using whiteboard	Quiz, discussion and homework

16	4	The student understands The lesson	Sixteenth: Using a transistor in voltage regulation.	Lecture using whiteboard	Quiz, discussion and homework
17	4	The student understands The lesson	FET transistor – property curves	Lecture using whiteboard	Quiz, discussion and homework
18	4	The student understands The lesson	Common source amplifier.	Lecture using whiteboard	Quiz, discussion and homework
19	4	The student understands The lesson	Combined Bank Amplifier.	Lecture using whiteboard	Quiz, discussion and homework
20	4	The student understands The lesson	properties of light emitting diode (LED).	Lecture using whiteboard	Quiz, discussion and homework
21	4	The student understands The lesson	Properties of the photodiode	Lecture using whiteboard	Quiz, discussion and homework
22	4	The student understands The lesson	Use of thyristors - their properties - phase angle control.	Lecture using whiteboard	Quiz, discussion and homework
23	4	The student understands The lesson	Using a thyristor as a dimmer.	Lecture using whiteboard	Quiz, discussion and homework
24	4	The student understands The lesson	Hartley oscillator.	Lecture using whiteboard	Quiz, discussion and homework
25	4	The student understands The lesson	Colpitts Oscillator.	Lecture using whiteboard	Quiz, discussion and homework
26	4	The student understands The lesson	The unstable vibrator.	Lecture using whiteboard	Quiz, discussion and homework
27	4	The student understands The lesson	the stable mono vibrator.	Lecture using whiteboard	Quiz, discussion and homework
28	4	The student understands The lesson	Bistable vibrator.	Lecture using whiteboard	Quiz, discussion and homework
29	4	The student understands The lesson	amplifier circuit for integrated circuit use.	Lecture using whiteboard	Quiz, discussion and homework
30	4	The student understands The lesson	Using an integrated circuit to add and subtract signals.	Lecture using whiteboard	Quiz, discussion and homework

11. Course Evaluation

- 1-First term theoretical exam 10/100
- 2- First term practical lab exam 10/100
- 3- Second term theoretical exam 10/100
- 4- Second term practical lab exam 10/100
- 5- Student activities 10/100
- 6- Final theoretical exam 40/100
- 7- Final practical lab exam 10/100

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Electronic basics
Recommended books and references (scientific journals, reports...)	-
Electronic References, Websites	YouTube Channel

Course Description Form

13.	Course Name: Engineering and Electrical Drawing
14.	Course Code: none
15.	Semester / Year: Year
16.	Description Preparation Date: 02/10/ 2024
17.	Available Attendance Forms: in person
18.	Number of Credit Hours (Total) / Number of Units (Total) 90H/6U
19.	Course administrator's name (mention all, if more than one name)
Name: Dheia N. Kadhum	
Email: dheiakadhum@atu.edu.i	
20.	Course Objectives:
Course Objectives	Training the student on the correct principles of engineering drawing, draw and read electronic and electrical maps using AutoCAD program.
21.	Teaching and Learning Strategies
Strategy	Teaching and learning methods 1- White board & marker. 2- Data show. 3- Practical applications in Labs. Evaluation methods 1- Daily exams (Quizzes). 2- Weekly practical application in drawings. 3- Midterm and final exams. 4- Emotional and Value goals 5- Evaluate the student's benefit after each week.
22. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	3	Learn about the general concepts of engineering drawing	The importance of engineering and industrial drawing - drawing tools and their uses - corrective drawing sizes - painting sizes - drawing a drawing data table - definitions of point, line and surface.	Lecture + Lab	Evaluation of skills in drawing
2 nd	3	Develop skills in drawing	Drawing types of lines: hidden line, hidden line, centre line, cutting line, cutting line for small parts, cutting line for large parts, cutting level line, dimension line, and extension line (panel drawing).	Lecture + Lab	Evaluation of skills in drawing
3 rd	3	Develop skills in drawing	Another painting on lines includes a group of simple geometric shapes and contains a group of lines.	Lecture + Lab	Evaluation of skills in drawing
4 th	3	Identify symbols in drawing	Explanation of electrical and electronic symbols	Lecture + Lab	Evaluation of skills in drawing
5 th	3	Develop skills in drawing	Drawing electrical and electronic symbols board	Lecture + Lab	Evaluation of skills in drawing
6 th	3	Develop skills in drawing	Writing Latin letters and numbers - a board that includes writing numbers and letters vertically and then at an angle 57.5° in sizes from four mm to ten mm.	Lecture + Lab	Evaluation of skills in drawing
7 th	3	Develop skills in drawing	Continuation of the previous painting	Lecture + Lab	Evaluation of skills in drawing
8 th	3	A review to identify the basic concepts in electrical and electronic circuits	How to distribute and install measuring devices (ammeter, voltmeter, wattmeter) and protective devices (separators -	Lecture + Lab	Evaluation of skills in drawing

			fuses - cutting devices - circuit breakers - switches).		
9 th	3	Developing computer drawing skills	Geometric operations include: 1- Dividing a straight line in equal and unequal proportions 2- Bisecting a straight line 3- Establishing a perpendicular on a straight line or arc from a point inside and a point outside it 4- Drawing a straight line parallel to a known straight at a known distance 5- Bisecting an angle 6- Finding the centre of a known arc or circle 7- Drawing a tangent circle Sides of a floating triangle from the inside and outside (one panel drawing).	Lecture + Lab	Evaluation of skills in drawing
10 th	3	Developing computer drawing skills	Drawing tangents to a circle: 1- Draw an arc that touches two known circles from the inside. 2- Draw an arc that touches two known circles from the outside. 3- Draw a straight line that touches two known circles from the outside. 5- Draw an arc of a known radius that touches a straight line and a known circle.	Lecture + Lab	Evaluation of skills in drawing
11 th	3	Developing computer drawing skills	Drawing a regular polygon given the length of the side in the general way, drawing a regular pentagon given the diameter of the circle, drawing a regular hexagon given the diameter of the circle - drawing the perspective of the circle at an angle of 30.	Lecture + Lab	Evaluation of skills in drawing

12 th	3	Developing computer drawing skills	Electrical installations - drawing a special drawing for the electrical installations of a room with an attached storeroom.	Lecture + Lab	Evaluation of skills in drawing
13 th	3	Developing computer drawing skills	Draw a diagram of the complete connections of the fluorescent tube	Lecture + Lab	Evaluation of skills in drawing
14 th	3	Developing computer drawing skills	Drawing an electronic wiring board containing a group of electronic circuits.	Lecture + Lab	Evaluation of skills in drawing
15 th	3	Developing computer drawing skills	Draw the simple solid shape at angles 30 and angles 45.	Lecture + Lab	Evaluation of skills in drawing
16 th	3	Identify general concepts in drawing	Explaining the placement of dimensions on a drawing in a geometric manner. Drawing a painting that includes two perspectives with all dimensions in a geometric manner.	Lecture + Lab	Evaluation of skills in drawing
17 th	3	Developing computer drawing skills	Drawing a complex perspective that contains cylindrical shapes or cavities - drawing a painting that includes two perspectives with the dimensions written in a geometric manner.	Lecture + Lab	Evaluation of skills in drawing
18 th	3	Developing computer drawing skills	Drawing a complex perspective that contains cylindrical shapes or cavities - drawing a painting that includes two perspectives with the dimensions written in a geometric manner.	Lecture + Lab	Evaluation of skills in drawing
19 th	3	Developing computer drawing skills	Drawing a board for an electronic circuit containing gates.	Lecture + Lab	Evaluation of skills in drawing

20 th	3	Developing computer drawing skills	Drawing an electronic circuit board containing integrated circuits	Lecture + Lab	Evaluation of skills in drawing
21 st	3	Developing computer drawing skills	Drawing an electronic circuit board containing gates and integrated circuits	Lecture + Lab	Evaluation of skills in drawing
22 nd	3	Developing computer drawing skills	Applications on drawing projections from different perspectives.	Lecture + Lab	Evaluation of skills in drawing
23 rd	3	Developing computer drawing skills	Perspective drawing of the three views	Lecture + Lab	Evaluation of skills in drawing
24 th	3	Identify the basic concepts in drawing	Cutting objects, cutting angle - cutting lines (slicing), definition of parts that do not cut (focuses on complete cutting only), a plate that includes projections after cutting.	Lecture + Lab	Evaluation of skills in drawing
25 th	3	Developing computer drawing skills	Drawing a board to control the speed of a three-phase motor	Lecture + Lab	Evaluation of skills in drawing
26 th	3	Learn how to read maps	How to read a map or set of maps for electrical circuits.	Lecture + Lab	Evaluation of skills in drawing
27 th	3	Developing computer drawing skills	Electrical drawing applications on the electronic calculator.	Lecture + Lab	Evaluation of skills in drawing
28 th	3	Developing computer drawing skills	Using Auto CAD system.	Lecture + Lab	Evaluation of skills in drawing
29 th	3	Developing computer drawing skills	Use of ORCAD system.	Lecture + Lab	Evaluation of skills in drawing
30 th	3	Developing computer drawing skills	Use of ORCAD system.	Lecture + Lab	Evaluation of skills in drawing

23. Course Evaluation

- 1- Midterm exam 15/100
- 2- Second term exam 15/100
- 3- Student activities 20/100

4- Final theoretical exam 50/100

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	none
Main references (sources)	1-Descriptive Geometry – Medhat Faisal Fadil – Al-Zaman Press, 1977 2-Descriptive Geometry – Muhammad Amin Wahib – Faculty of Engineering, Ain Shams University, 1979 3-Engineering Drawing Technology ((A.W-Wander William)) MC-Graw-Hill 1977 4-Engineering Drawing Graphic Technique by: Frennd MC-Graw-Hill 1976
Recommended books and references (scientific journals, reports...)	Engineering and electrical drawing using AutoCAD – Nouri Musa Abd
Electronic References, Webs	none

Course Description Form

25. Course Name: Digital Circuits

26. Course Code: none

27. Semester / Year: Year

28. Description Preparation Date: 15/10/2024					
29. Available Attendance Forms: In-person attendance					
30. Number of Credit Hours (Total) / Number of Units (Total) 120 hours/8 units					
31. Course administrator's name (mention all, if more than one name)					
Name: Dr. Nadia Awad Email: nadia.al-khalidi.iba@atu.edu.iq					
32. Course Objectives					
Course Objectives	On completion of this course, the student is expected to be familiar with the design many aspects of logic circuits. 1- Studying the four types of numerical systems that used in computer applications. 2- Understanding the basic building blocks i.e. basic logic gates. 3- Understanding the basic logic operations and laws of Boolean algebra. 4- Studying the other electronic circuits such as comparator, decoder, encoder and adders which would help to implement any logic circuit.				
33. Teaching and Learning Strategies					
Strategy	The methods that used in teaching of digital circuits module are: 1. Lecture by the instructor (lecturer). 2. Class discussion directed by the instructor. 3. Recitation oral questions by teacher answered orally by students. 4- Using the white board by the instructor as aid in teaching. 5- Tutorial. 6- Reading some lectures notes aloud to emphases on the important points.				
34. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	2	The student understands the lesson	Numerical Systems	Lecture using whiteboard	Quiz, discussion and homework
2	2	The student understands the lesson	Decimal to binary conversion and vice versa	Lecture using whiteboard	Quiz, discussion and homework
3	2	The student understands the lesson	Decimal to octal and hexadecimal and vice versa	Lecture using whiteboard	Quiz, discussion and homework
4	2	The student understands the lesson	Binary addition and subtraction	Lecture using whiteboard	Quiz, discussion and homework
5	2	The student understands the lesson	Basic logic gates OR, AND & NOT	Lecture using whiteboard	Quiz, discussion and homework
6	2	The student understands the lesson	NAND, NOR, XOR & XNOR Gates	Lecture using whiteboard	Quiz, discussion and homework
7	2	The student understands the lesson	Gates representation using only NAND or NOR gates	Lecture using whiteboard	Quiz, discussion and homework
8	2	The student understands the lesson	Boolean Algebra & De-Morgan theorem	Lecture using whiteboard	Quiz, discussion and homework
9	2	The student understands the lesson	SOP & POS	Lecture using whiteboard	Quiz, discussion and homework
10	2	The student understands the lesson	K-Map for 2, 3, & 4 Inputs	Lecture using whiteboard	Quiz, discussion and homework
11	2	The student understands the lesson	Truth table & K-Map	Lecture using whiteboard	Quiz, discussion and homework
12	2	The student understands the lesson	Simplification of different logic circuit using K-Map.	Lecture using whiteboard	Quiz, discussion and homework
13	2	The student understands the lesson	Two n-bit binary numbers comparator	Lecture using whiteboard	Quiz, discussion and homework
14	2	The student understands the lesson	Binary to octal decoder	Lecture using whiteboard	Quiz, discussion and homework
15	2	The student understands the lesson	Octal to binary encoding & decimal to binary encoding	Lecture using whiteboard	Quiz, discussion and homework
16	2	The student understands the lesson	Half adder, full adder Circuits	Lecture using whiteboard	Quiz, discussion and homework
17	2	The student understands the lesson	Full subtractor	Lecture using whiteboard	Quiz, discussion and homework
18	2	The student understands the lesson	Parallel subtraction circuit	Lecture using whiteboard	Quiz, discussion and homework
19	2	The student understands the lesson	RS Flip-flop J-K Flip-flop D Flip-flop	Lecture using whiteboard	Quiz, discussion and homework
20	2	The student understands the lesson	Comparison between different Flip-flops	Lecture using whiteboard	Quiz, discussion and homework
21	2	The student understands the lesson	Counters	Lecture using whiteboard	Quiz, discussion and homework
22	2	The student understands the lesson	Ripple counters	Lecture using whiteboard	Quiz, discussion and homework
23	2	The student understands the lesson	synchronous parallel	Lecture using whiteboard	Quiz, discussion and homework

		lesson	counter	whiteboard	and homework
24	2	The student understands the lesson	Shift registers	Lecture using whiteboard	Quiz, discussion and homework
25	2	The student understands the lesson	ROM, PROM, EPROM, ARA & DRAM	Lecture using whiteboard	Quiz, discussion and homework
26	2	The student understands the lesson	DAC	Lecture using whiteboard	Quiz, discussion and homework
27	2	The student understands the lesson	ADC	Lecture using whiteboard	Quiz, discussion and homework
28	2	The student understands the lesson	ADC1	Lecture using whiteboard	Quiz, discussion and homework
29	2	The student understands the lesson	ADC2	Lecture using whiteboard	Quiz, discussion and homework
30	2	The student understands the lesson	Voltage to frequency Converter	Lecture using whiteboard	Quiz, discussion and homework

35. Course Evaluation

- 1- First term theoretical exam 10/100
- 2- First term practical lab exam 10/100
- 3- Second term theoretical exam 10/100
- 4- Second term practical lab exam 10/100
- 5- Student assessment 10/100
- 6- Final theoretical exam 40/100
- 7- Final practical lab exam 10/100

36. Learning and Teaching Resources

Required textbooks (curricular books, if any)	None
Main references (sources)	Fundamentals of Logic Design, Enhanced Edition (Jr. Charles H. Roth, Larry L Kinney etc.)
Recommended books and references (scientific journals, reports...)	Fundamentals of Logic Design, Enhanced Edition Charles H. Roth, Larry L Kinney etc.)
Electronic References, Websites	https://atozmath.com/default.aspx https://www.rapidtables.com/convert/number/binary-to-decimal.html

Course Description Form

37. Course Name: Human Rights and Democracy					
38. Course Code: none					
39. Semester / Year: Year					
40. Description Preparation Date: 03/10/2024					
41. Available Attendance Forms: in person attendance					
42. Number of Credit Hours (Total) / Number of Units (Total) 60 hours/4 units					
43. Course administrator's name (mention all, if more than one name)					
Name: Zaid Khudhur					
Email: zaid.bermany@atu.edu.iq					
44. Course Objectives					
Course Objectives	At the end of the course the student will be able to: 1. Knowing about human rights. 2. In addition, the student will be able to deal with different Theories of human rights				
45. 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.				
46. Course Structure					
Week	Hours	Unit or subject name	Required Learning Outcomes	Learning method	Evaluation method
1 st week	2	Introduction	The student understands the lesson	Theoretical lecture	oral examination and quiz
2 nd week	2	Explain the term of human rights	The student understands the lesson	Theoretical lecture	oral examination and quiz

3 rd week	2	The historical of human rights	The student understands the	Theoretical lecture	oral examination and quiz
4 th week	2	Development of human rights	lesson	Theoretical lecture	oral examination and quiz
5 th week	2	Development of human rights	The student understands the	Theoretical lecture	oral examination and quiz
6 th week	2	Development of human rights	lesson	Theoretical lecture	oral examination and quiz
7 th week	2	Human rights and Sumerian civilization	The student understands the	Theoretical lecture	oral examination and quiz
8 th week	2	Human rights in Roman civilization	lesson	Theoretical lecture	oral examination and quiz
9 th week	2	Human rights in the Nile Valley civilization	The student understands the	Theoretical lecture	oral examination and quiz
10 th week	2	Introduction to heavenly religions.	lesson	Theoretical lecture	oral examination and quiz
11 th week	2	Human rights in Judaism	The student understands the	Theoretical lecture	oral examination and quiz
12 th week	2	Human rights in the Christian religion	lesson	Theoretical lecture	oral examination and quiz
13 th week	2	Human rights in the Islamic religion	The student understands the	Theoretical lecture	oral examination and quiz
14 th week	2	Human rights in the Islamic religion	lesson	Theoretical lecture	oral examination and quiz
15 th week	2	Comparison between other religions and Islam.	The student understands the	Theoretical lecture	oral examination and quiz
15 th week	2	Democracy and Islam	lesson	Theoretical lecture	oral examination

47. Course Evaluation

First semester 20% second semester 20%, activities 10% final exam 50%

1. Learning and Teaching Resources

Required textbooks (curricular books any)	Human Rights book
Main references (sources)	The organization of human rights magazine
Recommended books and references (scientific journals, reports...)	none

Course Description Form

48.	Course Name: Applications of Computer 1				
49.	Course Code: none				
50.	Semester / Year: Year				
51.	Description Preparation Date: 8\10\2024				
52. Available Attendance Forms: in person attendance					
53. Number of Credit Hours (Total) / Number of Units (Total): 60h / 2 units					
54.	Course administrator's name (mention all, if more than one name)				
Name: Ishraq Merza Hassan					
Email: ishraq.hassan@atu.edu.iq					
55.	Course Objectives				
Course Objectives		Teaching the students about the computer and some applications.			
56.	Teaching and Learning Strategies				
Strategy		Internet			
1. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

Week1	theoretical Practical=2	Data show, Computer Machine, Screen Show	Computer Definiti Software, Hardwa Computer Generations.	Lectures an practical training	Written exams And practical training
Week2	theoretica l=1 Practical= 2	Computer Machine, Ms-Dos system	MS-DOS Operating System, Definition, Internal commands, External commands	Lectures and practical training	Written exams And practical training
Week3 12:	theoretic al=1 Practical =2	Computer Machine, MS-DOS System	Internal command Dir , Del , Time , Da , Cls , RD, CD, MD, Echo, Prompt, Ren copy , vol, ver , pat External Commands: Edit , tree , xcopy , format , chkdsk, diskcopy	Lectures and practical training	Written exams And practical training
Week1 27:	theoretic al=1 Practical =2	Computer Machine, Windows System	Operating System Windows: Disktop, Icons, Taskbar, Start, Shutdown, My computer, Control Panel, Windows media player, Calculator, Paint, Note Pad, Help	Lectures and practical training	Written exams And practical training
Week2 30:	theoretica 1 Practical= 2	Computer Machine, Screen Show.	Computer Viruses, Antivirus.	Lectures and practical training	Written exams And practical training

57. Course Evaluation

The degree is distributed

1- 10 marks for the first theoretical semester and 10 marks for practical.

2- 10 marks for the second semester, theoretical + 10 marks for practical

3 - 10 marks for student activities

4 - 50 marks final exam

58. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer and its Applications
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Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports...)	reports
Electronic References, Websites	none

Course Description Form

59.	Course Name: Mathematics
60.	Course Code: none
61.	Semester / Year: Year
62.	Description Preparation Date: 13/10/2024
63.	Available Attendance Forms: in person attendance
64.	Number of Credit Hours (Total) / Number of Units (Total) 60 hours/4 units
65.	Course administrator's name (mention all, if more than one name)
Name: Daelael Saad Abdul-Zahra	
Email: daelael.abdul-zahra.iba5@atu.edu.iq	
66.	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
67.	Teaching and Learning Strategies

Strategy	1.Discuss the students and ask questions about the topic of the lecture and how 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 material.
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68. Course Structure

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

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

69. Course Evaluation

- 1- First term theoretical exam 20/100
- 2- Second term theoretical exam 20/100
- 3- Student activities 10/100
- 6- Final theoretical exam 50/100

70. 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 Samaria-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

71.	Course Name: Electrical Circuits & Measurements
72.	Course Code: none
73.	Semester / Year: Year
74.	Description Preparation Date: Oct 2 nd 2024
75.	Available Attendance Forms: in person attendance
76.	Number of Credit Hours (Total) / Number of Units (Total) 120 H/8 U
77.	Course administrator's name (mention all, if more than one name) Name: Sarah khammas or Sarah k. Lami Email: sarah.lami@atu.edu.iq
78.	Course Objectives: The student will be able to apply general electrical laws and theories of DC & AC electrical networks and analyze.

Course Objectives	• Apply general electrical laws when analyzing electrical circuits. • Choose the most suitable application when analyzing DC & AC circuits. • Understanding the different basic electrical theories and apply them to mathematical applications. • Connecting single – phase and three–phase equipment and dealing with different types of loads.
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79. Teaching and Learning Strategies

Strategy	Teaching and learning methods • White board & marker. • Data show. • Practical applications in Labs. Evaluation methods • Daily exams (Quizzes). • Homework. • Midterm and final exams. • Direct questions during the theoretical lectures. • Exams + Oral and written activities, practical and laboratory exercises. • Emotional and Value goals • Evaluate the student's benefit after each week.
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80. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	4	Weekly quizzes	System of units used in electricity and units of measurement for each substance (its parts and multiples) - Mathematical applications for converting values using units - Definition of basic units of voltage, current and resistance - Components of an electrical circuit - Ohm's law - Factors affecting the value of resistance - Specific resistance of conductive and insulating	Lecture + Lab	Report and oral exam.

			materials - Effect of temperature On the value of resistance - thermal coefficient of resistance with the solution of practical examples.		
2 nd	4	Weekly quizz	DC circuits include: 1. Connecting resistors in series with examples. 2. Connecting resistors in parallel with examples 3. Mixed connection of resistors with examples. 4. The star and delta connection of resistors and the conversion from each to the other with examples.	Lecture + Lab	Report and oral exam.
3 rd	4	Weekly quizz	Applications on series, parallel, mixed, star and delta circuits.	Lecture + Lab	Report and oral exam.
4 th	4	Weekly quizz	Kirchhoff's Laws - Kirchhoff's Law for Current and Voltage with Practical Examples.	Lecture + Lab	Report and oral exam.
5 th	4	Weekly quizz	Maxwell's law with solutions and practical examples.	Lecture + Lab	Report and oral exam.
6 th	4	Weekly quizz	Thevenin's theory - definition of the theory - how to apply it in DC.	Lecture + Lab	Report and oral exam.
7 th	4	Weekly quizz	Norton's theory - definition of the theory - how to apply it in DC.	Lecture + Lab	Report and oral exam.
8 th	4	Weekly quizz	Practical examples of Thevenin and Norton theorems.	Lecture + Lab	Report and oral exam.
9 th	4	Weekly quizz	Superposition theory - definition of the theory - steps of its application in solving DC circuits that contain more than one source - solving definitional examples of current and voltage	Lecture + Lab	Report and oral exam.

			source (DC power suppliers) and how to convert from one to the other - the theory of maximum power transferring - definition of the theory and the derivation of its relations - examples.		
10 th	4	Weekly quizz	Alternating quantities the definition of the characteristics of alternating current - how to generate alternating current and its wave drawing and its relationships - includes the definition of the RMS effective value and its average value and its relations to find the form factor and value factor for irregular waveforms with practical examples.	Lecture + Lab	Report and oral exam.
11 th	4	Weekly quizz	Alternating vector quantities - definition - their phase and graphic representation - phase angle and how to find it - finding the result of vector quantities includes multiplication, division, addition and subtraction with practical examples.	Lecture + Lab	Report and oral exam.
12 th	4	Weekly quizz	The effect of alternating current on a circuit containing only resistance A circuit containing only pure inductance A circuit containing only pure capacitance Finding the phase angle between current and voltage for each circuit with examples.	Lecture + Lab	Report and oral exam.
13 th	4	Weekly quizz	The effect of alternating current on a circuit containing (resistance and inductance in series -	Lecture + Lab	Report and oral exam.

			resistance and capacitance in series - resistance and inductance and capacitance in series) - finding the relationship between current and voltage in the three cases, phase angle - the total impedance of the circuit with practical examples.		
14 th	4	Weekly quizz	The effect of alternating current on a circuit containing (resistance and inductance - resistance and capacitance - resistance and inductance and capacitance) in parallel - Finding the relationship between voltage and current in the three cases - phase angle - total impedance of the circuit with practical examples	Lecture + Lab	Report and oral exam.
15 th	4	Weekly quizz	Using the J-OPERATOR characterization or the complex factor to find the total impedance, total permittivity, current, voltage, and phase angle for circuits connecting impedances in series and parallel with solving examples.	Lecture + Lab	Report and oral exam.
16 th	4	Weekly quizz	Resonance circuits, including series and parallel resonance circuits (defining the state of resonance and how to reach it - calculating current, voltage, impedance, phase angle and frequency at resonance - finding the bandwidth - quality factor - drawing the relationship between inductive and capacitive	Lecture + Lab	Report and oral exam.

			reactance with frequency - solving examples for both cases)		
17 th	4	Weekly quizz	Application of theorems such as Norton and Thevenin theorem and matching on alternating current circuits with solving examples.	Lecture + Lab	Report and oral exam.
18 th	4	Weekly quizz	Power in alternating current circuits, including calculating the power on circuits containing (resistance only - inductance only - capacitive only resistance, inductance and capacitive, respectively and in parallel). Defining the active and passive capacity and how to calculate them.	Lecture + Lab	Report and oral exam.
19 th	4	Weekly quizz	Total apparent power (definition) - how to draw a power triangle - power factor - definition and its effect on alternating current circuits - how to improve power factor with applied examples.	Lecture + Lab	Report and oral exam.
20 th	4	Weekly quizz	Theory of maximum power transfer in alternating current circuits - derivation of its relationship with practical examples.	Lecture + Lab	Report and oral exam.
21 st	4	Weekly quizz	Analysis of electrical networks by node voltage method - introduction - node voltages - number of node voltage equations - node voltage equations by examination – common admittance - transmission admittance.	Lecture + Lab	Report and oral exam.

22 nd	4	Weekly quizzes	Practical examples of the analysis of electrical networks by the node method.	Lecture + Lab	Report and oral exam.
23 rd	4	Weekly quizzes	Three-phase alternating current circuits - its definition and how to generate alternating current (one phase - two phases - three phases) with a drawing of each circuit of the star and triangular wiring diagrams in three-phase alternating current circuits and the special relationships for calculating the current and voltage of the line and phase and the total power and power of the line - phase capacity The characteristics of each connection when used in balanced and unbalanced loads, with examples of solution.	Lecture + Lab	Report and oral exam.
24 th	4	Weekly quizzes	Solve practical examples of three-phase alternating current and trigonometric and star connections of balanced and unbalanced loads.	Lecture + Lab	Report and oral exam.
25 th	4	Weekly quizzes	Methods for measuring power for three-phase loads - a wattmeter - how to connect it to the circuit to measure the effective power and calculate the reactive power and the apparent power with an example solution - measuring power using a wattmeter and voltage - how to find the total power in this way and in the case of star and delta conduction -	Lecture + Lab	Report and oral exam.

			using two wattmeters - three wattmeters.		
26 th	4	Weekly quizzes	Transient circuit states - DC transient states - circuits in transient state - (RLC - RC - RL) circuits.	Lecture + Lab	Report and oral exam.
27 th	4	Weekly quizzes	Transient alternating currents - transient sinusoidal currents in RLC, RC, RL circuits - transmission currents.	Lecture + Lab	Report and oral exam.
28 th	4	Weekly quizzes	Self-inductance of the coil (electromagnetic induction) - its definition - special relations for finding the self-inductance of the coil - mutual induction between two coils - relationships for finding mutual induction and according to the type of connection of the two coils and includes - Synergistic linkage. - Reverse series link.	Lecture + Lab	Report and oral exam.
29 th	4	Weekly quizzes	Transformers - installation of the transformer - diagram of the transformer - its characteristics - its working principle and special relationships - types of transformers and solutions of examples.	Lecture + Lab	Report and oral exam.
30 th	4	Weekly quizzes	Curves of current growth and decay from an inductive circuit - Explanation of this circuit and its effect on DC - General relations of growth and decay of current in the coil - Drawing current and calculating the time constant - Solution	Lecture + Lab	Report and oral exam.

			examples - Charging and discharging capacitors the use of capacitors in DC circuits includes the general relationship of charging and discharging the capacitor and drawing the current the effect of a time constant and its calculation - solutions of examples.		
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81. Course Evaluation

- 1- First term theoretical exam 10/100
- 2- First term practical lab exam 10/100
- 3- Second term theoretical exam 10/100
- 4- Second term practical lab exam 10/100
- 5- Student activities 10/100
- 6- Final theoretical exam 40/100
- 7- Final practical lab exam 10/100

82. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	1 - Electrical Technology (Edward Hughes). 2- Basic Circuit (A.M.Brooks) .pergaman press. 3- Introduction To Electric Circuit (M. Romanwltz) John Willey. 4- Basic Electrical Engineering (Fitzgerald& Rlgginbothan). Graw
Recommended books and references (scientific journals, reports...)	Lectures notes.
Electronic References, Websites	YouTube Channel

Course Description Form

83.	Course Name: Physiology
84.	Course Code: none
85.	Semester / Year: Year
86.	Description Preparation Date: 15/10/2024
87.	Available Attendance Forms: in person
88.	Number of Credit Hours (Total) / Number of Units (Total) 60 H/ 4 units
89.	Course administrator's name (mention all, if more than one name)
Name: Amear Qusy abbas Email: ameer.abbas.iba1@atu.edu.iq	
90.	Course Objectives
Course Objectives	1 – Study of the organs of the body of living organisms and the systems that make them up. 2– Identify information about the functions of the human body's organs through experiments conducted on animals 3– Describing the functions of organs in living organisms 4– Explaining and interpreting these functions in terms of physical and chemical laws
1. Teaching and Learning Strategies	
Strategy	The methods used in teaching the physiology lesson are: 1. Lecture by the teacher (lecturer).

	2. Class discussion by the teacher. 3. Oral questions are recited by the teacher and answered orally by the students. 4- The teacher's use of the whiteboard as an aid in teaching. 5- Read some lecture notes out loud to emphasize important points.
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91. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understanding physiology	Muscle tissue - and types of muscles	PowerPoint lecture and explanation on whiteboard	Semester exams, discussion and Quiz
2	2	Understanding physiology	Electrical changes - simple muscle contraction.	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
3	2	Understanding physiology	Muscle pain	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
4	2	Understanding physiology	Muscle stress	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
5	2	Understanding physiology	Sensory nervous system	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
6	2	Understanding physiology	The role of nerves in transmitting stimuli-reflexes	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
7	2	Understanding physiology	Sympathetic nervous system	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz

8	2	Understanding physiology	Parasympathetic nervous system	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
9	2	Understanding physiology	Circulatory system and heart	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
10	2	Understanding physiology	Blood vessels - their components - types	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
11	2	Understanding physiology	blood pressure	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
12	2	Understanding physiology	The role of blood in the body	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
13	2	Understanding physiology	Breathing - types of breathing	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
14	2	Understanding physiology	Respiratory movements- cavitory pressure	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
15	2	Understanding physiology	Lung expansion - respiratory capacity	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
16	2	Understanding physiology	Vital capacity - components of inhaled air	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
17	2	Understanding physiology	The digestive system, its	PowerPoint lecture and explanation	Semester exams,

			structure, parts, and importance	on a whiteboard	discussion and Quiz
18	2	Understanding physiology	Digestive secretions - stages of digestion	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
19	2	Understanding physiology	Digestion of carbohydrates - Digestion of proteins	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
20	2	Understanding physiology	Absorption, assimilation, and defecation	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
21	2	Understanding physiology	(Urinary system) kidney - ureter - bladder - external orifice	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
22	2	Understanding physiology	Composition of the parts of the system - the importance of the urinary system	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
23	2	Understanding physiology	Diuretic formation - urinary urea and urinary stones	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
24	2	Understanding physiology	The components of urine and their properties	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
25	2	Understanding physiology	Endocrine	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
26	2	Understanding physiology	Types of endocrine glands and their importance	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz

27	2	Understanding physiology	Secretions-endocrine glands	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
28	2	Understanding physiology	Endocrine work.	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
29	2	Understanding physiology	Reproductive system	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz
30	2	Understanding physiology	Reproductive system functions	PowerPoint lecture and explanation on a whiteboard	Semester exams, discussion and Quiz

92. Course Evaluation

- 1- First term theoretical exam 20/100
- 2- Second term theoretical exam 20/100
- 3- Student assessment 10/100
- 4- Final theoretical exam 50/100

93. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Bioelectricity By : Mary .A. Brazier . Text Book Of Physiology By : Best and Taylor. Physiological Basis of Medical Practice Ninth Edition By : Jhon R . BG back-S &C . CO . New Delhi .
Recommended books and references (scientific journals, reports...)	Physiology by Professor Dr. Sabah Nasser Al-Aluji
Electronic References, Websites	none

Course Description Form

94.	Course Name: Electronics Circuits
95.	Course Code: none
96.	Semester / Year: Year
97.	Description Preparation Date: 12/10/2024
98. Available Attendance Forms: in-person attendance	
99. Number of Credit Hours (Total) / Number of Units (Total) 120H/8 units	
100.	Course administrator's name (mention all, if more than one name)
Names: Basim Al-Qargholi Ali Abdul Karim Hadi Email: basim.alqargholi.inj@atu.edu.iq ali.hadi.iba2@atu.edu.iq	
101.	Course Objectives
Course Objectives	By the end of the course, students will be able to: - Identify different electronics elements and know the function of each. - Design and implementation of variable electronic circuit required in MID.
102.	Teaching and Learning Strategies
Strategy	Visualization techniques are used to process/summarize the given and instructed knowledge in class. Teamwork by dividing the class into groups to complete a task to encourage students of mixed abilities to work with one another. Student-led Classroom to give more power to students allows them to become self-aware of their strengths. Open discussion in the class to let students feel more confident, comfortable and build trust with the teacher.
103. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-2	4	The student understands The lesson	1- Fundamentals of Zener Diode	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
3	4	The student understands The lesson	2- Silicon control rectifier and its applications	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
4	4	The student understands The lesson	3- Theoretical exercise	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
5-6	4	The student understands The lesson	4- Bipolar junction transistor	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
7-8	4	The student understands The lesson	5- Applications of Bipolar junction transistor	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
9	4	The student understands The lesson	6- Theoretical exercise about Bipolar junction transistor	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
10	4	The student understands The lesson	7- Electronic oscillator	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions

11	4	The student understands The lesson	8- Theoretical exercise about electronic oscillator	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
12-13	4	The student understands The lesson	9- Introduction to Operation Amplifier	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
14-15	4	The student understands The lesson	10-Features and characteristics of Operation Amplifier	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
16	4	The student understands The lesson	11-Inverting Operation Amplifier	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
17	4	The student understands The lesson	12-Non-inverting Operation Amplifier	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
18	4	The student understands The lesson	13-Comparator Amplifier	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
19	4	The student understands The lesson	14-Summing & Subtractor/Difference Amplifier	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
20-21	4	The student understands The lesson	15-Introduction of Active Filters	Presentation (Projector and whiteboard) and experimental	Open discussion, quiz, and direct questions

				work using electronics Lab	
22-23	4	The student understands The lesson	16-Operational amplifier applications: differential circuit, mathematical equations	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions
24-25	4	The student understands The lesson	17-Nonlinear applications of operational amplifiers	Presentation (Projector and whiteboard) and experimental work using electronics Lab	Open discussion, quiz, and direct questions

104. Course Evaluation

- 1- First term theoretical exam 10/100
- 2- First term practical lab exam 10/100
- 3- Second term theoretical exam 10/100
- 4- Second term practical lab exam 10/100
- 5- Student assessment 10/100
- 6- Final theoretical exam 40/100
- 7- Final practical lab exam 10/100

105. Learning and Teaching Resources

Required textbooks (curricular books, if any)	The Physics of Semiconductors (Marius Grundmann) Electronics Fundamentals Circuits, Devices and Applications (Thomas L. Floyd David L. Buchla) Electronic Devices and Circuit Applications (Thomas F. Schubert, Jr. Ernest M. Kim)
Main references (sources)	Electronics Fundamentals Circuits, Devices and Applications (Thomas L. Floyd David L. Buchla)
Recommended books and references (scientific journals, reports...)	Electronics Fundamentals Circuits, Devices and Applications (Thomas L. Floyd David L. Buchla)
Electronic References, Websites	none

Course Description Form

106.	Course Name: Programmable Logic Controller (PLC)				
107.	Course Code: none				
108.	Semester / Year: Semester				
109.	Description Preparation Date: 10/10/2024				
110.	Available Attendance Forms: in-person attendance				
111.	Number of Credit Hours (Total) / Number of Units (Total)				
3 hours per week/ 3 units					
112.	Course administrator's name (mention all, if more than one name)				
Name: HUSSEIN ALI MOHAMMED					
Email: huseen.alsegmany.iba@atu.edu.iq					
113.	Course Objectives				
Course Objectives	1– Introducing the student to the components of programmed controllers and how to program and use them. 2– Learn about programmable digital controllers (Plc) and how to deal with them and program them.				
114.	Teaching and Learning Strategies				
Strategy	Providing an educational environment; It provides students with the necessary knowledge make the most of the available learning opportunities.				
115. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Understanding the lecture	Introducing the vocabulary of the academic subject and distributing exam grades. An introductory overview of programmed control	Theoretical lecture	Weekly exams - and post questions

			and its application fields		
2 And 3	4	Understanding the lecture	Sensors compatible with the programmed controller (temperature, proximity, pressure, movement, etc.)	Theoretical lecture	Weekly exams - and post questions
4	2	Understanding the lecture	Electrical switches and electrical contacts and how they work	Theoretical lecture	Weekly exams - and post questions
5	2	Understanding the lecture	Learn about the ladder programming language	Theoretical lecture	Weekly exams - and post questions
6	2	Understanding the lecture	Implementation of logic circuits (and, or, not, etc.). by using ladder programming language	Theoretical lecture	Weekly exams - and post questions
7	2	Understanding the lecture	Relays and their types and how to implement them by using ladder programming language with examples.	Theoretical lecture	Weekly exams - and post questions
8	2	Understanding the lecture	How to hold the signal and releasing it in ladder language.	Theoretical lecture	Weekly exams - and post questions
9	2	Understanding the lecture	Digital counters in the ladder language with practical examples	Theoretical lecture	Weekly exams - and post questions
10	2	Understanding the lecture	Practical examples: power converter circuit (Changeover Circuit) By using ladder programming language.	Theoretical lecture	Weekly exams - and post questions
11	2	Understanding the lecture	Traffic signal application example	Theoretical lecture	Weekly exams – and post questions

12	2	Understanding the lecture	An applied example of opening and closing a gate based on motion sensors	Theoretical lecture	Weekly exams – and post questions
13	2	Understanding the lecture	Single-phase motor operating circuit with on and off switches (motor starter) by using ladder programming language	Theoretical lecture	Weekly exams – and post questions
14	2	Understanding the lecture	Three-phase motor drive circuit (Delta Star).	Theoretical lecture	Weekly exams – and post questions
15	2	Understanding the lecture	Practical example of electric elevator circuit	Theoretical lecture	Weekly exams – and post questions

116. Course Evaluation

Distribution of the score out of 100 according to the tasks assigned to the student: -

1- Second semester exams = 20 theoretical + 20 practical's = 20 marks.

2- Final exams = 40 theoretical + 10 practical's = 50 marks.

3- Annual evaluation, such as attendance, daily preparation, oral exams, reports, activities, etc. = 10 marks.

117. Learning and Teaching Resources

Required textbooks (curricular books, if any)	PLC book
Main references (sources)	Sources of ancient and modern control less books
Recommended books and references (scientific journals, reports...)	Related journals and research papers
Electronic References, Websites	Trusted and approved sites only

Course Description Form

118. Course Name: Electronic Instrumentations

119. Course Code: none

120. Semester / Year: Year	
121. Description Preparation Date: 14/10/2024	
122. Available Attendance Forms: in person attendance	
123. Number of Credit Hours (Total) / Number of Units (Total): 120h/8 units	
124. Course administrator's name (mention all, if more than one name) Name: Hayder Fadhil Abdul Sada Email: inj.had1@atu.edu.iq	
125. Course Objectives	
Course Objectives	The student learns about: • The basic components of measuring devices and methods of using them in measurements • Factors affecting the accuracy of readings and how to test the appropriate dev • Calibrating and organizing measuring devices
126. Teaching and Learning Strategies	
Strategy	1. Peer Tutoring and Assessment Peer tutoring and assessment activities require students to understand the subject material and decide how to share it with others. Students learn as they teach concepts, explain ideas, plan educational activities and test knowledge. Through peer tutoring and assessment, your students hone their organizational and collaborative skills, discover how to give and receive feedback, and evaluate their own learning. 2. Brainstorming Creative juices flow during simple or group brainstorming sessions. Students focus on one topic and freely discuss their ideas, thoughts and opinions. There are no right or wrong answers during brainstorming sessions where numerous, creative ideas are put forth and debated on. These brainstorming sessions help your students develop confidence and their communication and collaboration skills. 3. Student-Led Classes Students must fully understand coursework, spend time preparing an in-depth lesson and be prepared to answer questions in order to lead a class. With this teaching strategy, students take on individual tasks or group assignments to demonstrate their knowledge, boost their presentation skills and discover how to

share and collaborate with their peers. Students are sometimes invited to lead the class at OWIS and are assessed for their lesson complexity, preparation and creativity. This teaching method promotes student ownership and helps teachers and students to understand interests, strengths and potential areas for improvement.

127. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student understands the lesson	Definitions (accuracy, degree of accuracy, rank numbers, types of errors, statistical analysis, probability of error, specific errors)	Theoretical lecture	Weekly exams - pre and post questions
2	2	The student understands the lesson	Definitions (accuracy, degree of accuracy, rank numbers, types of errors, statistical analysis, probability of error, specific errors)	Theoretical lecture	Weekly exams - pre and post questions
3	2	The student understands the lesson	Classification of devices, marking devices and the foundations based on them, effective moments (deflection torque, control torque, diminishing torque)	Theoretical lecture	Weekly exams - pre and post questions
4	2	The student understands the lesson	Moving coil measuring devices, Darsonval movement, structure, moment equations, disadvantages and advantages of moving coil measuring devices	Theoretical lecture	Weekly exams - pre and post questions
5	2	The student understands the lesson	Direct current ammeter, ammeter with parallel comparator, direct current voltmeter, voltmeter with series resistance, mathematical examples for the two devices, voltmeter sensitivity,	Theoretical lecture	Weekly exams - pre and post questions

			mathematical examples		
6	2	The student understands the lesson	Methods of measuring resistance, with ammeter and voltmeter, mathematical examples, ohmmeter, series ohmmeter, parallel ohmmeter, calibration of direct current devices, voltage, mathematical examples.	Theoretical lecture	Weekly exams - pre and post questions
7	2	The student understands the lesson	Methods of measuring resistance, with ammeter and voltmeter, mathematical examples, ohmmeter, series ohmmeter, parallel ohmmeter, calibration of direct current devices, voltage, mathematical examples.	Theoretical lecture	Weekly exams - pre and post questions
8	2	The student understands the lesson	DC bridges, Wheatstone bridge, working principle, measurement errors, Kelvin bridge, double Kelvin bridge, mathematical examples.	Theoretical lecture	Weekly exams - pre and post questions
9	2	The student understands the lesson	Alternating current bridges and bridge equilibrium conditions, application of balance equations	Theoretical lecture	Weekly exams - pre and post questions
10	2	The student understands the lesson	Inductance measurement bridge, inductance comparison bridge, Maxwell bridge, Hay bridge	Theoretical lecture	Weekly exams - pre and post questions
11	2	The student understands the lesson	Capacity measuring bridges, capacity comparison bridges,	Theoretical lecture	Weekly exams - pre

			shrink bridges, and Wayne bridges		and post questions
12	2	The student understands the lesson	Wayne bridge for measuring frequency, cases of lack of balancing instruments, how to balance the bridge	Theoretical lecture	Weekly exams - pre and post questions
13	2	The student understands the lesson	Devices for measuring alternating current, electro-dynamometers, structures, and moment equation	Theoretical lecture	Weekly exams - pre and post questions
14	2	The student understands the lesson	Mobile steel measuring devices, installation, moment equations, advantages and disadvantages.	Theoretical lecture	Weekly exams - pre and post questions
15	2	The student understands the lesson	Uniform type measuring devices - full-wave uniform - half-wave uniform - examples.	Theoretical lecture	Weekly exams - pre and post questions
16	2	The student understands the lesson	The use of electro-dynamometers in measuring single-phase power, composition, and the deflection angle equation	Theoretical lecture	Weekly exams - pre and post questions
17	2	The student understands the lesson	Frequency scale, compositions and working principle	Theoretical lecture	Weekly exams - pre and post questions
18	2	The student understands the lesson	Thermal devices, thermocouple device for measuring non-granular shapes	Theoretical lecture	Weekly exams - pre and post questions
19	2	The student understands the lesson	Signal oscilloscope, block diagram, cathode ray diode, assembly, screen, factors for selecting screens, types of screens, optical grid.	Theoretical lecture	Weekly exams - pre and post questions
20	2	The student understands the lesson	Vertical deflection system, functional diagram, input	Theoretical lecture	Weekly exams - pre

			member, attenuator, vertical amplifier, delay line, function and types of delay line		and post questions
21	2	The student understands the lesson	Horizontal deflection system, basic sweep generator, sweep synchronization, mug sweep, horizontal amplifier, oscilloscope figures, passive and active voltage figures, current figures, high voltage figures, Lissajous shapes, phase calculation, frequency calculation	Theoretical lecture	Weekly exams - pre and post questions
22	2	The student understands the lesson	Horizontal deflection system, basic sweep generator, sweep synchronization, mug sweep, horizontal amplifier, oscilloscope figures, passive and active voltage figures, current figures, high voltage figures, Lissajous shapes, phase calculation, frequency calculation	Theoretical lecture	Weekly exams - pre and post questions
23	2	The student understands the lesson	Dual-beam signal plotter, storage signal plotter	Theoretical lecture	Weekly exams - pre and post questions
24	2	The student understands the lesson	Electronic measuring devices, electronic voltmeter, basic transistor type circuit	Theoretical lecture	Weekly exams - pre and post questions
25	2	The student understands the lesson	Analog voltmeter selection considerations, input impedance, voltage range, decibels, sensitivity, versus strip width, current measurement	Theoretical lecture	Weekly exams - pre and post questions

26	2	The student understands the lesson	Analog voltmeter selection considerations, input impedance, voltage range, decibels, sensitivity, versus strip width, current measurement	Theoretical lecture	Weekly exams - pre and post questions
27	2	The student understands the lesson	Analog voltmeter selection considerations, input impedance, voltage range, decibels, sensitivity, versus strip width, current measurement	Theoretical lecture	Weekly exams - pre and post questions
28	2	The student understands the lesson	Simple frequency counter, display counters, time base, signal processing n measurement extending the frequency range of the counter, automatic counters and calculators	Theoretical lecture	Weekly exams - pre and post questions
29	2	The student understands the lesson	Simple frequency counter, display counters, time base, signal processing n measurement extending the frequency range of the counter, automatic counters and calculators	Theoretical lecture	Weekly exams - pre and post questions
30	2	The student understands the lesson	Simple frequency counter, display counters, time base, signal processing n measurement extending the frequency range of the counter, automatic counters and calculators	Theoretical lecture	Weekly exams - pre and post questions

Course Evaluation(practical)

Week	hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student understands the lesson	Familiarizing the student with the measuring devices in the laboratory.	Practical lecture	Weekly exams - pre and post questions
2	2	The student understands the lesson	measure the sensitivity of the galvanometer	Practical lecture	Weekly exams - pre and post questions
3	2	The student understands the lesson	expand the measuring range of the ammeter	Practical lecture	Weekly exams - pre and post questions
4	2	The student understands the lesson	build a series ohmmeter	Practical lecture	Weekly exams - pre and post questions
5	2	The student understands the lesson	Building a parallel ohmmeter	Practical lecture	Weekly exams - pre and post questions
6	2	The student understands the lesson	Calibrating the DC ammeter	Practical lecture	Weekly exams - pre and post questions
7	2	The student understands the lesson	Calibration of a DC voltmeter	Practical lecture	Weekly exams - pre and post questions
8	2	The student understands the lesson	the phenomenon of loading	Practical lecture	Weekly exams - pre and post questions
9	2	The student understands the lesson	the Weston Bridge	Practical lecture	Weekly exams - pre and post questions
10	2	The student understands the lesson	Bridge inductance comparison	Practical lecture	Weekly exams - pre and post questions
11	2	The student understands the lesson	Maxwell Bridge	Practical lecture	Weekly exams - pre and post questions

12	2	The student understands the lesson	Hai Bridge	Practical lecture	Weekly exams - pre and post questions
13	2	The student understands the lesson	a capacity comparison bridge	Practical lecture	Weekly exams - pre and post questions
14	2	The student understands the lesson	the Shirnak Bridge	Practical lecture	Weekly exams - pre and post questions
15	2	The student understands the lesson	Wayne's bridge to measure the vastus	Practical lecture	Weekly exams - pre and post questions
16	2	The student understands the lesson	Wayne bridge for measuring frequency	Practical lecture	Weekly exams - pre and post questions
17	2	The student understands the lesson	Electric dynamometers and measuring devices of the combined type	Practical lecture	Weekly exams - pre and post questions
18	2	The student understands the lesson	Using wattmeters to measure power	Practical lecture	Weekly exams - pre and post questions
19	2	The student understands the lesson	Using wattmeters to measure power	Practical lecture	Weekly exams - pre and post questions
20	2	The student understands the lesson	Use a frequency meter	Practical lecture	Weekly exams - pre and post questions
21	2	The student understands the lesson	Calibration of voltmeters and ammeters for alternating current	Practical lecture	Weekly exams - pre and post questions
22	2	The student understands the lesson	Calibration of the oscilloscope	Practical lecture	Weekly exams - pre and post questions
23	2	The student understands the lesson	Using a dual-beam oscilloscope to measure the phase angle	Practical lecture	Weekly exams - pre and post questions

24	2	The student understands the lesson	Measuring an angle using the Lissajous method	Practical lecture	Weekly exams - pre and post questions
25	2	The student understands the lesson	Frequency measurement using the Lissajous method	Practical lecture	Weekly exams - pre and post questions
26	2	The student understands the lesson	Comparing the measurement error rate between a digital and a regular voltmeter	Practical lecture	Weekly exams - pre and post questions
27	2	The student understands the lesson	Comparing frequency measurement with a frequency measuring device and an oscilloscope	Practical lecture	Weekly exams - pre and post questions
28	2	The student understands the lesson	Calibration and maintenance of the amphotometer	Practical lecture	Weekly exams - pre and post questions
29	2	The student understands the lesson	Calibration and maintenance of the oscilloscope	Practical lecture	Weekly exams - pre and post questions
30	2	The student understands the lesson	Calibration and maintenance of digital voltmeters	Practical lecture	Weekly exams - pre and post questions

128. Course Evaluation

Distribution of the score out of 100 according to the tasks assigned to the student: -

- 1- First semester exams = 10 theoretical + 10 practical +5 assessment= 25 marks.
- 2 - Second semester exams = 10 theoretical + 10 practical +5 assessment= 25 marks.
- 3- Final exams = 40 theoretical + 10 practical = 50 marks.

129. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Electronic measuring devices and measurement techniques / Hani Aziz, Abdullah Muhammad, Gabriel Ishua, Technical Education Authority / Mosul University Press / 1991
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Main references (sources)	• “Electronic Instrumentation and measurement Techniques “By: Cooper Helfick Prentice – hall international • “A Course in electrical and electronic measurement and instrumentation By : A;K . Sawhney .
Recommended books and references (scientific journals, reports...)	https://ar.workprotocol.com/news/a-comprehensive-guide-to-digital-clamp-multime-73227523.html
Electronic References, Websites	https://kahraba4u.com

Course Description Form

130.	Course Name: Electronic medical instrumentation
131.	Course Code: none
132.	Semester / Year: Year
133.	Description Preparation Date:14/10/2024
134.	Available Attendance Forms: in-person attendance
135.	Number of Credit Hours (Total) / Number of Units (Total):120h/ 8 units
136.	Course administrator's name (mention all, if more than one name)
	Name: Zahraa Mohammed Taher Rashid Email: zahraa.mrashid@atu.edu.iq
137.	Course Objectives
Course Objectives	The student will be able to know the exact parts of a medi instrumentation and how to maintains it.

138. Teaching and Learning Strategies

Strategy	1. Peer Tutoring and Assessment Peer tutoring and assessment activities require students to understand the subject material and decide how to share it with others. Students learn as they teach concepts, explain ideas, participate in educational activities and test knowledge. Through peer tutoring and assessment, your child can hone their organizational and collaborative skills, discover how to give and receive feedback, and evaluate their own learning. 2. Brainstorming Creative juices flow during simple or group brainstorming sessions. Students focus on one topic and freely discuss their ideas, thoughts and opinions. There are no right or wrong answers during brainstorming sessions where numerous, creative ideas are put forth and debated on. These brainstorming sessions help your children develop confidence and their communication and collaboration skills. 3. Student-Led Classes Students must fully understand coursework, spend time preparing an in-depth lesson and be prepared to answer questions in order to lead a class. With this teaching strategy, students take on individual tasks or group assignments to demonstrate their knowledge, boost their presentation skills and discover how to share and collaborate with their peers. Students are sometimes invited to lead the class at OWIS and are assessed for their lesson complexity, preparation and creativity. This teaching method promotes student ownership and helps teachers and students to understand interests, strengths and potential areas for improvement.
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 10/100 2- First term practical lab exam 10/100 3- Second term theoretical exam 10/100 4- Second term practical lab exam 10/100 5- Student assessment 10/100 6- Final theoretical exam 40/100 7- Final practical lab exam 10/100	
Required textbooks (curricular books, if any)	1-Medical instrumentation 2- Medical device technology
Main references (sources)	1- Planning of medical devices 2- Practical medical devices 3- Medical devices applications and design (1 & 2)
Recommended books and references (scientific journals, reports...)	1- Introduction to biomedical device technology 2- Measurement and calibration in medical device technology 3- Medical device technology

Electronic References, Websites	Nour Library
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Course Description Form

139.	Course Name: CONTROL
140.	Course Code:
141.	Semester / Year: Year
142.	Description Preparation Date: 10/10/2024
143.	Available Attendance Forms: in person attendance
144.	Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (30) for both theory and practical	
Number of Units (8)	
145.	Course administrator's name (mention all, if more than one name)
Name: BASIM JABBAR MAJEED	
Email: basim.majeed@atu.edu.iq	
146.	Course Objectives

Course Objectives	Through this course, the student will study the basic sciences of the various branches of control engineering. • General objective: To familiarize the student with the basics and principles of control engineering. • Specific objective: For the student to be able to understand the principles of electrical control in medical devices, distinguish between open-circuit and closed-circuit control circuits, and examine the components of control circuits of both types of open-circuit and closed-circuit.
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A - Expected learning outcomes of the program

1- Knowledge

Scientific and applied knowledge	Providing the student with scientific and applied knowledge that enables him to operate and control medical devices.
Preparing competent technicians	Preparing competent technicians who have the ability to keep pace with the rapid development in the field of controlling the operation of medical devices

2- Skills

Acquire development and updating skills	Acquiring skills to develop and modernize medical devices
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3 - Ethics

Be responsible and manage time at work.	Giving the graduate the ability to learn responsibility, time management, and professionalism in performing the tasks assigned to him.
Dedication, loyalty and commitment	Dedication, sincerity, and adherence to rules, laws, and regulations ensure.

147. Teaching and Learning Strategies

Strategy	Providing an educational environment; It provides students with the necessary knowledge to make the most of the available learning opportunities.
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148. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student understand the lesson	Introduction and definitions of control engineering - open circuit and closed circuit - examples	Theoretical lecture	Weekly exams - pre and post questions
2	2	The student understand the lesson	Control systems - the need for automated control - types of automated control.	Theoretical lecture	Weekly exams pre and post questions
3	2	The student understand the lesson	The basic form of the control system - block diagram - transformation function.	Theoretical lecture	Weekly exams pre and post questions
4	2	The student understand the lesson	Algebra of block diagrams and their laws	Theoretical lecture	Weekly exams pre and post questions
5	2	The student understand the lesson	Simplifying complex block diagrams.	Theoretical lecture	Weekly exams pre and post questions
6	2	The student understand the lesson	Systems with multiple entrances and exits	Theoretical lecture	Weekly exams pre and post questions
7	2	The student understand the lesson	Signal flow diagrams Mason's method - its laws.	Theoretical lecture	Weekly exams pre and post questions
8	2	The student understand the lesson	Extracting the transformational function using Mason's method - examples.	Theoretical lecture	Weekly exams pre and post questions
9	2	The student understand the lesson	Physical systems - electrical and mechanical systems	Theoretical lecture	Weekly exams pre and post questions
10	2	The student understand the lesson	Extracting the transformational functions of the systems - theories of compatibility between systems	Theoretical lecture	Weekly exams pre and post questions

11	2	The student understand the lesson	Laplace transform - transformation theorems - inverse Laplace transform	Theoretical lecture	Weekly exams pre and post questions
12	2	The student understand the lesson	Use transformation to solve differential equations	Theoretical lecture	Weekly exams pre and post questions
13	2	The student understand the lesson	Analog Calculator – Use the op magnifier in the analog calculator	Theoretical lecture	Weekly exams pre and post questions
14	2	The student understand the lesson	Solve differential equations using an analog calculator.	Theoretical lecture	Weekly exams pre and post questions
15	2	The student understand the lesson	Comparison between analog circuits - electronic circuits - modeling.	Theoretical lecture	Weekly exams pre and post questions
16	2	The student understand the lesson	Types of input signal stability and system type.	Theoretical lecture	Weekly exams pre and post questions
17	2	The student understand the lesson	Stability	Theoretical lecture	Weekly exams pre and post questions
18	2	The student understand the lesson	Identifying the S-level Determining the poles and zeros of the S-level control system and determining stability	Theoretical lecture	Weekly exams pre and post questions
19	2	The student understand the lesson	Roth scale stability - scale theories	Theoretical lecture	Weekly exams pre and post questions
20	2	The student understand the lesson	Use the scale to find out	Theoretical lecture	Weekly exams pre and post questions
21	2	The student understand the lesson	Limits of stability - examples.	Theoretical lecture	Weekly exams pre and post questions
22	2	The student understand the lesson	Response - the transient response and its classification into temporal and frequency - the temporal response of first-order system.	Theoretical lecture	Weekly exams pre and post questions
23	2	The student understand the lesson	Time response of a second order system	Theoretical lecture	Weekly exams pre and post questions

24	2	The student understand the lesson	Factors determining stability in time and circumstances of the use - examples.	Theoretical lecture	Weekly exams pre and post questions
25	2	The student understand the lesson	Frequency response Types of frequency response - examples	Theoretical lecture	Weekly exams pre and post questions
26	2	The student understand the lesson	Electronic controller and their types	Theoretical lecture	Weekly exams pre and post questions
27	2	The student understand the lesson	Uses of electronic controllers in control systems and their impact on system performance	Theoretical lecture	Weekly exams pre and post questions
28	2	The student understand the lesson	Error rate - types of errors in the system	Theoretical lecture	Weekly exams pre and post questions
29	2	The student understand the lesson	How to calculate the error rate	Theoretical lecture	Weekly exams pre and post questions
30	2	The student understand the lesson	Root locus method - curve rules used for this method - examples.	Theoretical lecture	Weekly exams pre and post questions

149. Course Evaluation

Distribution of the score out of 100 according to the tasks assigned to the student: -

1- First semester exams = 10 theoretical + 10 practical = 20 marks.

2 - Second semester exams = 10 theoretical + 10 practical = 20 marks.

3- 1- Final exams = 40 theoretical + 10 practical = 50 marks.

4- Annual evaluation, such as attendance, daily preparation, oral exams, reports, activities, etc. = 10 marks.

150. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Control book
Main references (sources)	Sources of ancient and modern control less books
Recommended books and references (scientific journals, reports...)	Related journals and research papers
Electronic References, Websites	Trusted and approved sites only

Course Description Form

151. Course Name: Crimes of the Baath Regime in Iraq	
152. Course Code: none	
153. Semester / Year: Year	
154. Description Preparation Date: 03/10/2024	
155. Available Attendance Forms: in-person attendance	
156. Number of Credit Hours (Total) / Number of Units (Total)	
30 hours/ 1 unit	
157. Course administrator's name (mention all, if more than one name)	
Name: Zaid Khudhur	
Email: zaid.bermany@atu.edu.iq	
158. Course Objectives	
Course Objectives	At the end of the course the student will be able to: 1- The student gets to know the concept of crimes. 2- Learn about the dictatorship of the former regime
159. 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 the questions.

160. Course Structure					
Week	Hours	Unit or subject name	Required Learning Outcomes	Learning method	Evaluation method
1 st week	1	Introduction to the concept of crimes	The student understands the lesson	Theoretical lecture	oral examination and quiz
2 nd week	1	History of crime committed by the authority	The student understands the lesson	Theoretical lecture	oral examination and quiz

3 rd week	1	Crime departments	The student understands the lesson	Theoretical lecture	oral examination and quiz
4 th week	1	Crime departments.	The student understands	Theoretical lecture	oral examination and quiz
5 th week	1	Types of international crimes	the lesson	Theoretical lecture	oral examination and quiz
6 th week	1	Types of international crimes.	The student understands	Theoretical lecture	oral examination and quiz
7 th week	1	Human rights in Roman civilization.	the lesson	Theoretical lecture	oral examination and quiz
8 th week	1	Decisions issued by the Supreme Court.	The student understands	Theoretical lecture	oral examination and quiz
9 th week	1	Decisions issued by the Supreme Court.	the lesson	Theoretical lecture	oral examination and quiz
10 th week	1	Decisions issued by the Supreme Court.	The student understands	Theoretical lecture	oral examination and quiz
11 th week	1	Psychological crimes.	The student understands	Theoretical lecture	oral examination and quiz
12 th week	1	Mechanisms of psychological crimes.	the lesson	Theoretical lecture	oral examination and quiz
13 th week	1	Psychological effects of crimes.	The student understands	Theoretical lecture	oral examination and quiz
14 th week	1	Baath crimes against religion	the lesson	Theoretical lecture	oral examination and quiz
15 th week	1	Baath crimes against religion.	The student understands	Theoretical lecture	oral examination and quiz
16 th week	1	Baath prisons.	The student understands the lesson	Theoretical lecture	oral examination
17 th week	1	Environmental crimes	The student understands the lesson	Theoretical lecture	oral examination
18 th week	1	Use of internationally prohibited weapons	The student understands	Theoretical lecture	oral examination
19 th week	1	Use of internationally prohibited weapons.	the lesson	Theoretical lecture	oral examination
20 th week	1	scorched earth policy.	The student understands	Theoretical lecture	oral examination
21 th week	1	scorched earth policy.	the lesson	Theoretical lecture	oral examination
22 th week	1	scorched earth policy.	The student understands	Theoretical lecture	oral examination
23 th week	1	Mass grave crimes	the lesson	Theoretical lecture	oral examination

24 th week	1	Introduction to mass graves	The student understands	Theoretical lecture	oral examination
25 th week	1	Genocide cemeteries events.	the lesson	Theoretical lecture	oral examination
26 th week	1	Genocide grave sites.	The student understands	Theoretical lecture	oral examination
27 th week	1	Genocide grave sites.	the lesson	Theoretical lecture	oral examination
28 th week	1	Genocide grave sites.	The student understands	Theoretical lecture	oral examination
29 th week	1	Genocide grave sites.	the lesson	Theoretical lecture	oral examination
30 th week	1	Crime departments	The student understands	Theoretical lecture	oral examination

161. Course Evaluation

Distribution of the score out of 100 according to the tasks assigned to the student: -

- 1- First semester exams = 20 marks.
- 2 - Second semester exams = 20 marks.
- 3- assessment= 10 marks.
- 4- Final exams = 50 marks.

162. Learning and Teaching Resources

Required textbooks (curricular books, if any)	The main book supply by the ministry of high education
Main references (sources)	Al Baath crime's
Recommended books and references (scientific journals, reports...)	none

Course Description Form

163. Course Name: Electromechanical Medical Devices					
164. Course Code: none					
165. Semester / Year: Year					
166. Description Preparation Date: 14-10-2024					
167. Available Attendance Forms: in-person attendance					
168. Number of Credit Hours (Total) / Number of Units (Total) 8 units					
169. Course administrator's name (mention all, if more than one name)					
Name: Dr. Shaima Ibraheem Jabbar					
Email: shaima.jabbar@atu.edu.iq					
170. Course Objectives					
Course Objectives	- student understands the main principle and structure of electro-mechanical medical devices - The student learns about how these devices work by tracking block diagram of each device and following the anatomy structure of electro-mechanical medical devices				
171. Teaching and Learning Strategies					
Strategy	Presentation - coordination - training - discussion, and it includes two components: the methodology and the procedure				
172. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Student understands lecture	Introduction to operation of medical devices	Theoretical lecture	Weekly exams Short questions

2	2	Student understands lecture	Identify the component x-rays	Theoretical lecture	Weekly exams Short questions
3	2	Student understands lecture	Determine the ability control infection	Theoretical lecture	Weekly exams Short questions
4	2	Student understands lecture	Selecting high-pres radiation	Theoretical lecture	Weekly exams Short questions
5	2	Student understands lecture	Operating and maintain manual and self-drive devices	Theoretical lecture	Weekly exams Short questions
6	2	Student understands lecture	Examination on radiology scanning devices	Theoretical lecture	Weekly exams Short questions
7	2	Student understands lecture	Monitoring viewing device	Theoretical lecture	Weekly exams Short questions
8	2	Student understands lecture	Translation on machines	Theoretical lecture	Weekly exams Short questions
9	2	Student understands lecture	Magnetic resonance imaging device	Theoretical lecture	Weekly exams Short questions
10	2	Student understands lecture	Master's degree in electrical components	Theoretical lecture	Weekly exams Short questions
11	2	Student understands lecture	Speed control device control circuit	Theoretical lecture	Weekly exams Short questions
12	2	Student understands lecture	Wax bath operating device	Theoretical lecture	Weekly exams Short questions
13	2	Student understands lecture	Ultrasound transmitter	Theoretical lecture	Weekly exams Short questions
14	2	Student understands lecture	Simple, simple and more devices	Theoretical lecture	Weekly exams Short questions
15	2	Student understands lecture	Electrical stimulation device	Theoretical lecture	Weekly exams Short questions
16	2	Student understands lecture	Specialization on members of the incubator system	Theoretical lecture	Weekly exams Short questions
17	2	Student understands lecture	The incubator temperature control was checked	Theoretical lecture	Weekly exams Short questions
18	2	Student understands lecture	Study material for members of the industrial college system	Theoretical lecture	Weekly exams Short questions
19	2	Student understands lecture	Connecting the artificial kidney device to the patient	Theoretical lecture	Weekly exams Short questions
20	2	Student understands lecture		Theoretical lecture	Weekly exams Short questions
21	2	Student understands lecture	Identify the types machines used in industrial college	Theoretical lecture	Weekly exams Short questions
22	2	Student understands lecture	View the components of anesthesia machine	Theoretical lecture	Weekly exams Short questions
23	2	Student understands lecture	View central medical networks	Theoretical lecture	Weekly exams Short questions
24	2	Student understands lecture	Establishing central medical gas networks	Theoretical lecture	Weekly exams Short questions
25	2	Student understands lecture	Operating and maintain the centrifuge	Theoretical lecture	Weekly exams Short questions
26	2	Student understands lecture	Operating and maintain the microscope	Theoretical lecture	Weekly exams Short questions
27	2	Student understands lecture	Operating and maintain device to measure acidity and basicity, PH	Theoretical lecture	Weekly exams Short questions

28	2	Student understands lecture	Operating and maintaini hemoglobin measu device	Theoretical lecture	Weekly exams Short questions
29	2	Student understands lecture	Operating and maintai the self-analysis device	Theoretical lecture	Weekly exams Short questions
30	2	Student understands lecture	Operating and maintai the lithotripsy device	Theoretical lecture	Weekly exams Short questions

173. Course Evaluation

Distribution of the score out of 100 according to the tasks assigned to the student: -

1- First semester exams = 10 theoretical + 10 practical = 20 marks.

2 - Second semester exams = 10 theoretical + 10 practical = 20 marks.

3- Assessment =10 marks.

4- Final exams = 40 theoretical + 10 practical = 50 marks.

174. Learning and Teaching Resources

Required textbooks (curricular books, if any)	John D. Enderle and Joseph D. Bronzino Medical Devices Improving Health Care Through a Multidisciplinary Approach
Main references (sources)	Books, internet
Recommended books and references (scientific journals, reports...)	none
Electronic References, Websites	none

Course Description Form

175.	Course Name: Applications of Computer2				
176.	Course Code: none				
177.	Semester / Year: Year				
178.	Description Preparation Date:30\10\2024				
179.	Available Attendance Forms: in person				
180.	Number of Credit Hours (Total) / Number of Units (Total): 60h/ 2 units				
181.	Course administrator's name (mention all, if more than one name)				
Name: Ishraq Merza Hasan					
Email: ishraq.hassan@atu.edu.iq					
182.	Course Objectives				
Course Objectives		Teaching the students about the computer and some applications.			
183.	Teaching and Learning Strategies				
Strategy		Internet			
184. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week1—2:	theoretical=1 Practical=1	Data show, Computer Machine, Screen Show	Security and Networking: What is a network? Types of networks. Basic network components. Network Security Basics. Understanding network threats. Network Troubleshooting	Lectures and practical training	Written exams And practical training
Week 3-4	theoretical=1 Practical=1	Data show, Computer Machine, Screen Show	E-Commerce: Concepts of Electronic banking	Lectures and practical training	Written exams And practical training

Week5-8:	theoretical=1 Practical=1	Data show, Computer Machine, Screen Show	services this include online banking: ATM and debit card services, Phone banking, SMS banking, electronic alert, Mobile banking	Lectures and practical training	Written exams And practical training
Week 9-12:	theoretical=1 Practical=1	Data show, Computer Machine, Screen Show	Computer Troubleshooting: Identifying and solving common hardware and software problems that computer users encounter. Basic troubleshooting techniques and tools for diagnosing and resolving issues.	Lectures and practical training	Written exams And practical training
Week 13-16	theoretical=1 Practical=1	Data show, Computer Machine, Screen Show	AI in Our Daily Lives: AI in smartphones and virtual assistants like Siri or Google Assistant.)	Lectures and practical training	Written exams And practical training
Week 17-22	theoretical=1 Practical=1	Data show, Computer Machine, Screen Show	Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising.	Lectures and practical training	Written exams And practical training
Week 23-24	theoretical=1 Practical=1	Data show, Computer Machine, Screen Show	AI and Society: (How AI affects social, AI and international relations, AI and the future of humanity.)	Lectures and practical training	Written exams And practical training
Week 25-26	theoretical=1 Practical=1	Data show, Computer Machine, Screen Show	Ethical Challenges in AI : (AI ethics, privacy and surveillance, the impact of AI on the job market.)	Lectures and practical training	Written exams And practical training
Week 27-28	theoretical=1 Practical=1	Data show, Computer Machine, Screen Show	The Future of AI (Future trends in AI, recent research and emerging technologies.	Lectures and practical training	Written exams And practical training

185. Course Evaluation

The degree is distributed as following:

- 1- 10 marks for the first theoretical semester and 10 marks for practical.
- 2- 10 marks for the second semester, theoretical + 10 marks for practical
- 3 - 10 marks for student activities
- 4 - 50 marks for the final exam

186. Learning and Teaching Resources

Required textbooks (curricular books, if any)	none
Main references (sources)	1. Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020)

	2. Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete16,"th Edition (2020) 3. .Ahmed Banafa, "Introduction to Artificial Intelligence (AI)", Ist Edition (2024) 4. .الخضر على الخضر بحاث, " أساسيات الحاسوب 2016 . 5. الدكتور عادل عبد النور, مدخل إلى عالم الذكاء الاصطناعي " 2005
Recommended books and references (scientific journals, reports...)	https://www.noor-book.com/
Electronic References, Websites	https://www.noor-book.com/

Course Description Form

187.	Course Name: Maintenance of Medical Devices
188.	Course Code: none
189.	Semester / Year: Year
190.	Description Preparation Date: 16-10-2024
191.	Available Attendance Forms: in- person attendance
192.	Number of Credit Hours (Total) / Number of Units (Total) 120 hours/ 8 units
193.	Course administrator's name (mention all, if more than one name) Name: Safa Isam Hakeem Email: safa.hakeem@atu.edu.iq
194.	Course Objectives
Course Objectives	• Qualifying the student to be able to maintain and operate electronic and electromechanical medical devices • to be able to identify and address their malfunctions.
195.	Teaching and Learning Strategies

Strategy	Presentation – coordination – training – discussion, and it includes two components: the methodology and the procedure
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196. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Student understands lecture	Occupational safety of patient and workers.	Theoretical lecture	Weekly exams Short questions
2	2	Student understands lecture	Types of maintenance	Theoretical lecture	Weekly exams Short questions
3	2	Student understands lecture	Types of malfunctions methods of identify them	Theoretical lecture	Weekly exams Short questions
4	2	Student understands lecture	ECG device maintenance	Theoretical lecture	Weekly exams Short questions
5	2	Student understands lecture	X-ray machine maintenance	Theoretical lecture	Weekly exams Short questions
6	2	Student understands lecture	Pressure device maintenance	Theoretical lecture	Weekly exams Short questions
7	2	Student understands lecture	Viewing device maintenance	Theoretical lecture	Weekly exams Short questions
8	2	Student understands lecture	Maintenance of the MRI machine	Theoretical lecture	Weekly exams Short questions
9	2	Student understands lecture	Defibrillator maintenance	Theoretical lecture	Weekly exams Short questions
10	2	Student understands lecture	Dental device maintenance	Theoretical lecture	Weekly exams Short questions
11	2	Student understands lecture	Maintenance of compressor and dental chair	Theoretical lecture	Weekly exams Short questions
12	2	Student understands lecture	Respiratory equipment maintenance	Theoretical lecture	Weekly exams Short questions
13	2	Student understands lecture	Wax bath device maintenance	Theoretical lecture	Weekly exams Short questions
14	2	Student understands lecture	Clinical monitoring device maintenance	Theoretical lecture	Weekly exams Short questions
15	2	Student understands lecture	Maintenance of the physical therapy device	Theoretical lecture	Weekly exams Short questions
16	2	Student understands lecture	Baby incubator device maintenance	Theoretical lecture	Weekly exams Short questions
17	2	Student understands lecture	EMG device maintenance	Theoretical lecture	Weekly exams Short questions
18	2	Student understands lecture	Vocabulary details	Theoretical lecture	Weekly exams Short questions

19	2	Student understands lecture	Fetal monitor maintenance	Theoretical lecture	Weekly exams Short questions
20	2	Student understands lecture	Maintenance of industrial kidney device	Theoretical lecture	Weekly exams Short questions
21	2	Student understands lecture	Birth monitor maintenance	Theoretical lecture	Weekly exams Short questions
22	2	Student understands lecture	Sonar device maintenance	Theoretical lecture	Weekly exams Short questions
23	2	Student understands lecture	Maintenance of sonar display devices	Theoretical lecture	Weekly exams Short questions
24	2	Student understands lecture	Anesthesia machine maintenance	Theoretical lecture	Weekly exams Short questions
25	2	Student understands lecture	Centrifuge maintenance	Theoretical lecture	Weekly exams Short questions
26	2	Student understands lecture	Electronic balance and microscope	Theoretical lecture	Weekly exams Short questions
27	2	Student understands lecture	Spectrophotometer maintenance	Theoretical lecture	Weekly exams Short questions
28	2	Student understands lecture	Hemoglobin measuring device	Theoretical lecture	Weekly exams Short questions
29	2	Student understands lecture	Maintenance of the auto analyzer	Theoretical lecture	Weekly exams Short questions
30	2	Student understands lecture	Maintenance of the surgical folding device	Theoretical lecture	Weekly exams Short questions

197. Course Evaluation

- 1- Thermotical exam 80 marks.
- 2- Assessment 20 marks.

198. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Internet, YouTube
Main references (sources)	Books, internet
Recommended books and references (scientific journals, reports...)	https://www.noor-book.com/tag/
Electronic References, Websites	https://www.alfreed-ph.com/2018/03/Medical-Maintenance-Management-pdf.html

Course Description Form

199.	Course Name: Microcomputers				
200.	Course Code: none				
201.	Semester / Year: Year				
202.	Description Preparation Date: 24/10/2023				
203.	Available Attendance Forms: in-person attendance				
204.	Number of Credit Hours (Total) / Number of Units (Total) : (120)/8 units				
205.	Course administrator's name (mention all, if more than one name)				
Name: Mohammad Musadeq Al-Shalah					
Email: mohammadalshalah37@atu.edu.iq					
206.	Course Objectives				
Course Objectives		The student will be able to know the exact parts of a computer and how to program it. 1– Applying general electrical laws when analyzing electrical circuits 2– Introducing the student to the components of the microcomputer, microprocessors, how to program them and their uses. 3– Studying the components of microcomputers and microprocessors (8086–Z80–8085) and how to deal with them and programming them in the language of the machine.			
207. Teaching and Learning Strategies					
Strategy		1- white board & Marker 2- data show			
208. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1 st	4	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	Introducing microcomputers - their types, and their relationship to other electronic computers		Theoretical And Practical lectures	Oral and written exams
3 rd	4	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	Microcomputer architecture - block diagram - input unit - keyboard - mouse - the two types of mice and a comparison between them - the input port.		Theoretical And Practical lectures	Oral and written exams
5 th	4	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	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	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	CPU - Microprocessor - Definition - Block diagram showing the architecture of the microprocessor - Microprocessor 8085 - Terminal diagram and its		Theoretical And Practical lectures	Oral and written exams

		block diagram - Data bus bumpers - Address bus bumpers and a comparison between them.			
9 th	4	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	Informing the Z-80 microprocessor and comparing it with the information of the 8085 microprocessor - Arithmetic example - PC program counter - SP stack pointer - Instruction register - Instruction decoder - Control unit.		Theoretical And Practical lectures	Oral and written exams
11 th	4	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	Directions of the data transmission group and its types - solving examples - writing an application program.		Theoretical and practical lectures	Oral and written exams
13 th	4	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	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 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	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 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	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	Stages of executing a direct - 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 from memory.		Theoretical and practical lectures	Oral and written exams
20 th	4	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	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	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	Writing a program for an ascending counter - with an example application		Theoretical and practical lectures	Oral and written exams
24 th	4	Writing a program for a countdown timer - with an example		Theoretical and practical lectures	Oral and written exams
25 th	4	Writing an ascending/descending		Theoretical and	Oral and written exams

		counter program - with an example application.		practical lectures	
26 th	4	Microprocessor 8086 - Specifications - Architecture Terminal Diagram.		Theoretical and practical lectures	Oral and written exams
27 th	4	Addressing types for the 80 microprocessor - Directions for data transfer - Direction for multiplication and division - Examples of other instructions.		Theoretical and practical lectures	Oral and written exams
28 th	4	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	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	A general review of the curriculum and vocabulary		Theoretical and practical lectures	Oral and written exams

209. Course Evaluation

- 1- First term theoretical exam 10/100
- 2- First term practical lab exam 10/100
- 3- Second term theoretical exam 10/100
- 4- Second term practical lab exam 10/100
- 5- Student assessment 10/100
- 6- Final theoretical exam 40/100
- 7- Final practical lab exam 10/100

210. Learning and Teaching Resources

1- Required prescribed books	1- Microcomputer techniques written by (Dr. Riyad Kama Abdel Hadi Ahmed) 2- Digital Electronics, written by (Malvino) 3- Modern Digital Electronics, written by (R.P. Jain) (Translated by Dhia Mahdi)
2-(Main references (sources))	4-Modern Digital Electronic (R-P. Jain) TAT Mc-Graw Hill 1984. 5-Micro Computer Technology (Julian Ollmann)) Pitman Books -Limited -1982. 6-Micro Computer & Their Interfacing ((RC Holland)) Pergamum on Press 1984.
Recommended books and references (scientific journals, reports,..)	none

Course Description Form

Course Name: General Arabic

211. Course Code: none

212. Semester / Year: Semester

213. Description Preparation Date: 1/11/2024

214. Available Attendance Forms: in person

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

30 hours/2 units

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

Name: Balqees Sattar Jaber

Email: balqees.jaber.iba11@atu.edu.iq

217. Course Objectives

Course Objectives

- Trying to raise the student to love Arabic because it is our mother tongue.
- The student should learn about the beauty of the Arabic language and its literature.
- The student acquires the ability to study the branches of the Arabic language.
- The student should avoid grammatical, spelling and linguistic errors in writing and administrative correspondence.
- The student should be able to receive the correct ideas and the correct meaning, by controlling the language in which he communicates.
- Developing the student's literary taste so that he can understand the aesthetic aspects of speech styles, meanings and images.

	• Developing the student's ability and spelling and writing skills. • Helping the student understand complex structures and obscure methods and enabling him to think accurately. • Enabling the student to write the research assigned to him in the correct language free of linguistic errors.
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218. Teaching and Learning Strategies

Strategy	• Lecture, use of blackboard and delivery • Use of demonstrations (using diagrams, pictures, and educational films) • Interactive Discussion • Self-education • brainstorming
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219. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	2	The student understands the lesson	What is parsing? What are the parsing marks? What is the difference between them?	Lecture using White board	Daily oral review of the previous lecture
2	2	The student understands the lesson	What are the parts of speech? What is the definition of a noun? What is the definition of a verb? What is the difference between a noun and a verb?	Lecture using White board	Daily oral review of the previous lecture
3	2	The student understands the lesson	What is a nominal sentence? What is the mobtada? What is the khabar? What are the types of mobtada? What are the types of khabar?	Lecture using White board	Daily oral review of the previous lecture
4	2	The student understands the lesson	What is administrative discourse? What is the importance of language in administrative discourses?	Lecture using White board	Daily oral review of the previous lecture
5	2	The student understands	What is the declined noun? What are its types? What is the non-declinable noun?	Lecture using White board	Daily oral review of

		the lesson	What is the difference between the definite noun and the indefinite noun?		the previous lecture
6	2	The student understands the lesson	What is the abrogator of sentence? What are the types of abrogators? What is the function of abrogator? What is the parsing of the abrogator sentence?	Lecture using White board	Daily oral review of the previous lecture
7	2	The student understands the lesson	What is the difference between extended taa and the tied taa? When is the tied taa written and when is it written as extended taa? The difference between the taa and the haa?	Lecture using White board	Daily oral review of the previous lecture
8	2	The student understands the lesson	What is prose? The difference between prose and poetry? The importance of prose in Arabic What is the vocative? What are the types of vocative? What is the sign of the vocative?	Lecture using White board	Daily oral review of the previous lecture
9	2	The student understands the lesson	What are the dependents? What are the types of dependents? What is the adjective? What is its parsing? What is the emphasis? What is its parsing?	Lecture using White board	Daily oral review of the previous lecture
10	2	The student understands the lesson	How do we extract the adjective and the affirmation from the Quran and the eloquent texts? What is the substitute? What are its types? What is its parsing? What is the conjunction? What are the conjunction letters? What is the parsing of the conjoined?	Lecture using White board	Daily oral review of the previous lecture
11	2	The student understands the lesson	How to extract the substitute and distinguish it from the adjective? How do we extract the word and meaning from Arabic dictionaries?	Lecture using White board	Daily oral review of the previous lecture
12	2	The student understands the lesson	What is scientific research? How does a researcher write scientific research?	Lecture using White board	Daily oral review of the

					previous lecture
13	2	The student understands the lesson	How does a student write scientific research? What is justice? What is social justice? Where is it mentioned in the Holy Quran?	Lecture using White board	Daily oral review of the previous lecture
14	2	The student understands the lesson	What are morals? What are good morals? How does a person maintain his good conduct and behavior? What is Andalusian poetry? And how is it distinguished from other eras?	Lecture using White board	Daily oral review of the previous lecture
15	2	The student understands the lesson	What is an article? What are its types? What are its components? How do you write an article?	Lecture using White board	Daily review of previous lecture

Course Evaluation .220

Distributing the score out of 100 according to the tasks assigned to the student as following:

- 1- First term theoretical exam 40/100
- 2- Student assessment 10/100
- 3- Final theoretical exam 50/100

221. Learning and Teaching Resources

Required textbooks (curricular books, if any)	none
Main references (sources)	The Holy Quran, History of Arabic Literature Dr. Sha Dayf, Collector of Arabic Lessons Mustafa Ghala Comprehensive Grammar Abbas Hassan
Recommended books and references (scientific journals, reports...)	The Origins of Grammar by Ibn Al-Sarraj Ibn Aqli's explanation of Ibn Malik's Alfiyyah
Electronic References, Websites	Electronic references, websites