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

Academic Program and Course Description Guide

2026

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: Al-Furat Al-Awsat Technical University
College/Institute: Technical Institute / Najaf
Scientific Department: Medical Devices Technology
Academic of professional program: Diploma in Medical Devices Techniques
Final certificate name: Diploma in Medical Devices Techniques
Academic system: Annual
Description preparation date: 2026
Date of File Completion: 2026

Signature:
Name of Head of Department:
Dr. Mohammed Kareem Khashan

Signature:
Name of Scientific Assistant:
11/2/2026

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Prof. Dr. Hyder Hassan Balla

I. Program Vision

The department of medical devices techniques at the Najaf 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•**
Institution Requirements	19	109	17.4%	
College Requirements	15	125	12%	
Department Requirements	15	125	12%	
Summer Training		Without units		
Other				

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

7. Program Description

Year/Level	**Course Code**	**Course Name**	**Credit** Hours	
			theoretical	**practical**
2nd **Stage**		Electromechanical Medical Devices	2	2
rd **Stage**		Microcomputers	2	2
2nd **Stage**		Control	2	2
2nd **Stage**		Technical English Language	1	-
2nd **Stage**		Electronic measuring devices	2	2
2nd **Stage**		Maintenance of medical devices	1	2
2nd **Stage**		Electronic medical devices	2	2
2nd **Stage**		Computer applications 2	1	2
rd **Stage**		Electronic circuits	2	2
1st stage		Digital circuits	2	2
1st stage		Electronics	2	2
1st stage		Technical English Language	1	-
1st stage		Mathematics	2	-
1st stage		Electrical Circuits and Measurements	2	2
1st stage		Human rights and democracy	2	-
1st stage		Computer Applications 1	1	2
1st stage		Engineering Drawing	-	3
1st stage		Physiology	2	-

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 emphases on the important points.

I 0. 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	Ph.D. Biomedical Engineering	Biomedical Engineering			I	-
Lecturer	Ph.D. Electrical Engineering	Communications Engineering			I	
Lecturer	Ph.D. Electrical Engineering	Electrical and electronic engineering			I	
Lecturer	Master's degree in electrical engineering	electrical engineering			I	
Lecturer	Master's degree in electrical	Biomedical			I	

	engineering					
Assistant Lecturer	Master of Computer Engineering	Computer Engineering			I	
Assistant Lecturer	Master's degree in Electrical Engineering	Power			I	
Assistant Lecturer	Master's degree in Electrical Engineering	Renewable Energy			1	
Assistant Lecturer	Master's degree in Electrical Engineering	Electrical Engineering			1	
Assistant Lecturer	Master's degree in Electrical Engineering	Electronic			1	
Assistant Lecturer	Master's degree in Electrical Engineering	Electronics and Communications			I	
Assistant Lecturer	Master's degree in Electrical Engineering	Electronic			1	
Assistant Lecturer -	Master's degree in Electrical Engineering	Electrical Power			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

1- Text books

2- Books recommended by lecturers

3- Some reliable internet sites.

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.

Program Skills Outline

Year/Level	Course Code	Course Name	Basic or optional	Required program Learning outcomes											
				Knowledge				Skills				Ethics			
				A1	A2	A3	**A4**	**B1**	B2	B3	B4	C1	C2	C3	C4
2nd 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 Laneua2e	Basic			■		■	■			■		■	■
1st stage		Electrical Circuits and Measurements	Basic		■		■	■	■		■		■	■	■
		Mathematics	Basic			■		■	■			■		■	■
		Factories	Basic				■	■					■	■	
		Computer Aoolicationsl	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:
3. Semester/ Year: Year
4. Description Preparation Date: 2026
5. Available Attendance Forms: attendance in person
6. Number of Credit Hours (Total) / Number of Units (Total)
4 hours per week/ 4 units
7. Course administrator's name (mention all, if more than one name)
8. Course Objectives

Course Objectives	• Use of electronic laboratory equipment. • Connecting electronic components in different circuits • Learn specifications and inspection of electronic componer
9. Teaching and Learning Strategies	
Strategy	**The methods that used in teaching of digital circuits module are:** I. **Lecture by the instructor (lecturer).** **2. Class discussion directed by the instructor.** **3. Recitation oral questions by teacher answered orally by students.** **4- Using of white board by the instructor as aid in teaching.** ***5-*** **Tutorial.**

1O. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

First	4	The studen understand The lesson	Learn about the use of equipment used in the laboratory.	Lecture usmg whiteboard	Quiz, discussion and homework
Second	4	The studen understand The lesson	P-n junction forward and reverse.	Lecture using whiteboard	Quiz, discussion and homework
Third	4	The studer understand The lesson	A half-wave rectifier.	Lecture using whiteboard	Quiz, discussion and homework
Fourth	4	The studen understand The lesson	Full wave rectifier using a center tap transformer	Lecture using whiteboard	Quiz, discussion and homework
Fifth	4	The studen understand The lesson	Full-wave bridge rectifier.	Lecture using whiteboard	Quiz, discussion and homework
Sixth	4	The studen understand The lesson	Half-wave rectifier with a filter.	Lecture using whiteboard	Quiz, discussion and homework
Seventh	4	The studen understand The lesson	Full-wave rectifier with a filter	Lecture using whiteboard	Quiz, discussion and homework
Eighth	4	The studen understand The lesson	Constant voltage multiplier.	Lecture using whiteboard	Quiz, discussion and homework
Ninth	4	The studen understand The lesson	double Zener - forward and reverse properties	Lecture using whiteboard	Quiz, discussion and homework
Tenth	4	The studen understand The lesson	Use of a Zener diode in constant voltage regulation.	Lecture using whiteboard	Quiz, discussion and homework
Eleventh	4	The studen understand The lesson	bipolar transistor - common base connection properties.	Lecture using whiteboard	Quiz, discussion and homework
twelveth	4	The studen understand The lesson	Common emitter connection.	Lecture using whiteboard	Quiz, discussion and homework
Thirteenth	4	Thestuden understand The lesson	Common base amplifier.	Lecture using whiteboard	Quiz, discussion and homework
fourteenth	4	The studen understand The lesson	Common emitter amplifier. Nineteenth Combined Bank Amplifier.	Lecture using whiteboard	Quiz, discussion and homework
Fifteenth	4	The studen understand	joint mosque amplifier.	Lecture using	Quiz, discussion and homework

		The lesson		whiteboard	
Sixteenth	4	The studen understand The lesson	Sixteenth: Using a transistor in voltage regulation.	Lecture using whiteboard	Quiz, discussion and homework
Seventeenth	4	The studen understand The lesson	FET transistor - property curves	Lecture using whiteboard	Quiz, discussion and homework
eighteen	4	The studen understand The lesson	Common source amplifier.	Lecture using whiteboard	Quiz, discussion and homework
Nineteenth	4	The studen understand The lesson	Combined Bank Amplifier.	Lecture using whiteboard	Quiz, discussion and homework
Twenty	4	The studen understand The lesson	properties of light emitting diode (LED).	Lecture using whiteboard	Quiz, discussion and homework
Twenty- one	4	The studen understand The lesson	Properties of the photodiode	Lecture using whiteboard	Quiz, discussion and homework
Twenty-secon	4	The student understands	Use of thyristors - their properties - phase angle control.	Lecture using whiteboard	Quiz, discussion and homework
Twenty-thin	4	Thestuden understand The lesson	Using a thyristor as a dimmer.	Lecture using whiteboard	Quiz, discussion and homework
Twenty-fourt	4	The studen understand The lesson	Hartley oscillator.	Lecture using whiteboard	Quiz, discussion and homework
25th	4	The studen understand The lesson	Colbits Oscillator.	Lecture using whiteboard	Quiz, discussion and homework
Twenty-sixth	4	The studen understand The lesson	The unstable vibrator.	Lecture using whiteboard	Quiz, discussion and homework
27th	4	The studen understand The lesson	the stable mono vibrator.	Lecture using whiteboard	Quiz, discussion and homework
Twenty-eight	4	The studen understand The lesson	Bistable vibrator.	Lecture using whiteboard	Quiz, discussion and homework
Twenty-nine	4	The lesson	amplifier circuit for integrated circuit use.	Lecture usmg whiteboard	Quiz, discussion and homework
Thirty	4	The studen understand The lesson	Using an integrated circuit to add and subtract sig;nals.	Lecture using whiteboard	Quiz, discussion and homework

11. Course Evaluation	
1- Midterm theoretical exam 10/100 2- Midterm 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	

Course Description Form

13. Course Name: Engineering and Electrical Drawing	
14. Course Code:	
15. Semester / Year: Year	
16. Description Preparation Date: 2026	
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)	
20. Course Objectives: Training the student on the correct principles of engineering drawing, draw and read electronic and electrical maps. Using AutoCAD program.	
Course Objectives	
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. Emotional and Value goals
	Evaluate the student's benefit after each week.

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	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
2nd	3	Develop skills 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
3rd	3	Develop skills i 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
4th	3	Identify symbols in drawing	Explanation of electrical and electronic symbols	Lecture + Lab	Evaluation of skills in drawing
5th	3	Develop skills in drawing	Drawing electrical and electronic symbols board	Lecture + Lab	Evaluation of skills in drawing
6th	3	Develop skills in drawing	Writing Latin letters and numbers - a board that includes writing numbers and letters vertically and then at an angle575 in sizes from four mm to ten mm.	Lecture + Lab	Evaluation of skills in drawing
7th	3	Develop skills in	Continuation of the previous painting	Lecture + Lab	Evaluation of skills in

		drawing			drawing
	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 - fuses - cutting devices - circuit breakers - switches).	Lecture + Lab	Evaluation of skills in drawing
9th	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
10th	**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
11th	3	Developing computer drawing skill.	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
12th	**3**	Developing computer drawing skill	Electrical installations - drawing a special drawing for the electrical installations of a room with an attached storeroom.	Lecture + Lab	Evaluation of skills in drawing
13th	**3**	Developing	Draw a diagram Of the complete	Lecture	Evaluation

		computer drawing skill	connections of the fluorescent tube	+ Lab	of skills in drawing
14th	3	Developing computer drawing skill	Drawing an electronic wiring board containing a group of electronic circuits.	Lecture + Lab	Evaluation of skills in drawing
15th	3	Developing computer drawing skill-	Draw the simple solid shape at angles 30 and angles 45.	Lecture + Lab	Evaluation of skills in drawing
16th	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
17th	3	Developing computer drawing skill	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
18th	3	Developing computer drawing skill	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
19th	3	Developing computer drawing skill-	Drawing a board for an electronic circuit containing gates.	Lecture + Lab	Evaluation of skills in drawing
20th	3	Developing computer drawing skill	Drawing an electronic circuit board containing integrated circuits	Lecture + Lab	Evaluation of skills in drawing
21st	3	Developing computer drawing skill	Drawing an electronic circuit board containing gates and integrated circuits	Lecture + Lab	Evaluation of skills in drawing
22nd	3	Developing computer drawing skill-	Applications on drawing projections from different perspectives.	Lecture + Lab	Evaluation of skills in drawing
23rd	3	Developing computer drawing skill	Perspective drawing of the three views	Lecture + Lab	Evaluation of skills in drawing
24th	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	Lecture + Lab	Evaluation of skills in drawing

			only), a plate that includes projections after cutting.		
25th	3	Developing computer drawing skill	Drawing a board to control the speed of a three-phase motor	Lecture + Lab	Evaluation of skills in drawing
26th	3	Learn how to read maps	How to read a map or set of maps for electricalcircuits.	Lecture + Lab	Evaluation of skills in drawing
27th	3	Developing computer drawing skill	Electrical drawing applications on the electronic calculator.	Lecture + Lab	Evaluation of skills in drawing
28th	3	Developing computer drawing skill	Using Auto CAD system.	Lecture + Lab	Evaluation of skills in drawing
29th	3	Developing computer drawing skill	Use of ORCAD system.	Lecture + Lab	Evaluation of skills in drawing
3Qth	3	Developing computer drawing skill.	Use of ORCAD system.	Lecture + Lab	Evaluation of skills in drawing

23. Course Evaluation

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

1- Midterm exam 15/100
2- Second term exam 15/10
3- Student activities 20/100
4- Final theoretical exam 50/100

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Nothing
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 ((AW-Wander William)) MC-Graw-Hill 1977 4-Engineering Drawing Graphic Technique by: Frend MC-Graw-Hill 1976
Recommended books and references (scientific journals,	Engineering and electrical drawing using AutoCAD - Nouri Musa Abd

reports...)	
Electronic References, Websites	1- YouTube. 2- Google search.

Course Description Form

1. Course Name: Digital Circuits	
2. Course Code:	
3. Semester/ Year: Year	
4. Description Preparation Date: 2026	
5. Available Attendance Forms: In person attendance	
6. Number of Credit Hours (Total)/ Number of Units (Total)	
4 hours per week/ 4 units	
7. Course administrator's name (mention all, if more than one name)	
8. Course Objectives	
Course Objecti	**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 the 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.**
9. Teaching and Learning Strategies	
Strates;	**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 of white board by the instructor as aid in teaching.** **5- Tutorial.** **6- Reading some lectures notes aloud to emphases on the important points.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student understanc the lesson	Numerical Systems	Lecture using whiteboard	Quiz, discussion and homework
2	2	The student understanc The lesson	Decimal to binary conversion and vice versa	Lecture using whiteboard	Quiz, discussion and homework
3	2	The student understanc the lesson	Decimal to octal and hexadecimal and vice versa	Lecture using whiteboard	Quiz, discussion and homework
4	2	The student understanc the lesson	Binary addition and Subtraction	Lecture using whiteboard	Quiz, discussion and homework
5	2	The student understanc the lesson	Basic logic gates OR, AND & NOT	Lecture using whiteboard	Quiz, discussion and homework
6	2	The student understanc the lesson	NANO, NOR, XOR & XNOR Gates	Lecture using whiteboard	Quiz, discussion and homework
7	2	The student understanc the lesson	Gates representation using only NAND or NOR gates	Lecture using whiteboard	Quiz, discussion and homework
8	2	The student understanc the lesson	Boolean Algebra & De-Morgan theorem	Lecture using whiteboard	Quiz, discussion and homework
9	2	The student understanc the lesson	SOP & POS	Lecture using whiteboard	Quiz, discussion and homework
10	2	The student understanc the lesson	K-Map for 2, 3, & 4 Inputs	Lecture using whiteboard	Quiz, discussion and homework
11	2	The student understanc the lesson	Truth table & K-Map	Lecture using whiteboard	Quiz, discussion and homework
12	2	Thestudent understands t lesson	Simplification of different logic circuit using K-Map.	Lecture using whiteboard	Quiz, discussion and homework
13	2	Thestudent understands the lesson	Two n-bit binary numbers comparator	Lecture using whiteboard	Quiz, discussion and homework
14	2	Thestudent understands t lesson	Binary to octal decoder	Lecture using whiteboard	Quiz, discussion and homework
15	2	Thestudent understands the lesson	Octal to binary encoding & decimal to binary encoding	Lecture using whiteboard	Quiz, discussion and homework
16	2	Thestudent understands The lesson	Half adder, full adder Circuits	Lecture using whiteboard	Quiz, discussion and homework
17	2	Thestudent understands The lesson	Full subtractor	Lecture using whiteboard	Quiz, discussion and homework
18	2	Thestudent understands the lesson	Parallel subtraction circuit	Lecture using whiteboard	Quiz, discussion and homework

19	2	Thestudent understands the lesson	RS Flip-flop J-KFlip-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	Thestudent understands the lesson	Counters	Lecture using whiteboard	Quiz, discussion and homework
22	2	Thestudent understands the lesson	Ripple counters	Lecture using whiteboard	Quiz, discussion and homework
23	2	Thestudent understands the lesson	synchronous parallel counter	Lecture using whiteboard	Quiz, discussion and homework
24	2	Thestudent understands the lesson	Shift registers	Lecture using whiteboard	Quiz, discussion and homework
25	2	Thestudent understands the lesson	ROM, PROM, EPROM, ARA DRAM	Lecture using whiteboard	Quiz, discussion and homework
26	2	Thestudent understands the lesson	DAC	Lecture using whiteboard	Quiz, discussion and homework
27	2	Thestudent understands the lesson	ADC	Lecture using whiteboard	Quiz, discussion and homework
28	2	Thestudent understands the lesson	ADCl	Lecture using whiteboard	Quiz, discussion and homework
29	2	Thestudent understands the lesson	ADC2	Lecture using whiteboard	Quiz, discussion and homework
30	2	Thestudent understands the lesson	Voltage to frequency Converter	Lecture using whiteboard	Quiz, discussion and homework

11. Course Evaluation

1- Midterm theoretical exam 10/100
2- Midterm 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)	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 Or. Charles H. Roth, Larry L Kinney etc.)
Electronic References, Websites	https:LLatozmath.com Ldefault.aspx https:/ /www.rapidtables.com/convert/number/binary-to-decimal.html

Course Description Form

25. Course Name:
Human rights
26. Course Code:
27. Semester/ Year: Year
28. Description Preparation Date:
2026
29.Available Attendance Forms: in person attendance
Theoretical lecture + scientific visits
30.Number of Credit Hours (Total)/ Number of Units (Total)
30 hours per week/ 1 unit
31. Course administrator's name (mention all, if more than one name)
Name: Lela Yaser Tayih Abed **Email:** lelaeasrm92@gmail.com
32. Course Objectives

Course Objectivi	At the end of the course the student will be able to: I. Know about human rights. 2. In addition, the student will be able to deal with different Theories of human right
3. Teaching and Learning Strategies	
Strategy	At the beginning of every theoretical lecture, there is an introduction to the lecture topic. This would inc most of the questions that can be asked about the topic and will be answered during the lecture. Students wi taken through a discussion in order to find the pre answers to those questions.

4. Course Structure

Theoretical

Week	Hours	Unit or subject name	Required Learning Outcomes	Leaming method	Evaluation method

15' week	2	Introduction	The student understands the lesson	Theoretical lecture	oral examination and quiz
2nd Week	2	Explain the term of human rights	The student understands the lesson	Theoretical lecture	oral examination and quiz
3rd Week	2	The historical of human rights	The student understands the	Theoretical lecture	oral examination and quiz
4th Week	2	Development of human rights	lesson	Theoretical lecture	oral examination and quiz
5th Week	2	Development of human rights	The student understands the	Theoretical lecture	oral examination and quiz
6th Week	2	Development of human rights	lesson	Theoretical lecture	oral examination and quiz
7th Week	2	Human rights and Sumerian civilization	The student understands the	Theoretical lecture	oral examination and quiz
3th Week	2	Human rights in Roman civilization	lesson	Theoretical lecture	oral examination and quiz
9th Week	2	Human rights in the Nile Valley civilization	The student understands the	Theoretical lecture	oral examination and quiz
IQth week	2	Introduction to heavenly religions.	lesson	Theoretical lecture	oral examination and quiz
II'h week	2	Human rights in Judaism	The student understands the	Theoretical lecture	oral examination and quiz
12th Week	2	Human rights in the Christian religion	lesson	Theoretical lecture	oral examination and quiz
!3th Week	2	Human rights in the Islamic religion	The student understands the	Theoretical lecture	oral examination and quiz
14th Week	2	Human rights in the Islamic religion	lesson	Theoretical lecture	oral examination and quiz
15th week	2	Comparison between other religions and Islam.	The student understands the	Theoretical lecture	oral examination and quiz
15th Week	2	Democracy and Islam	lesson	Theoretical lecture	oral examination

5. 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...)	

Course Description Form

1. Course Name: Applications of Computer					
2. Course Code:					
3. Semester/ Year: Year					
4. Description Preparation Date:2026					
5. Available Attendance Forms: in person attendance					
6. Number of Credit Hours (Total)/ Number of Units (Total): 90					
7. Course administrator's name (mention all, if more than one name)					
8. Course Objectives					
Course Objectives	[**Teaching the students about the computer and some applications.**				
9. Teaching and Learning Strategies					
Strategy	Internet				
10. Course Structure					
Week	**Hours**	**Required Learning**	**Unit or subject Name**	**Learning method**	**Evaluation method**

		Outcomes			
Week	theoretical=! Practical=2	Data show, Computer Machine, Screen Show	Computer Definition, Software, Hardware, Computer Generations.	Lectures and practical training	Written exams And practical training
Week	theoretical=1 Practica1=2	Computer Machine, Ms-Dos system	MS-DOS Operating System, Definition, Internal commands, External commands	Lectures and practical training	Written exams And practical training
Week 12:	theoretical= I Practica1=2	Computer Machine, MS-DOS System	Internal commands: Dir Del , Time , Dati Cls, RD, CD, MI Echo, Prompt, Ren < copy, vol ver, path. External Commands: Edit, tree, xcopy, format, chkdsk, diskcopy	Lectures and practical training	Written exams And practical training
Week 27:	theoretical=1 Practical=2	Computer Machine, Windows System	Operating System Windows: Disktop, Icons, Taskbar, Start, Shutdown, My computer, Control Panel, Windows medi.	Lectures and practical training	Written exams And practical training

			player, Calculator, Paint, Note Pad, Help		
Week 30:	theoreticalaal Practicalaa2	Computer Machine, Screen Show.	Computer Viruses, Antivirus.	Lectures and practical training	Written exams And practical training

11. 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 - SO marks final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Computer and its Applications
Main references (sources)	Currently available methodical book
Recommended books and references (scientific journals, reports...)	reports
Electronic References, Websites	Internet

Course Description Form

1. Course Name: Mathematics	
2. Course Code:	
3. Semester/ Year: Year	
4. Description Preparation Date:	
2026	
5. Available Attendance Forms: in person attendance	
Theoretical lecture	
6. Number of Credit Hours (Total)/ Number of Units (Total)	
60 hours/ 4 unit	
7. Course administrator's name (mention all, if more than one name)	
Name: **Fatimah Hayder Hasan** Email: fatimahhayder.inj@atu.edu.iq	
8. Course Objectives	
Course Objectives	At the end of the course the student will be able to: 1. The student understands the Jaws and mathematical issues 2. To olve simple and complex electrical circuits using mathematics 3. knows the applications of Engineering Mathematics
4. Teaching and Learning Strategies	
Strategy	1.Discuss the students and ask questions about the topic of the lectt and how to think critically and analytically, and then guide them towards how to solve the problem in a way that suits the topic. 2.Explain the material in a consistent manner commensurate with t 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 comprehens of the material.

5. Course Structure

Theoretical

Week	Hours	Unit or subject name	Required Learning Outcomes	Leaming method	Evaluation method
!st week	2hr	Types of matrices, operations on matrices	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
2nd **week**	2hr	Solving linear equations using determinants (Cramer's rule)	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
3rd 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
4th week	2hr	Orthogonal vectors-scalar and directional multiplication-applications.	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
5th week	2hr	Trigonometric function - trigonometric relations-logarithmic function	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
6th week	2hr	Exponential functions Hyperbola functions and their applications	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
7th week	2hr	Limits - limits of algebraic and trigonometric functions-applications	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
8th week	2hr	Differential -derivation by definition - derivation of algebraic functions-chain rule	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
9th week	2hr	Standard implicit function-higher-order derivative	The student understands the lesson	Theoretical lecture	Solving exercises+ dailv exam
10th **week**	2hr	Derivation of trigonometric and logarithmic functions	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
11'h week	2hr	The derivative of exponential functions	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
}2th 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
J3lh **week**	2hr	Increasing and decreasing-minor and great endings	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
14th **week**	2hr	General physical and engineering applications	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam
] 5th **week**	2hr	Indefinite integration-integration of algebraic-trigonometric functions	The student understands the lesson	Theoretical lecture	Solving exercises+ daily exam

16" week	2hr	Integration of exponential functions	The student understands the lesson	practical lecture	Solving exercises+ daily exam
17nd 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'd week	2hr	Rotational volumes - the length of the curved arc	The student understands the lesson	practical lecture	Solving exercises+ daily exam
19th week	2hr	Physical and engineering applications	The student understands the lesson	practical lecture	Solving exercises+ daily exam
20,21, 22th 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
23th week	2hr	Numerical methods in integration - the base of the trapezoid	The student understands the lesson	practical lecture	Solving exercises+ dailv exam
24,25th week	2hr	Solving discrete, homogeneous and linear differential equations with their various aoolications	The student understands the lesson	practical lecture	Solving exercises+ daily exam
26th week	2hr	Complex numbers addition, subtraction, multiplication and division	The student understands the lesson	practical lecture	Solving exercises+ daily exam
27th 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
28th week	2hr	Powers and roots - representation of roots	The student understands the lesson	practical lecture	Solving exercises+ daily exam
29th week	2hr	Statistical operations - frequency distributions - histogram -frequency curve	The student understands the lesson	practical lecture	Solving exercises+ daily exam
30th 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

6. Course Evaluation

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

7. Learning and Teaching Resources

Required textbooks (curricular books any)	Applied mathematics-yaequb sibagha

Main references (sources)	Solving electrical circuits-Joseph Methods for solving differential equations-Kha Ahmed Samarai-Yahya Abdul said Calculus ((Thomas)) Laplace transformation
Recommended books and references (scientific journals, reports...)	All books and Journals which includes the app mathematics
Electronic References, Websites	All applied mathematics websites on the intern

Course Description Form

33. Course Name: Electrical Circuits & Measurements
34. Course Code:
35. Semester/ Year: Year
36. Description Preparation Date: 2026
37.Available Attendance Forms: in person attendance
38.Number of Credit Hours (Total)/ Number of Units (Total) 120H/8 U
39. Course administrator's name {mention all, if more than one name)
Name: **Ayad Muslim Hamzah** Email: **Engayad79@atu .edu.iq**
40. Course Objectives: The student will be able to apply general electrical laws and theories of DC & AC electrical networks and analvze.

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.**

41. Teaching and Learning Strategies

Strategy	Teaching and learning methods 4- White board & marker. 5- Data show. 6- Practical applications in Labs. Evaluation methods 4- Daily exams (Quizzes). 5- Home works. 6- Midterm and final exams. 7- Direct questions during the theoretical lectures. 8- Exams + Oral and written activities, practical and laboratory exercises. Emotional and Value goals Evaluate the student's benefit afer each week.

42. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	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	Lecture + Lab	Report and oral exam.

			and resistance - Components of an electrical circuit - Ohm's law - Factors affecting the value of resistance - Specific resistance of conductive and insulating materials - Effect of temperature On the value of resistance - thermal coefficient of resistance with the solution of practical examples.		
2nd	4	Weekly quizzes	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.
	4	Weekly quizzes	Applications on series, parallel, mixed, star and delta circuits.	Lecture + **Lab**	Report and oral exam.
	4	Weekly quizzes	Kirchhoff's Laws - Kirchhoff's Law for Current and Voltage with Practical Examples.	Lecture + Lab	Report and oral exam.
	4	Weekly quizzes	Maxwell's law with solutions and practical examples.	Lecture + Lab	Report and oral exam.
	4	Weekly quizzes	Thevenin's theory - definition of the theory - how to apply it in DC.	Lecture + Lab	Report and oral exam.
7th	4	Weekly quizzes	Norton's theory - definition of the theory - how to apply it in DC.	Lecture + Lab	Report and oral exam.
	4	Weekly quizzes	Practical examples of Thevenin and Norton theorems.	Lecture + Lab	Report and oral exam.
9th	4	Weekly	Superposition theory - definition	Lecture +	Report and

		quizzes	of the theory - steps of its application in solving DC circuits that contain more than one source - solving definitional examples of current and voltage 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.	Lab	oral exam.
10th	4	Weekly quizzes	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.
11th	4	Weekly quizzes	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.
12th	4	Weekly quizzes	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	Lecture + Lab	Report and oral exam.

			circuit with examples.		
	4	Weekly quizzes	The effect of alternating current on a circuit containing (resistance and inductance in series - 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.	Lecture + Lab	Report and oral exam.
14th	4	Weekly quizzes	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.
15th	4	Weekly quizzes	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.
	4	Weekly quizzes	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	Lecture + Lab	Report and oral exam.

			the bandwidth - quality factor - drawing the relationship between inductive and capacitive reactance with frequency - solving examples for both cases)		
	4	Weekly quizzes	Application of theorems such as Norton and Thevenin theorem and matching on alternating current circuits with solving examples.	Lecture + Lab	Report and oral exam.
18th	4	Weekly quizzes	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.
19th	4	Weekly quizzes	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.
2Qth	4	Weekly quizzes	Theory of maximum power transfer in alternating current circuits - derivation of its relationship with practical examples.	Lecture + Lab	Report and oral exam.
	4	Weekly quizzes	Analysis of electrical networks by node voltage method - introduction - node voltages - number of node voltage equations - node voltage equations by examination -	Lecture + Lab	Report and oral exam.

			common admittance - transmission admittance.		
22nd	4	Weekly quizzes	Practical examples of the analysis of electrical networks by the node method.	Lecture + Lab	Report and oral exam.
23rd	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.
24th	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.
25th	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	Lecture + Lab	Report and oral exam.

			of star and delta conduction - using two wattmeters - three wattmeters.		
26th	4	Weekly quizzes	Transient circuit states - DC transient states - circuits in transient state - (RLC - RC - RL) circuits.	Lecture + Lab	Report and oral exam.
	4	Weekly quizzes	Transient alternating currents - transient sinusoidal currents in RLC, RC, RL circuits - transmission currents.	Lecture + Lab	Report and oral exam.
28th	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.
	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.
30th	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	Lecture + Lab	Report and oral exam.

			the coil - Drawing current and calculating the time constant - Solution 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.		

43. Course Evaluation

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

5- Midterm theoretical exam 10/100
6- Midterm practical lab exam 10/100
7- Second term theoretical exam 10/100
8- Second term practical lab exam 10/100
9- Student activities 10/100
10-Final theoretical exam 40/100
11-Final practical lab exam 10/100

44. 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 site.

Course Description Form

1. Course Name: Physiology
2. Course Code:
3. Semester/ Year: Year
4. Description Preparation Date: 2026
5. Available Attendance Forms: in person
6. Number of Credit Hours (Total)/ Number of Units (Total)
Number of Units (Total) 60 hours/year
7. Course administrator's name (mention all, if more than one name)
Name: Zaineb Ahmed Email: Zaineb.ahmed.inj@atu.edu.iq
8. 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**
9. 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.

10. 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 a 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	**Semester exams, discussion**

				on a whiteboard	**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- cavitary 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 structure, parts, and importance	PowerPoint lecture and explanation on a whiteboard	**Semester exams ,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	**Semester exams ,discussion**

				on a whiteboard	**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**

11. Course Evaluation

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

Daily tests
Discussing with students during the lecture
Student activity in the lecture
First semester exam
Second semester exam
final exam

12. 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. Phyaiological 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 Nas Al-Aluji
Electronic References, Websites	

Course Description Form

45.	Course Name:
Electronics Circuits	
46.	Course Code:
47.	Semester/ Year: Year
48.	Description Preparation Date:
2026	
49.Available Attendance Forms: in person attendance	
In person attendance	
SO.Number of Credit Hours (Total)/ Number of Units (Total)	
4 hours a week/ 8 units	
51.	Course administrator's name (mention all, if more than one name)
Name:Hassoon Salman Neamah FAHAMA Email:hassoon.fahama atu.edu.iq	
52.	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.
53.	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.

54. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1-2	4		1- Fundamentals of Zener Diode	Presentation (Projector and whiteboard) a experimental work using electronics Lal	Open discussion, quiz, and direct questions
3	4		2- Silicon control rectifier and its applications		
4	4		3- Theoretical exercise		
5-6	4		4- Bipolar junction transistor		
7-8	4		5- Applications of Bipolar junction transistor		
9	4		6- Theoretical exercise about Bipolar junction transistor		
10	4		7- Electronic oscillator		
11	4		8- Theoretical exercise about electronic oscillator		
12-1	4		9- Introduction to Operation Amplifier		
14-1	4		10-Features and characteristics of Operation Amplifier		
16	4		11-Inverting Operation Amplifier		
17	4		12-Non-invertingOperation Amplifier		
18	4		13-Comparator Amplifier		
19	4		14-Summing & Subtractor/Difference Amplifier		
20-2	4		15-Introduction of Active Filters		
22-2	4		16-Operational amplifier applications: differential circuit, mathematical equations		
24-2	4		17-Nonlinear applications of operational amplifiers		

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

56. Learning and Teaching Resources	
Required textbooks (curricular books, if an	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	

Course Description Form

57. Course Name:
programmable logic controller
58. Course Code:
59. Semester *I* Year: Year
2026
60. Description Preparation Date:
2026
61.Available Attendance Forms: in person attendance
Official attendance list
62.Number of Credit Hours (Total)/ Number of Units (Total)
Number of credit hours (30) for both theory and practical Number of Units (8)
63. Course administrator's name (mention all, if more than one name)
Name:Sara Alaa Tamkeen Abd Email: sara.ala.inj@atu.edu.iq
64. Course Objectives
Course **1- Introducing the student to the components of programmed controllers and how to**

Objectives	**program and use them.** **2- Learn about programmable digital controllers (Pie) and how to deal with them and program them.**
65. Teaching and Learning Strategies	
Strategy	Providing an educational environment; It provides students with the necessary knowledgi make the most of the available learning opportunities.

66. 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 and its application fields	Theoretical lecture	Weekly exams pre and p questions
2 And 3	4	Understanding the lecture	Sensors compatib with the programmed controller (temperature, proximity, pressu movement, etc.)	Theoretical lecture	Weekly exams pre and p questions
4	2	Understanding the lecture	Electrical switche and electrical contacts and how they work	Theoretical lecture	Weekly exams pre and p questions

5	2	Understanding the lecture	Learn about the ladder programming language	Theoretical lecture	Weekly exams pre and p questions
6	2	Understanding the lecture	Implementation o logic circuits (and or, not, etc.). by using ladder programming language	Theoretical lecture	Weekly exams pre and p questions
7	2	Understanding the lecture	Relays and their types and how to implement them 1 using ladder programming language with examples.	Theoretical lecture	Weekly exams pre and p questions
8	2	Understanding the lecture	How to holding th signal and releasi1 it in ladder language.	Theoretical lecture	Weekly exams pre and p questions

9	2	Understanding the lecture	Digital counters ir the ladder langua, with practical examples	Theoretical lecture	Weekly exams pre and p questions
10	2	Understanding the lecture	Practical example power converter circuit (Changeov Circuit). By using ladder programming language.	Theoretical lecture	Weekly exams pre and p questions
11	2	Understanding the lecture	Traffic signal application exam1	Theoretical lecture	Weekly exams pre and p questions
12	2	Understanding the lecture	An applied examp of opening and closing a gate bast on motion sensorc	Theoretical lecture	Weekly exams pre and p questions

13	2	Understanding the lecture	Single-phase mote operating circuit with on and off switches) motor starter) by using ladder programming language	Theoretical lecture	Weekly exams pre and p questions
14	2	Understanding the lecture	Three-phase mote drive circuit (Delt Star).	Theoretical lecture	Weekly exams pre and p questions
15	2	Understanding the lecture	Practical example an electric elevate circuit	Theoretical lecture	Weekly exams pre and p questions

67. 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.

68. Learning and Teaching Resources

Required textbooks (curricular books, if any)	PLC book
Main references (sources)	Sources of ancient and modem con lessons books
Recommended books and references (scientific	Related journals and research papers

journals, reports...)	
Electronic References, Websites	Trusted and approved sites only

Course Description Form

69. Course Name: Electronic Instrumentation	
70. Course Code:	
71. Semester *I* Year: Year: 2026	
72. Description Preparation Date: 14/2/2026	
73.Available Attendance Forms: in person attendance	
74.Number of Credit Hours (Total)/ Number of Units (Total): 120h	
75. Course administrator's name (mention all, if more than one name) Name: Sara Alaa **Email:** sara.ala.inj@atu.edu.iq	
76. 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 device • Calibrating and organizing measuring devices
77. Teaching and Learning Strategies	
Strategy	1. Peer Tutoring and A sessment 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 to prepare 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.

78. 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,	Theoretical lecture	Weekly exams - pre and post questions

			diminishing torque)		
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 aforementioned devices, voltmeter sensitivity, mathematical examples	Theoretical lecture	Weekly exams - pre and post questions
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	DC bridges,	Theoretical	Weekly

		understands the lesson	Wheatstone bridge, working principle, measurement errors, Kelvin bridge, double Kelvin bridge, mathematical examples.	lecture	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, shrink bridges, and Wayne bridges	Theoretical lecture	Weekly exams - pre 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, electrodynamometers, 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 electrodynamometers in measuring single-phase power,	Theoretical lecture	Weekly exams - pre and post questions

			composition, and the deflection angle equation		
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 member, attenuator, vertical amplifier, delay line, function and types of delay line	Theoretical lecture	Weekly exams - pre 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,	Theoretical lecture	Weekly exams - pre and post questions

			Lissajous shapes, phase calculation, frequency calculation		
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,	Theoretical lecture	Weekly exams - pre and post

			signal processing n measurement extending the frequency range of the counter, automatic counters and calculators		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 en-or 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 amphometer	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

1. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ..... etc	
2. 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 Universitv Press / 1991
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.work2rotool.com/news/a-com2rehensive-guide-to-digital-clamg-multime-73227523.html
Electronic References, Websites	httQs://kahraba4u.com

Course Description Form

1. Course Name: electronic medical instrumentation
2. Course Code:
3. Semester / Year: Year
4. Description Preparation Date:2026
5. Available Attendance Forms: in person attendance
6. Number of Credit Hours (Total) / Number of Units (Total):120
7. Course administrator's name (mention all, if more than one name)
Name: Bahaa Shabaa Email: Shabaabahaa@gmail.com

8. Course Objectives

Course Objectives	The student will be able to know the exact parts of a med instrumentation and how to maintains it.

9. Teaching;and Learning;Strategies

Strategy	**1. Peer Tutoring and Assessment** Peer tutoring and assessment activities require students to understand the subject mate and decide how to share it with others. Students learn as they teach concepts, exp ideas, plan educational activities and test knowledge. Through peer tutoring assessment, your children hone their organizational and collaborative skills, discc how to give and receive feedback, and evaluate their own learning. **2. Brainstorming** Creative juices flow during simple or group brainstorming sessions. Students focus one topic and freely discuss their ideas, thoughts and opinions. There are no righ wrong answers during brainstorming sessions where numerous, creative ideas are forth and debated on. These brainstorming sessions help your children deve confidence and their communication and collaboration skills. 3. Student-Led Classes Students must fully understand coursework, spend time to prepare an in-depth lesson be prepared to answer questions in order to lead a class. With this teaching strate students take on individual tasks or group assignments to demonstrate their knowlec boost their presentation skills and discover how to share and collaborate with their pe Students are sometimes invited to lead the class at OWIS and are assessed for their les complexity, preparation and creativity. This teaching method promotes stuc ownership and helps teachers and students to understand interests, strengths and poten areas for improvement.

10. Course Evaluation (Theoretical)

Week	hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student understands the lesson	Introduction to electronic medical devices	Practical lecture	Weekly exams - pre and post questions
2	2	The student understands the lesson	Medical terminology in English and Latin	Practical lecture	Weekly exams - pre and post questions
3	2	The student understands the lesson	The circulatory system, the parts of the	Practical lecture	Weekly exams - pre and post questions

				heart, the major and minor circulation		
	4	2	The student understands the Lesson	ECG device, basic stages of the device	Practical lecture	Weekly exams - pre and post questions
	5	2	The student understands the Lesson	Types of electrodes.	Practical lecture	Weekly exams - pre and post questions
	6	2	The student understands the Lesson	Measuring blood pressure, types of blood pressure devices, mercury blood pressure device	Practical lecture	Weekly exams - pre and post questions
	7	2	The student understands the Lesson	Pneumatic pressure device electronic pressure device	Practical lecture	Weekly exams - pre and post questions
	8	2	The student understands the Lesson	Cardiac defibrillation device, its types	Practical lecture	Weekly exams - pre and post questions
	9	2	The student understands the Lesson	Electrodes of vibration devices, circuits of vibration devices	Practical lecture	Weekly exams - pre and post questions
	10	2	The student understands the Lesson	Pacemaker classification device heart-lung	Practical lecture	Weekly exams - pre and post questions
	11	2	The student understands the Lesson	Heart rate monitor-VCG	Practical lecture	Weekly exams - pre and post questions
	12	2	The student	Mechanical	Practical	Weekly

			understands the Lesson	breathing devices	lecture	exams - pre and post questions
	13	2	The student understands the Lesson	Sensors, spirometers, breathing monitoring devices	Practical lecture	Weekly exams - pre and post questions
	14	2	The student understands the Lesson	Patient monitor device	Practical lecture	Weekly exams - pre and post questions
	15	2	The student understands the Lesson	The central nervous system how to distribute sensations and commands, whether voluntary or involuntary	Practical lecture	Weekly exams - pre and post questions
	16	2	The student understands the Lesson	EEG device	Practical lecture	Weekly exams - pre and post questions
	17	2	The student understands the Lesson	Muscle electricity and the sensory system. The muscular system	Practical lecture	Weekly exams - pre and post questions
	18	2	The student understands the Lesson	Muscle planning device. The basic stages of the device and its parts	Practical lecture	Weekly exams - pre and post questions
	19	2	The student understands the Lesson	Ultrasonic devices, their types, and the physics of ultrasound devices	Practical lecture	Weekly exams - pre and post questions
	20	2	The student understands the	Fetal monitoring	Practical lecture	Weekly exams - pre

			Lesson	device components and components of the device solution		and post questions
	21	2	The student understands the Lesson	delivery monitor device components and stages of the device	Practical lecture	Weekly exams - pre and post questions
	22	2	The student understands the Lesson	Sonar device components and stages of the device	Practical lecture	Weekly exams - pre and post questions
	23	2	The student understands the Lesson	Sonar display devices	Practical lecture	Weekly exams - pre and post questions
	24	2	The student understands the Lesson	Amplifiers and their types	Practical lecture	Weekly exams - pre and post questions
	25	2	The student understands the Lesson	Tracer devices and their types	Practical lecture	Weekly exams - pre and post questions
	26	2	The student understands the Lesson	Display devices of both types: analogue and digital	Practical lecture	Weekly exams - pre and post questions
	27	2	The student understands the Lesson	Electronic circuits for surgical cauterization devices and their types	Practical lecture	Weekly exams - pre and post questions
	28	2	The student understands the Lesson	Surgical cauterization devices and their types	Practical lecture	Weekly exams - pre and post questions
	29	2	The student understands the Lesson	Operating room equipment, used devices	Practical lecture	Weekly exams - pre and post questions
	30	2	The student	The	Practical	Weekly

			understands the lesson	operating room and how to isolate it electrically and thermally	lecture	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	Introduction to electronic medical devices	Practical lecture	Weekly exams - pre and post questions
2	2	The student understands the Lesson	Medical terminology in English and Latin	Practical lecture	Weekly exams - pre and post questions
3	2	The student understands the Lesson	The circulatory system, the parts of the heart, the major and minor circulation	Practical lecture	Weekly exams - pre and post questions
4	2	The student understands the Lesson	ECG device, basic stages of the device	Practical lecture	Weekly exams - pre and post questions
5	2	The student understands the Lesson	Types of electrodes.	Practical lecture	Weekly exams - pre and post questions
6	2	The student understands the Lesson	Measuring blood pressure, types of blood pressure devices, mercury blood pressure device	Practical lecture	Weekly exams - pre and post questions
7	2	The student	Pneumatic	Practical	Weekly

			understands the Lesson	pressure device Electronic pressure device	lecture	exams - pre and post questions
	8	2	The student understands the Lesson	Cardiac defibrillation device, its types	Practical lecture	Weekly exams - pre and post questions
	9	2	The student understands the Lesson	Electrodes of vibration devices, circuits of vibration devices	Practical lecture	Weekly exams - pre and post questions
	10	2	The student understands the Lesson	Pacemaker classification device heart-lung	Practical lecture	Weekly exams - pre and post questions
	11	2	The student understands the Lesson	Heart rate monitor - VCG	Practical lecture	Weekly exams - pre and post questions
	12	2	The student understands the Lesson	Mechanical breathing devices	Practical lecture	Weekly exams - pre and post questions
	13	2	The student understands the Lesson	Sensors, spirometers, breathing monitoring devices	Practical lecture	Weekly exams - pre and post questions
	14	2	The student understands the Lesson	Patient monitor device	Practical lecture	Weekly exams - pre and post questions
	15	2	The student understands the Lesson	The central nervous system how to distribute sensations and commands, whether voluntary or involuntary	Practical lecture	Weekly exams - pre and post questions
	16	2	The student understands the	EEG device	Practical lecture	Weekly exams - pre

			Lesson			and post questions
	17	2	The student understands the Lesson	Muscle electricity and the sensory system. The muscular system	Practical lecture	Weekly exams - pre and post questions
	18	2	The student understands the Lesson	Muscle planning device. The basic stages of the device and its parts	Practical lecture	Weekly exams - pre and post questions
	19	2	The student understands the Lesson	Ultrasonic devices, their types, and the physics of ultrasound devices	Practical lecture	Weekly exams - pre and post questions
	20	2	The student understands the Lesson	Fetal monitoring device components and components of the device solution	Practical lecture	Weekly exams - pre and post questions
	21	2	The student understands the Lesson	delivery monitor device components and stages of the device	Practical lecture	Weekly exams - pre and post questions
	22	2	The student understands the Lesson	Sonar device components and stages of the device	Practical lecture	Weekly exams - pre and post questions
	23	2	The student understands the lesson	Sonar display devices	Practical lecture	Weekly exams - pre and post questions
	24	2	The student understands the lesson	Amplifiers and their types	Practical lecture	Weekly exams - pre and post questions

	25	2	The student understands the lesson	Tracer devices and their types	Practical lecture	Weekly exams - pre and post questions
	26	2	The student understands the lesson	Display devices of both types: analogue and digital	Practical lecture	Weekly exams - pre and post questions
	27	2	The student understands the lesson	Electronic circuits for surgical cauterization devices and their types	Practical lecture	Weekly exams - pre and post questions
	28	2	The student understands the lesson	Surgical cauterization devices and their types	Practical lecture	Weekly exams - pre and post questions
	29	2	The student understands the lesson	Operating room equipment, used devices	Practical lecture	Weekly exams - pre and post questions
	30	2	The student understands the lesson	The operating room and how to isolate it electrically and thermally	Practical lecture	Weekly exams - pre and post questions

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	
11.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	I-Medical instrumentation 2- Medical device technology
Main references (sources)	1- Planning of medical devices 2- Practical medical devices 3- Medical devices applications and de (1 and 2)
Recommended books and references (scientific journals, reports...)	1- Introduction to biomedical de, technology. 2- Measurement and calibration in med devices

	3- Medical device technology
Electronic References, Websites	Nour Library

Course Description Form

79. Course Name: CONTROL
80. Course Code:
81. Semester / Year: Year
82. Description Preparation Date: 2026
83.Available Attendance Forms: in person attendance
84.Number of Credit Hours (Total)/ Number of Units (Total)
Number of credit hours (30) for both theory and practical Number of Units (8)
85. Course administrator's name (mention all, if more than one name)
Name: Mohammed Najeh Nemah Email: mohammed.nemah@atu.edu.iq
86. Course Objectives

Course Objectives	**Through this course, the student will study the basic sciences of the various branchi of control engineering.** • **General objective: To familiarize the student with the basics and principles of cont** • **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 typ open-circuit and closed-circuit.**

A - Expected learning outcomes of the program	
1- Knowledge	
Scientific and applied knowledge	Providing the student with scientific and applied knowledg that enables him to operate and control medical devices.
Preparing competent technicians	Preparing competent technicians who have the ability to ke pace with the rapid development in the field of controlling operation of medical devices
2- Skills	
Acquire development and updating skills	Acquiring skills to develop and modernize medical devices
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 that ensure.

87. Teaching and Learning Strategies

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

88. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student understar the lesson	Introduction and definitions of control engineering - open circuit and closed circ - examples	Theoretical lect	eekly exams - nd post questim
2	2	The student understar 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 understar the lesson	The basic form of the control system - bloc diagram - transformat function.	Theoretical lecture	Weekly exams pre and post questions
4	2	The student understar the lesson	Algebra of block diagrams and their la,	Theoretical lecture	Weekly exams pre and post questions
5	2	The student understar the lesson	Simplifying complex block diagrams.	Theoretical lecture	Weekly exams pre and post questions
6	2	The student understar the lesson	Systems with multiplt entrances and exits	Theoretical lecture	Weekly exams pre and post questions
7	2	The student understar the lesson	Signal flow diagrams Mason's method - its laws.	Theoretical lecture	Weekly exams pre and post questions
8	2	The student understar the lesson	Extracting the transformational function using Maso method - examples.	Theoretical lecture	Weekly exams pre and post questions
9	2	The student understar the lesson	Physical systems - electrical and mechanical systems	Theoretical lecture	Weekly exams pre and post questions
10	2	The student understar the lesson	Extracting the transformational functions of the svsti	Theoretical lecture	Weekly exams pre and post questions

			- theories of compatibility betwe1 systems		
11	2	The student understar the lesson	Laplace transform - transformation theorems - inverse Laplace transform	Theoretical lecture	Weekly exams pre and post questions
12	2	The student understar the lesson	Use transformation 1 solve differential equations	Theoretical lecture	Weekly exams pre and post questions
13	2	The student understar the lesson	Analog Calculator -· the op magnifier in t analog calculator	Theoretical lecture	Weekly exams pre and post questions
14	2	The student understar the lesson	Solve differential equations using an analog calculator.	Theoretical lecture	Weekly exams pre and post questions
15	2	The student understar the lesson	Comparison betwee1 analog circuits - electronic circuits - modeling.	Theoretical lecture	Weekly exams pre and post questions
16	2	The student understar the lesson	Types of input signa stability and system type.	Theoretical lecture	Weekly exams pre and post questions
17	2	The student understar the lesson	Stability	Theoretical lecture	Weekly exams pre and post questions
18	2	The student understar the lesson	Identifying the S-lev Determining the pol1 and zeros of the S-le control system and determining stabilit	Theoretical lecture	Weekly exams pre and post questions
19	2	The student understar the lesson	Roth scale stability - scale theories	Theoretical lecture	Weekly exams pre and post questions
20	2	The student understar the lesson	Use the scale to find out	Theoretical lecture	Weekly exams pre and post questions
21	2	The student understar the lesson	Limits of stability - examples.	Theoretical lecture	Weekly exams pre and post questions
22	2	The student understar the lesson	Response - the transient response a its classification into temporal and frequency - the temporal response c first-order system.	Theoretical lecture	Weekly exams pre and post questions

23	2	The student understar the lesson	Time response of a second order systerr	Theoretical lecture	Weekly exams pre and post questions
24	2	The student understar 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 understar the lesson	Frequency response Types of frequency response - examples	Theoretical lecture	Weekly exams pre and post questions
26	2	The student understar the lesson	Electronic controller and their types	Theoretical lecture	Weekly exams pre and post questions
27	2	The student understar the lesson	Uses of electronic controllers in contro systems and their impact on system performance	Theoretical lecture	Weekly exams pre and post questions
28	2	The student understar the lesson	Error rate - types of errors in the system	Theoretical lecture	Weekly exams pre and post questions
29	2	The student understar the lesson	How to calculate the error rate	Theoretical lecture	Weekly exams pre and post questions
30	2	The student understar the lesson	Root locus method - curve rules used for this method - examples.	Theoretical lecture	Weekly exams pre and post questions

89. 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.

90. Learning and Teaching Resources

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

Course Description Form

91. Course Name: CONTROL practical
92. Course Code:
93. Semester / Year: Year
94. Description Preparation Date:
2026
95.Available Attendance Forms: in person attendance
96.Number of Credit Hours (Total) / Number of Units (Total)
Number of credit hours (30) for both theory and practical Number of Units (8)
97. Course administrator's name (mention all, if more than one name)
Name:Mohammed Najeh Nemah Email: mohammed.nemah@atu.edu.iq
98. Course Objectives

Course Objectives	**Through this course, the student will study the basic sciences of the various branchi of control engineering.** • **General objective: To familiarize the student with the basics and principles of cont** • **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 typ open-circuit and closed-circuit.**

A - Expected learning outcomes of the program	
1- Knowledge	
Scientific and applied knowled	Providing the student with scientific and applied knowledge that enables him to operate and control medical devices.
Preparing competent technicia l	Preparing competent technicians who have the ability to keep pac l with the rapid development in the field of controlling the operatio of medical devices
2- Skills	
Acquire development and updating skills	**Acquiring skills to develop and modernize medical devices.**
6. Design and development, finding alternatives	Design and development skills, finding alternatives to some parts related to medical devices.
3- Ethics	
Be responsible and manage tirr at work.	Giving the graduate the ability to learn responsibility, time management, and professionalism in performing the tasks assigne to him.
Dedication, loyalty and commitment	Dedication, sincerity, and adherence to rules, laws, and regulation that ensure.

99. Teaching and Learning Strategies

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

100. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	The student understar the lesson	Getting to know the laboratory, safety precauti how to write the report an arrange the results sheet	practical lecture	eekly exams - pre ost questions
2	2	The student understar the lesson	Identify the operational amplifier and extract its properties	practical lecture	Weekly exams - pre and post questions
3	2	The student understar the lesson	Use an op amp as a reflect	practical lecture	Weekly exams - pre post questions
4	2	The student understar the lesson	Use the op-amp as non-inverting	practical lecture	Weekly exams - pre post questions
5	2	The student understar the lesson	Use an operational amplif as a collector	practical lecture	Weekly exams - pre post questions
6	2	The student understar the lesson	Use an operational amplif as a subtractor	practical lecture	Weekly exams - pre post questions
7	2	The student understar the lesson	Using an op amp as an integrator	practical lecture	Weekly exams - pre post questions
8	2	The student understar the lesson	Using an op amp as an enhanced integrator	practical lecture	Weekly exams - pre post questions
9	2	The student understar the lesson	Using an op-amp as a differentiator	practical lecture	Weekly exams - pre post questions
10	2	The student understar the lesson	Using the op-amp as an optimizer differentiator	practical lecture	Weekly exams - pre post questions
11	2	The student understar the lesson	Introduction to control systems and transformatio functions	practical lecture	Weekly exams - pre post questions
12	2	The student understar the lesson	Study of an open control system	practical lecture	Weekly exams - pre post questions
13	2	The student understar the lesson	Study of a closed control system	practical lecture	Weekly exams - pre post questions
14	2	The student understar the lesson	Study of a closed control system with a jamming si	practical lecture	Weekly exams - pre post questions
15	2	The student understar the lesson	Open-circuit first-order control system circuit - system specifications and transfer function extractio	practical lecture	Weekly exams - pre and post questions

16	2	The student understar the lesson	Closed-circuit first-order control system circuit - system specifications and transfer function extractio	practical lecture	Weekiy exams - pre d post questions
17	2	The student understar the lesson	A second-order control system circuit extracts the time response for three ca	practical lecture	Weekly exams - pre and post questions
18	2	The student understar the lesson	A second-order control system circuit extracts the time response for three ca:	practical lecture	Weekiy exams - pre and post questions
19	2	The student understar the lesson	A second-order system cir that calculates the settling time, rise time, and delay time	practical lecture	Weekly exams - pre and post questions
20	2	The student understar the lesson	Introduction to solving differential equations	practical lecture	Weekly exams - pre and post questions
21	2	The student understar the lesson	Solving first order differer equations using analog circuits	practical lecture	Weekly exams - pre and post questions
22	2	The student understar the lesson	Solving second order differential equations usin analog circuits	practical lecture	Weekly exams - pre and post questions
23	2	The student understar the lesson	Introduction to Dominator The Two-Situated Domin	practical lecture	Weekly exams - pre and post questions
24	2	The student understar the lesson	Proportional Dominant	practical lecture	Weekly exams - pre and post questions
25	2	The student understar the lesson	Integrative controller	practical lecture	Weekly exams - pre and post questions
26	2	The student understar the lesson	Differential controller	practical lecture	Weekly exams - pre and post questions
27	2	The student understar the lesson	Proportional-integral controller	practical lecture	Weekly exams - pre and post questions
28	2	The student understar the lesson	Proportional-differential controller	practical lecture	Weekly exams - pre and post questions
29	2	The student understar the lesson	Proportional - Integral - Differential controller	practical lecture	Weekly exams - pre and post questions
30	2	The student understar the lesson	Steady-state error calculations	practical lectur	Weekly exams - pre and post questions

101. Course Evaluation

Distribution ofthe 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.

102. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Control book
Main references (sources)	Sources of ancient and modern cont lessons books
Recommended books and references	Related journals and research papers

(scientific journals, reports...)	
Electronic References, Websites	Trusted and approved sites only

Course Description Form

103. Course Name:
The crimes of the Baath regime in Iraq
104. Course Code:
105. Semester *I* Year: Year
2026
106. Description Preparation Date:
2026
107. Available Attendance Forms: in person attendance
108. Number of Credit Hours (Total)/ Number of Units (Total)
30 hours/ 1 unit
109. Course administrator's name {mention all, if more than one name)
Name: Laila Yasser Tayeh Email: laila.tayeh@atu.edu.iq
110. Course Objectives

Course Objectivi	At the end of the course the student will be able to: 2. The student gets to know the concept of crimes. 3. Learn about the dictatorship of the former regime
4. Teaching and Learning Strategies	
Strategy	At the beginning of every theoretical lecture, there is an introduction to the lecture topic. This would inc most of the questions that can be asked about the topic and will be answered during the lecture. Students wi taken through a discussion in order to find the ore answers to those questions.

5. Course Structure

Theoretical					
Week	**Hours**	**Unit or subject name**	**Required Learning Outcomes**	**Learning method**	**Evaluation method**
pt week	I	Introduction to the concept of crimes	The student understands the lesson	Theoretical lecture	oral examination and quiz
2nd week	1	History of crime committed by the authority	The student understands the lesson	Theoretical lecture	oral examination and quiz
3rd week	L	Crime departments	The student understands the lesson	Theoretical lecture	oral examination and quiz
4th week	I	Crime departments.	The student understands	Theoretical lecture	oral examination and quiz
5th week	L	Types of international crimes	the lesson	Theoretical lecture	oral examination and quiz
6th week	I	Types of international crimes.	The student understands	Theoretical lecture	oral examination and Quiz
7th week	I	Human rights in Roman civilization.	the lesson	Theoretical lecture	oral examination and quiz
8th week	I	Decisions issued by the Supreme Court.	The student understands	Theoretical lecture	oral examination and Quiz
9th week	I	Decisions issued by the Supreme Court.	the lesson	Theoretical lecture	oral examination and Quiz
LOth week	I	Decisions issued by the Supreme Court.	The student understands	Theoretical lecture	oral examination and quiz
LLth week	I	Psychological crimes.	The student understands	Theoretical lecture	oral examination and Quiz
12th week	L	Mechanisms of psychological crimes.	the lesson	Theoretical lecture	oral examination and quiz
L3th week	I	Psychological effects of crimes.	The student understands	Theoretical lecture	oral examination and quiz
14th week	L	Baath crimes against religion	the lesson	Theoretical lecture	oral examination and quiz
15th week	L	Baath crimes against religion.	The student understands	Theoretical lecture	oral examination and quiz
Week	**Hours**		**Unit or sub_iect name**	**Learning method**	**Evaluation method**
16th week	I	Baath prisons.	The student understands the lesson	Theoretical lecture	oral examination
L7thweek	L	Environmental crimes	The student	Theoretical	oral

			understands the lesson	lecture	examination
18th week	I	Use of internationally prohibited weapons	The student understands	Theoretical lecture	oral examination
19th week	I	Use of internationally prohibited weapons.	the lesson	Theoretical lecture	oral examination
20th week	l	scorched earth policy.	The student understands	Theoretical lecture	oral examination
2[th week	l	scorched eart h policy.	the lesson	Theoretical lecture	oral examination
22th week	I	scorched earth policy.	The student understands	Theoretical lecture	oral examination
23th week	1	Mass grave crimes	the lesson	Theoretical lecture	oral examination
24th week	I	Introduction to mass graves	The student understands	Theoretical lecture	oral examination
25th week	I	Genocide cemeteries events.	the lesson	Theoretical lecture	oral examination
26th week	I	Genocide grave sites.	The student understands	Theoretical lecture	oral examination
27th week	I	Genocide grave sites.	the lesson	Theoretical lecture	oral examination
28th week	l	Genocide grave sites.	The student understands	Theoretical lecture	oral examination
29th week	I	Genocide grave sites.	the lesson	Theoretical lecture	oral examination
JQth week	I	Crime departments	The student understands	Theoretical lecture	oral examination

6. Course Evaluation

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

7. Learning and Teaching Resources

Required textbooks (curricular books, if any)	The main book supply by the ministry of hig education
Main references (sources)	Al baath crime's
Recommended books and references (scientific journals, reports...)	

Course Description Form

111.	Course Name: Electromechanical medical devices
112.	Course Code: -
113.	Semester/ Year: Year
2026	
114.	Description Preparation Date: 2026
115.	Available Attendance Forms: in person attendance
116.	Number of Credit Hours (Total)/ Number of Units (Total)
4 units	
117.	Course administrator's name (mention all, if more than one name)
Name: Sajjad Kadhim Hussein Email:sajjadk.hussein@atu.edu.iq	
118.	Course Objectives

Course Objectives	• **student understands the main principle and structure of elec1 mechanical medical devices** • **The student learns about how these devises work by tracking bl diagram of each device and following the anatomy structure of elec1 mechanical medical devices**

119.	Teaching and Learning Strategies

Strategy	

120. Course Structure

Week	Hours	Required Leaming Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Student understands lecture	Introduction to opera 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 maintai manual and self-dri devices	Theoretical lecture	Weekly exams Short questions
6	2	Student understands lecture	Examination on radiolo! scanning devices	Theoretical lecture	Weekly exams Short questions
7	2	Student understands lecture	Monitoring viewing dev	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 reson. imaging device	Theoretical lecture	Weekly exams Short questions
10	2	Student understands lecture	Master's degree in electr components	Theoretical lecture	Weekly exams Short questions
11	2	Student understands lecture	Speed control devic control circuit	E Theoretical lecture	Weekly exams Short questions
12	2	Student understands lecture	Wax bath operating devi	Theoretical lecture	Weekly exams Short auestions
13	2	Student understands lecture	Ultrasound transmitter	Theoretical lecture	Weekly exams Short questions
14	2	Student understands lecture	Simple, simple and m devices	Theoretical lecture	Weekly exams Short questions
15	2	Student understands lecture	Electrical stimulation de	Theoretical lecture	Weekly exams Short questions
16	2	Student understands lecture	Specialization on members of the incub system	Theoretical lecture	Weekly exams Short questions
17	2	Student understands lecture	The incubator tempera control was checked	Theoretical lecture	Weekly exams Short questions
18	2	Student understands lecture	Study material for mem of the industrial col system	Theoretical lecture	Weekly exams Short questions
19	2	Student understands lecture	Connecting the artif kidney device to the pati	Theoretical lecture	Weekly exams Short auestions
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 o anesthesia machine	1 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 mec gas networks	Theoretical lecture	Weekly exams Short questions
25	2	Student understands lecture	Operating and maintai the centrifuge	Theoretical lecture	Weekly exams Short questions

26	2	Student understands lecture	Operating and maintai the microsco e	Theoretical lecture	Weekly exams Short questions
27	2	Student understands lecture	Operating and maintaini device to measure ac and basicit , 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

121. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily pre aration, dail oral, month! , or written exams, re orts ....etc

122. Learning and Teaching Resources

8ffirttl•I =ffl'Uffl ti •U .11bfoffl Medical Devices Improving Health Care Through a Multidisciplinary Approac	**Editors:** 2022 • Carlo Boccato, • Sergio Cerutti, • Joerg Vienken
Main references (sources) A volume in Biomedical Engineering **Book** • Third Edition • 2012	Books, internet John D. Enderle and Joseph D. Bronzino

Course Description Form

123.	Course Name: computer applications2
124.	Course Code: -
125.	Semester/ Year: Year
126.	Description Preparation Date: 2026
127.	Available Attendance Forms: in person attendance
128.	Number of Credit Hours (Total)/ Number of Units (Total)

3 unit

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

Name:Mohammed baqer
Email:Mohammed.baqer.inj@atu.edu.iq

130. Course Objectives

Course Objectives	• **student understands the Excel program and how to apply it us different examples in various fields** • **The student should understand the AutoCAD program, application and its benefits.**

131. Teaching and Learning Strategies

Strategy	

132. Course Structure

Week	Hours	Required Leaming Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Student understands lecture	networks	Theoretical lecture	Weekly exams Short questions
2	2	Student understands lecture	Internet	Theoretical lecture	Weekly exams Short questions
3	2	Student understands lecture	How to deal with the web	Theoretical lecture	Weekly exams Short questions
4	2	Student understands lecture	Learn yahoo, google	Theoretical lecture	Weekly exams Short questions
5	2	Student understands lecture	Methods of searching data	Theoretical lecture	Weekly exams Short questions
6	2	Student understands lecture	Excel concept	Theoretical lecture	Weekly exams Short questions
7	2	Student understands lecture	Its benefits, features methods of operation	Theoretical lecture	Weekly exams Short questions
8	2	Student understands lecture	The main screen and components	Theoretical lecture	Weekly exams Short questions
9	2	Student understands lecture	Cell concept	Theoretical lecture	Weekly exams Short questions
10	2	Student understands lecture	Types of basic data how to enter them	Theoretical lecture	Weekly exams Short questions
11	2	Student understands lecture	How to save a works or workbook. Close program and close the	Theoretical lecture	Weekly exams Short questions
12	2	Student understands lecture	Open the saved file, e data and perform sin calculations.	Theoretical lecture	Weekly exams Short questions
13	2	Student understands lecture	Use some of the funct provided by the progi such as count, SQRT, s Min, Max	Theoretical lecture	Weekly exams Short questions

14	2	Student understands lecture	Learn about the editing process provided by th program, how to copy Data or data transfer	Theoretical lecture	Weekly exams Short questions
15	2	Student understands lecture	Control cell width: char its style and format by using Coordination tools	Theoretical lecture	Weekly exams Short questions
16	2	Student understands lecture	Dealing with charts how to convert digital text data into charts	Theoretical lecture	Weekly exams Short questions
17	2	Student understands lecture	Introduction to the Al CAD system, components, sys operation, main menu drawing screen components.	Theoretical lecture	Weekly exams Short questions
18	2	Student understands lecture	Screen dimensions	Theoretical lecture	Weekly exams Short questions
19	2	Student understands lecture	Methods of entering information	Theoretical lecture	Weekly exams Short questions
20	2	Student understands lecture	How to work with toolbars	Theoretical lecture	Weekly exams Short questions
21	2	Student understands lecture	Draw straight,square LINE ZOOM	Theoretical lecture	Weekly exams Short questions
22	2	Student understands lecture	CLOSE- VIEW - M REGAN - REDRAW ORTHO -LAST ,CROSS WINDOW , REMOV PREVIOUS-	Theoretical lecture	Weekly exams Short questions
23	2	Student understands lecture	SAVE, END, OUIT	Theoretical lecture	Weekly exams Short questions
24	2	Student understands lecture	ILL - HATCH - SOLi SCALE	Theoretical lecture	Weekly exams Short questions
25	2	Student understands lecture	Create a drawing layer with new specifications	Theoretical lecture	Weekly exams Short questions
26	2	Student understands lecture	Drawing arcs ARC and CIRCUIT CIRCILE - HATCH OFFSET	Theoretical lecture	Weekly exams Short questions
27	2	Student understands lecture	MIRROR - TRIM - ADD	Theoretical lecture	Weekly exams Short questions
28	2	Student understands lecture	ILLT - EXTEND-.	Theoretical lecture	Weekly exams Short questions
29	2	Student understands lecture	Draw an electrical circuit applying the previous instructions	Theoretical lecture	Weekly exams Short questions
30	2	Student understands lecture	Completing the previous diagram with addition of writings	Theoretical lecture	Weekly exams Short questions

133. Course Evaluation

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

134.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Microsoft Excel 2010 Curtis Frye
Main references (sources)	Books, internet
Recommended books and references (scientific journals, reports...)	Excel lectures from the College of Education, Al-Qadisiyah University Lectures and online resources
Electronic References, Websites	httgs:LLiunajaf.edu.igLGradual /Publication AutoCAD lectures by Riyad Dhaher from Muthanna University

Course Description Form

135. Course Name: Maintenance of medical devices
136. Course Code: -
137. Semester/ Year: Year
138. Description Preparation Date: 2026
139. Available Attendance Forms: **in** person attendance
140. Number of Credit Hours (Total)/ Number of Units (Total)
8 units
141. Course administrator's name (mention all, if more than one name)
Name: Mustafa Ali Abdulhussain Email: mustafa.abdulhussain.inj@atu.edu.iq
142. 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.**

143. Teaching and Learning Strategies

Strategy	Presentation - coordination - training - discussion, and it includes two components: methodology and the procedure

144. Course Structure

Week	Hours	Required Leaming 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 identi 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 maintenar	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 maintenanc	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 devin	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 maintenan	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 devic	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 maintenanc1	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

145.Course Evaluation

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

146. Learning and Teaching Resources

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

Course Description Form

147. Course Name: Microcomputers

148. Course Code:

149. Semester / Year: Year

150. Description Preparation Date:2026

151. Available Attendance Forms: in person attendance

152. Number of Credit Hours (Total)/ Number of Units (Total) : (120)/8 units

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

Name: Ahmed Fahim Al-baghdadi

Email: Dr.a.albaghdadi@atu.edu.iq

154. Course Objectives

Course Objectives The student will be able to know the ex parts of a computer and how to program	• **1- Apply general electrical laws when analyzing electrical circuitsl- Introducing the student to the components of the microcomputer, microprocesso how to program them and their uses.....** **2- Studying the components of microcomputers microprocessors (8086-280-8085) and how to c with them and programming them in the languagE the machine.....** • .....

155. Teaching and Learning Strategies

Strategy	1- white board & Marker 2- data show.

156. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1st	4	Introducing the vocabulary of the subjE and the distribution of exam grades - numeric systems - the decimal system - the binary system - the octal systE - the hexadecimal systt and its importance for microcomputers - conversions between systems.		Theoretical and pract lectures	Oral and writ exams
znct	4	Introducing microcomputers, their types, and their relationship to other electronic computers		Theoretical and pract lectures	Oral and writ1 exams
3rd	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 pract lectures	Oral and writ exams
4th	4	Microcomputer architecture - block diagram - input unit - keyboard - mouse - the two types of mouse am comparison between them - the input port.		Theoretical and pract lectures	Oral and writ exams
5th	4	The transmission syste - the data carrier - the address carrier - the li1		Theoretical and practi lectures	Oral and writ exams

		of control and control the benefit of each - a comparison between them.			
6th	4	Output unit - screen - t difference between a computer screen and a TV screen - an output port.		Theoretical and pract lectures	Oral and writ1 exams
7th	4	Memory - main mem01 read only memory - re, and write memory - a comparison between them - auxiliary memories and the difference between the and the main memory.		Theoretical and practi lectures	Oral and writ exams
8th	4	CPU - Microprocessor - Definition - Block diagram showing the architecture of the microprocessor - Microprocessor 8085 - Terminal diagram and block diagram - Data b bumpers - Address bu bumpers and a comparison between them.		Theoretical and practi lectures	Oral and writ exams
9th	4	General registers - A register (accumulator) Arithmetic and logic ur - Flag register - Flag of the 8085 microprocess - Arithmetic example f< determining the state c each flag and interpreting the state - The utility of the flag register.		Theoretical and pract lectures	Oral and writ1 exams
1Qth	4	Informing the Z-80 microprocessor and comparing it with the		Theoretical and practi lectures	Oral and writ1 exams

		information of the 808 microprocessor - Arithmetic example - I program counter - SP stack pointer - Instruc register - Instructor decoder - Control unit.			
11th	4	Directions of the 8085 Z80 microprocessor - symbols used to remember - the machi language - a comparisa between them - how tc extract the codes in thE machine language fron the instructions table.		Theoretical and practi lectures	Oral and writ exams
12th	4	Directions of the data transfer group and its types - solving examplE - writing an applicatior program.		Theoretical and practi lectures	Oral and writ1 exams
13th	4	Input and output instructions and their relationship to data transmission group instructions - practical examples.		Theoretical and practi lectures	Oral and writ exams
14th	4	*A* set of arithmetic Instructions and their types - practical examples - their use in amplifying the digital signal with an applied example.		Theoretical and practi lectures	Oral and writ exams
15th	4	The set of logical stimu and their types - practi examples - and their u< in solving digital circui		Theoretical and practi lectures	Oral and writ exams
16th	4	group of branching instructions and their types - conditional and unconditional and thei dependence on flags -		Theoretical and practi lectures	Oral and writ exams

		practical examples - th importance of this grm in writing programs.			
17th	4	The set of control commands - what is th relationship to the activation keys - how c they differ from the re of the previous instructions.		Theoretical and practi lectures	Oral and writ exams
18th	4	Programs to perform arithmetic operations: addition - subtraction multiplication - divisio intended addressing ar its types in the 8085 processor		Theoretical and practi lectures	Oral and writ exams
19th	4	Stages of executing a directive - Instructing cycle - Machine cycle - The timing diagram fo executing a command (instructing the conten of the accumulator to t stored in a memory location for example) - How the microprocess reads data in memory.		Theoretical and practi lectures	Oral and writ exams
2Qth	4	Composition of repetition loops - time delay loops - one loop two loops-three loops application programs i each of them.		Theoretical and practi lectures	Oral and writ exams
21st	4	Generating pulses with required frequency and known duty cycle compared to pulse generators that use integrated circuits.		Theoretical and practi lectures	Oral and writ exams
22nd	4	Practical examples showing how to exploi time-delay loops in		Theoretical and practi lectures	Oral and writ1 exams

		industrial and domesti fields.			
23rd	4	Writing a program for ascending counter - wi an example applicatior		Theoretical and practi lectures	Oral and writ1 exams
24th	4	Writing a program for countdown timer - wit an example		Theoretical and practi lectures	Oral and writ1 exams
25th	4	Writing an ascending/ descending counter program - with an example applicatior		Theoretical and practi lectures	Oral and writ1 exams
26th	4	Microprocessor 8086 - Specifications - Architecture - Termina Diagram.		Theoretical and practi lectures	Oral and writ exams
27th	4	Addressing types for ti 8086 microprocessor - Directions for data transfer - Directions fo multiplication and division - Examples of other instructions.		Theoretical and pract lectures	Oral and writ exams
28th	4	Comparison of an eigh ranked microprocesso (such as the 8085) and 16-ranked microprocessor (such , the 8086).		Theoretical and pract lectures	Oral and writ exams
29th	4	Microprocessors with ranks and their most prominent specificatic - the microprocessors used in Pentium computers.		Theoretical and practi lectures	Oral and writ exams
3Qth	4	A general review of thE curriculum vocabulary		Theoretical and practi lectures	Oral and writ1 exams
157. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.....etc					
158. Learning and Teaching Resources					

1- Required prescribed books	1- Microcomputer techniques written by (Dr Riyad Kamal - Abdel Hadi Ahmed) 2- Digital Electronics, written by (Malvino) 3- Modern Digital Electronics, written by (RP.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 Ollmar Pitman Books -Limited -1982. 6-Micro Computer & Their Interfacing ((RC Holland)) Porgamamon Press 1984.
Recommended books and references (scientific journals, reports, ...)	
Electronic References, Websites	